

A Guide to
Hybrid Pension Schemes

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Authority for Pensions

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Contents

1. Introduction	2
2. Defined contribution and defined benefit	3
3. What is a hybrid pension scheme?	6
4. Types of hybrid pension schemes	7
5. Conclusion	10
Appendix 1: Comparison of hybrid pension schemes	11
Appendix 2: The financial effects of closing a defined benefit scheme	13

1. Introduction

This booklet is intended to help employers, employees, union representatives and others involved with pensions to understand the different types of pension scheme designs. This is with a view to helping them to reach agreement about the most suitable type of pension scheme in a particular situation.

The booklet is being provided for information purposes only. It does not advocate any particular scheme design. It simply seeks to explain the features of different designs and provide enough information for those involved to understand the important features and to make informed decisions. Any pension scheme design should ideally involve professional advice. This booklet is not intended to replace this advice: it should, however, help those involved in their discussions with their advisers.

In preparing the booklet, the following approach has been adopted:

- Not all of the complexities of pensions can be included - only the most important issues are mentioned;
- Employers, members and trustees may have different priorities, so it is not possible to list the advantages and disadvantages of any particular scheme design, and;
- There is no limit to the number of potential hybrid designs. This booklet describes only the most significant designs.

A key point to bear in mind is that in all pension scheme designs, the importance of the pension contribution rate cannot be overstated. The retirement benefits that members will get from a pension scheme will depend on how much was contributed by the employer and employees to that scheme. This is far more important than the type of pension scheme, and it is not possible to compare two different types of scheme unless the contribution rates to both of them are similar.

2. Defined contribution and defined benefit

Almost all schemes in Ireland are either defined contribution or defined benefit.

A defined contribution (DC) scheme has a set contribution for the employee and a set contribution for the employer. For example, in many defined contribution schemes, the employer and the employee each contribute 5% of the member's earnings, or 10% in total.

These contributions are invested on behalf of each scheme member. The retirement benefits for each member depend on how much money has been built up by retirement and so it is not possible to know in advance what pension benefits a member will receive.

A defined benefit (DB) scheme fixes the benefit in advance - usually as a proportion of the member's earnings when they retire. For instance, a DB scheme might provide at retirement a pension of 1% of earnings for each year an employee was in the scheme. If an employee retired after 40 years, that employee would receive a pension of 40% of their earnings before retirement.

In a DB scheme, it is not possible to know in advance how much the scheme is going to cost. The benefits are fixed, and the contributions must be adjusted from time to time to make sure that the correct amount is being accumulated to provide for them. It is usual in a DB scheme for the member's contribution rate to be fixed and for the employer rate to increase or reduce as needed, though in some DB schemes both employer and employee contribution rates change from time to time.

Main features of a DC scheme

The following are the main features of a DC pension scheme:

- Contribution rates are fixed in advance – employers know what they have committed to;
- Members will not normally know until very close to retirement what their benefits will be;
- The higher the investment return achieved by the scheme before retirement, the better the pension benefits will be. On the other hand, if investment returns are poor, especially in the years just before retirement, retirement benefits will be lower than expected;
- In a DC scheme, the member builds up a fund by retirement age, which is used to buy a retirement pension. The cost of the pension is unknown in advance, and it is to the member's advantage if the cost is low, but detrimental if pension cost at retirement is high;
- If a member's earnings increase rapidly throughout their working life, and especially towards the end, their DC benefits may be low relative to their earnings just before retirement;
- Contributions are usually allocated uniformly across all members as a percentage of pensionable earnings – there is no discrimination between those who stay until retirement and those who leave early;
- Benefits can also be more valuable to early leavers than if they were in a DB scheme, and;
- Scheme may suit a more mobile worker, as the benefits can be more easily transferred between employers.

Main features of a DB scheme

The following are the main features of a DB pension scheme:

- Contribution rates vary, depending on the outcomes of the regular actuarial reviews;
- Members can predict the benefits they will receive as a proportion of their earnings just before retirement;
- Level of benefit payable often takes into account the level of social welfare pension paid to the member (known as integration);
- The higher the investment return achieved by the scheme, the lower the contribution rate will be. On the other hand, if investment returns are poor, contribution rates have to be increased to provide for the agreed benefits;
- The cost of buying a pension at retirement affects the contribution rate.

In order to give some protection to the security of the pensions promise, the Pensions Act, 1990 requires that each DB scheme check each year that it has accumulated enough assets to meet its liabilities to date. This is called meeting the funding standard, and if a scheme fails to meet this standard, steps must be taken to remedy the position.

Employers in their annual accounts are required by Financial Report Standards (FRSs) to show the amount of their pension commitments (liabilities) compared to the amount of the scheme assets (fund) and to disclose the net difference, whether a deficit or a surplus, in their balance sheet.

The particular accounting standard by which most Irish companies determine the effect of a pension scheme on their accounts is FRS17. Companies listed on a Stock Exchange and other large companies are required by law to use an equivalent International Account Standard (IAS19) to provide similar information on the effects of pension schemes on their accounts. For convenience this booklet only refers to FRS17, and;

- Schemes are best suited to those who stay until retirement in comparison to DC schemes, particularly those who experience above average salary growth. Those who leave before retirement can receive much lower benefits.

Summary of differences between DC and DB schemes

In summary, the four key differences between DC and DB schemes are:

DC	DB
Contributions are fixed	Benefits are fixed
If investment returns are lower than expected, or the cost of pensions is higher than expected, the member bears the cost in the form of lower benefits (unless it is agreed that higher costs will be paid by the employers and/or the employees).	If investment returns are lower than expected or the cost of pensions is higher than expected, then higher contributions must be paid (by employers and/or employees, if the benefits which have been agreed are to be paid).
Not subject to the funding standard	Subject to the funding standard
Not subject to FRS17	Subject to FRS17
Uniform allocation of contributions across members	Best suited to those who stay until retirement, particularly those who experience above average salary growth. Those who leave before retirement can receive relatively lower benefits.

It should be noted that the funding standard does not apply to DC schemes. The rationale behind the funding standard is ensuring that a pension promise is backed by sufficient assets to ensure delivery. Because the benefits/entitlements under a DC scheme exactly equal the scheme assets, there is no need for a funding standard to check if there are sufficient assets.

Similarly, DC schemes do not come under the scope of FRS17. FRS17 makes it clear that only in circumstances where the employer has "*no obligation other than to pay a contribution that reflects only the benefits earned in the current period...*" can he account for the scheme as a defined contribution scheme. FRS17 goes on to state that, "*... there must be clear evidence that the employer cannot be required to pay additional contributions to the scheme relating to past service.*"

3. What is a hybrid pension scheme?

A hybrid pension scheme is one which is neither a full DB nor a full DC scheme, but has some of the characteristics of each. There are many possible types of hybrid schemes, and section 4 describes a number of different schemes in some detail.

In a DC scheme, the member generally bears the full risk (of paying higher costs or receiving reduced benefits) if investment or pension costs are not as good as expected. In a DB scheme, the employer usually takes that risk and pays higher contributions in order to maintain the agreed level of benefits. In hybrid schemes, the risk is shared between the employer and employees. As a result, hybrid schemes may be of interest where a DC scheme is not considered suitable and a DB scheme is not felt to be a feasible or affordable alternative.

In considering different pension scheme designs, an important issue for employers and trustees is how the new design will be effected by the funding standard and how the scheme will be shown in the employers annual accounts under the FRS17 rules.

The funding standard and FRS17 rules can be complex and each scheme must get professional advice. The description of the different types of hybrid pension scheme design includes, in each case an outline of the likely treatment under the funding standard and FRS17.

Pressures from FRS17 and the funding standard are most significant where the guaranteed pension commitments on discontinuance are large relative to the long-term benefit payout aspirations. These pressures may be eased by reducing guarantees and replacing them with funded (but not guaranteed) elements of scheme design.

4. Types of hybrid pension schemes

This section looks at a number of different types of hybrid design, compares them with DB or DC and describes the main features and differences in each case. The schemes covered include career average schemes, combination hybrids, self annuitising DC scheme, final salary lump sum schemes, underpin arrangements, cash balance schemes and fixed benefit/benefit unit schemes. The reader should also refer to Appendix 1, which contains detailed examples of how the retirement benefit is worked out under each hybrid scheme discussed in this section. These examples are in tabular form, to allow the reader compare the differences in each design.

Career average schemes

Career Average schemes are DB in nature, but are a variation of the traditional DB design. The benefit offered is based not on the earnings close to retirement, but rather on the average earnings throughout the member's entire career. These earnings may be revalued in line with some index, for instance the Consumer Price Index (CPI).

From the employer's point of view, career average schemes differ from traditional DB schemes in the rate of revaluation used to inflate historic earnings. If this rate turns out to be lower than the average earnings growth (which is generally the case), the scheme will be cheaper than an equivalent defined benefit scheme: if the revaluation is higher, the scheme will be dearer.

If the revaluation is discretionary rather than linked to a specified index, the contribution rates to the scheme will be more stable than contribution rates to a typical DB scheme, as the revaluation rate can be reduced in years of poor investment return.

The retirement benefits for employees are less predictable (in terms of final earnings) than the benefits under a DB scheme.

If the revaluation is discretionary, the retirement benefits will be less predictable still. An employee whose earnings grow by more than the average for the workforce will get lower retirement benefits from a career average scheme than from a comparable DB scheme. An employee whose earnings grow by less than the average will get a greater benefit than under a comparable DB scheme.

These schemes will be treated identically to DB schemes for both funding standard and FRS17 purposes.

Combination hybrids

In a combination scheme, a member may be accumulating two types of benefit simultaneously. This would typically be DB for the first portion of income and DC on any earnings over that amount.

The experience of members of combination hybrids will depend on what proportion of their earnings fall within the DB scheme and what proportion under the DC scheme and the rate of contribution for the DC element. Members on lower earnings will be almost entirely in DB, and will have predictable retirement benefits and bear no risk. Those on higher earnings will have less predictable earnings, and bear more investment and pension cost risk.

The employer's experience of these schemes will obviously depend on the proportion of total employee earnings that qualifies for DB benefits and the proportion that is DC. The employer will bear less risk and have less variable contributions than for a totally DB arrangement.

The DB component of combination hybrids will be subject to the funding standard and to FRS17 as for any other DB arrangement. The DC element will clearly not be subject to either.

Self-annuitising DC schemes

These schemes operate identically to DC schemes until a member retires. At that point, the accumulated fund is converted to pension income not at the market rate for pension costs, in accordance with a process which is set out in the rules of the scheme. The pension is then paid from the scheme.

The retirement benefits are more predictable, because the cost of converting the accumulated fund at retirement into pension is more predictable. However, the benefit will depend on the investment return earned before retirement, unlike a DB scheme.

From the employer's point of view, these schemes are very similar to DC. Any difference will arise from the cost of self-annuitisation (i.e., actual experience vs the assumptions originally used). If this risk is borne wholly or partly by the employer, contribution rates will be less predictable than for DC schemes (though considerably more predictable than for DB).

These schemes are always subject to the funding standard. If the employer contributions vary to reflect the cost of the annuitisation, they will be subject to FRS17: these returns would be volatile in times of rapid interest rate movement.

Final salary lump sum schemes

Under these types of schemes, the retirement benefit is expressed as a lump sum at retirement, rather than as a pension. For example, the rules of the scheme may provide a lump sum at retirement of 20% of final salary for each year of employment. If a member retired with 40 years service, a lump sum of 20% times 40, i.e. 800% of final earnings would be used to buy a pension for that member at the market cost at that date.

Members of these schemes can predict the lump sum they will be entitled to at retirement (as a percentage of final earnings) but will not know the pension benefit that this will purchase, which will depend on the market cost at that time.

The contribution rates for these schemes will be more stable than for a typical DB scheme because effectively the longevity risk is being removed from the scheme. However, the contribution rates will vary depending on the investment return earned.

These schemes will be treated identically to DB schemes for both funding standard and FRS17 purposes. However, because the members rather than the scheme are bearing the post-retirement longevity and investment risk, the results are likely to be slightly more stable.

Underpin arrangements

In an underpin scheme, there is both a DB and DC basis for benefits. At retirement, the member receives whichever calculation provides the better benefit. For instance, a scheme may have an employer and employee contribution rate of 6% each, with a guarantee that at retirement, a pension of at least 1% of earnings per year of employment would be paid, no matter what the value of the DC benefit.

Although underpin arrangements are a mix of DB and DC, one or other design element usually predominates. A scheme might, for instance, be mostly DC with a DB underpin that occasionally takes effect, or might be very similar to a DB scheme but with benefits occasionally increased to take account of the DC underpin.

If the scheme is predominantly DB, the contribution cost may sometimes be higher than a comparable DB scheme. From the employees' point of view, the minimum benefits are predictable, and the DC underpin may occasionally provide higher benefits. If the scheme design is predominantly DC, the DB underpin will require additional funding in times of low interest rates and/or poor investment returns. Contribution rates may, therefore be higher than for a pure DC plan but are likely to still be more predictable than for a DB scheme. Employee benefits will be slightly more predictable than for a typical DC scheme.

One notable point about underpin arrangements is that administration and compliance are always more complex and costly than for other scheme types.

All underpin arrangements will be subject to the funding standard, and are likely to be subject to FRS17. However, if the design is predominantly DC rather than DB, the results are likely to be quite predictable.

Cash balance schemes

In a cash balance scheme, a member's benefit is an entitlement to a lump sum at retirement, in a similar fashion to a traditional DC scheme which is converted into an annuity. The difference is that the amount in the member's account is not directly related to the returns achieved on the underlying assets. However, the returns may be guaranteed, or smoothed (to offset any high or low peaks) or subject to some form of underwriting, by the scheme.

Cash balance schemes appear similar to DC schemes but because the rate of return credited on member funds is not related to short-term investment returns, member benefits may be slightly more predictable. The effect of this difference may be to make contributions less predictable. However, if the contribution rate is fixed, the result will be that investment returns will be shared among members. Since the total amount of investment risk has not changed the mechanism for achieving an equitable sharing of this risk amongst members may be quite complex.

These schemes will be subject to FRS17 only if the employer contribution rate varies in response to differences between the investment return credited and those actually earned.

Cash balance schemes will always be subject to the funding standard. How stable the funding standard returns will be will depend on how closely the investment returns credited differ from the returns actually earned.

Fixed benefit/benefit unit schemes

These schemes are DB in nature but without any link to earnings – a member usually accumulates a fixed amount of annual pension every year. The amount of pension granted in any year depends on the amount of the contribution made, how long the member has until retirement and the actuarial factors being used by the scheme. At retirement, the member receives a pension equal to the total amount of the pension built up each year.

Under these schemes, members can predict their retirement benefits in cash terms reasonably well in respect of their service to date. Predicting the total benefit is more difficult, but nonetheless easier than for a typical DC scheme. However, unless the members are close to retirement, their benefit in real terms, or as a percentage of their final salary, is not predictable and is arguably no more so than for a typical DC scheme.

Contribution rates may be unpredictable given the uncertainty of longevity risk underlying the pension promise (and possibly investment risks as well). Risks are, however, likely to be easier to control than under a traditional DB promise, particularly where there is scope to adjust the benefit promise to reflect emerging trends in longevity etc.

These schemes would be subject to the funding standard, but may not result in FRS17 disclosure. The funding standard results may be quite stable and predictable if the scheme investment policy matches the scheme commitments.

More complex hybrids

Some scheme designs may be a combination of a number of different hybrid types, for instance a self-annuitising cash balance scheme.

5. Conclusion

While all pension scheme designs have advantages and disadvantages, hybrid schemes, including the examples of hybrid scheme design set out above, can facilitate the distribution of pension risk between employers and employees. It is hoped that this guide will enable both employers and employees, and their advisers, to begin to consider the range of options available to them and appropriate solutions for their particular circumstances.

The attached appendices provide some additional information including:

- An overview of the hybrid schemes outlined in this booklet, and;
- Financial considerations when deciding whether or not to close a DB scheme.

Appendix 1 – Comparison of hybrid schemes¹

Type of Plan	Final Salary	Career Average Plans	Combination	Final Salary Lump Sum	Self-Annuitising DC	Underpin Schemes	Cash Balance
Benefit at Retirement	Pension	Pension	Pension & Lump Sum	Lump Sum	Lump Sum	Pension or Lump Sum	Lump Sum
Benefit Formula	1/60th of final year pensionable earnings x pensionable service.	1/60th of revalued pensionable earnings x pensionable service.	1/60th of pensionable earnings up to 2 times the State Retirement Pension (currently €10,868 pa) x pensionable service, plus DC benefits with 5% employer contribution on earnings in excess of 2 times the State Retirement Pension.	20% of final year pensionable earnings x pensionable service.	Employer contribution of 5% of pensionable earnings for each year of pensionable service. Favourable conversion terms to apply at retirement.	2% of career average earnings (without revaluation) x pensionable service, plus DC benefits with employer contribution of 15% of pensionable earnings.	8% of pensionable earnings for each year of pensionable service. Account balance increased by a specified rate of interest each year.
Pensionable Earnings	Year 1: €30,000 Year 2: €31,500 Year 3: €32,760 At Normal Retirement Date (NRD): €40,000	Year 1: €30,000 Year 2: €31,500 Year 3: €32,760 At NRD: €40,000	Year 1: €30,000 Year 2: €31,500 Year 3: €32,760 At NRD: €40,000	Year 1: €30,000 Year 2: €31,500 Year 3: €32,760 At NRD: €40,000	Year 1: €30,000 Year 2: €31,500 Year 3: €32,760 At NRD: €40,000	Year 1: €30,000 Year 2: €31,500 Year 3: €32,760 At NRD: €40,000	Year 1: €30,000 Year 2: €31,500 Year 3: €32,760 At NRD: €40,000
Accrued Benefit							
Year 1	1/60 x €40,000 = €667 pa payable from NRD.	1/60 x €30,000 = €500 pa payable from NRD.	1/60 x €21,736 = €362.26 pa payable from NRD plus DC benefit: 5% x (€30,000 - €21,736) = €413.20 contribution plus 7% investment return earned over the year = €442.12.	20% x €40,000 = €8,000 lump sum payable at NRD.	5% x €30,000 = €1,500 contribution plus 7% investment return earned over the year = €1,605.	DB benefit: 2% x €30,000 = €600 pa payable from NRD or DC benefit: 15% x €30,000 = €4,500 contribution plus 7% investment return earned over the year = €4,815 accumulated balance.	8% x €30,000 = €2,400 cash balance.
Year 2	2/60 x €40,000 = €1,334 pa payable from NRD.	1/60 x €31,500 = €525 pa plus €500 from year 1 plus Consumer Price Index (CPI) revaluation = €500 x 1.034 = €517 pa. Total at end of year 2 = €517 + €525 = €1,042 pa payable from NRD.	2/60 x €21,736 = €724.53 pa payable from NRD, plus DC benefit: 5% x (€31,500 - €21,736) = €488.20 contribution plus accumulated balance of €442.12 plus 10% investment return earned over the year = (€448.20 + €442.12) x 1.1 = €979.35 accumulated balance.	20% x 2 x €40,000 = €16,000 lump sum payable at NRD.	5% x €31,500 = €1,575 contribution plus accumulated balance of €1,605 plus 10% investment return earned over the year = (€1,575 + €1,605) x 1.1 = €3,498 accumulated balance.	DB benefit: 2% x €31,500 = €630 pa plus €600 pa from year 1 = €1,230 pa payable from NRD or DC benefit: 15% x €31,500 = €4,725 contribution plus accumulated balance of €4,815 plus 10% investment return earned over the year = (€4,725 + €4,815) x 1.1 = €10,494 accumulated balance.	8% x €31,500 = €2,520 plus €2,400 from year 1 plus interest = €2,400 x 1.04 = €2,496 Total at end of year 2 = €2,496 + €2,520 = €5,016 cash balance.
Year 3	3/60 x €40,000 = €2,000 pa payable from NRD.	1/60 x €32,760 = €546 pa plus €1,042 from year 2 plus CPI revaluation = €1,042 x 1.025 = €1,068.05 pa Total at end of year 3 = €1,068.05 + €546 = €1,614.05 pa payable from NRD. The pension may be subject to further revaluation up to NRD.	3/60 x €21,736 = €1086.79 pa payable from NRD DC benefit: 5% x (€32,760 - €21,736) = €551.20 contribution plus accumulated balance of €979.35 plus 6% investment return earned over the year = (€551.20 + €979.35) x 1.06 = €1,622.38 accumulated balance.	20% x 3 x €40,000 = €24,000 lump sum payable at NRD.	5% x €32,760 = €1,638 contribution plus accumulated balance of €3,498 plus 6% investment return earned over the year = (€1,638 + €3,498) x 1.06 = €5,444.16 accumulated balance. <i>Favourable conversion terms at retirement.</i>	DB benefit: 2% x €32,760 = €655.20 pa plus €1,230 pa from year 2 = €1,885.20 pa payable from NRD or DC benefit: 15% x €32,760 = €4,914 contribution plus accumulated balance of €10,494 plus 6% investment return earned over the year = (€4,914 + €10,494) x 1.06 = €16,332.48 accumulated balance.	8% x €32,760 = €2,620.80 plus €5,016 from year 2 plus interest = €5,016 x 1.043 = €5,231.69 Total at end of year 3 = €5,231.69 + €2,620.80 = €7,852.49 cash balance.
Employer Perspective	There is some flexibility in how to meet the cost, i.e. the pace of 'funding' and this scope may be increased by introducing discretionary elements in to the plan design; The employer may not wish to make an open-ended commitment to underwrite the cost in periods of high inflation/low investment returns, and; Pension legislation provides various constraints on scheme design.	Removal of the final salary linkage makes these schemes lower cost and may represent an opportunity to offer a more affordable scheme; Distribution of resources is more balanced in these schemes with no obvious bias in favour of those on high salaries, or cross subsidies with respect to stayers and leavers; Opportunity to offer intended, rather than contractual, revaluation may give a significant degree of funding flexibility lacking in more tightly defined benefit schemes, and; The annuity risk is with the employer.	Risk is shared between the employer and the employee, but with the employer taking primary responsibility for the first tranche of pension coverage and passing most of the pension risk to more highly paid employees once this basic pension commitment has been covered.	The employer accepts the pre-retirement risk, with the risk transferring to the employee at the point of retirement.	The employer takes on the annuity risk at the point of retirement by offering rates of conversion into pension within the scheme, rather than requiring the member to purchase an annuity from the open market with the DC fund.	The employer bears the risk as the benefit for employees is calculated as the better or best of two (or more) scales.	The employer takes the investment risk in the period up to retirement, and; Employer's obligation is limited to providing the promised 'pot' of money at retirement – risk passes to employee at retirement.
Employee Perspective	The employee is not left to bear the investment risk; Benefits sometimes unsuited to particular worker's career earnings patterns (e.g. if pay falls in later years); Part-timers' benefits may be complex; Early leavers may suffer some loss of pension expectation, and; Along with Career Average Schemes, these schemes involve the least sharing of risk with employees and so the least variability in outcome.	These schemes are a type of DB scheme, with the Benefit offered based on average earnings throughout the member's entire career; Pensionable earnings under these schemes may be revalued in line with an index, e.g. Consumer Price Index, to ensure the benefit keeps pace with inflation, and; Along with Defined Benefit Schemes, these schemes involve the least sharing of risk with employees and so the least variability in outcome.	Risk is shared between the employer and the employee.	The nature of the scheme switches from DB during active membership to a DC basis at retirement, where the employee purchases an annuity with the lump sum.	Employee benefits from the more generous terms offered under the scheme and the employer bears the additional cost on the basis of the market annuity costs at that point in time.	This scheme provides a 'value-for-money' guarantee for early leavers, and; Value of final benefit is guaranteed not to be less than a DC benefit calculated on the basis of a multiple of the employees contributions accumulated with interest.	Treats accrued benefits similarly for leavers and stayers alike, there is no 'bias' towards leavers, and; Employer takes the investment risk up to the point of retirement. Employee then takes the interest rate and mortality risk when they purchase a pension with the retirement fund.
FRS17	✓	✓ But with a lower commitment than under DB schemes.	✓ But will be determined by the way the benefit is calculated – i.e., what element is DB and what element is DC.	✓ But with a lower commitment and risk than under traditional DB schemes.	✓ Impact depends on attractiveness of conversion terms relative to market rates.	✓	✓
IAS19	✓	✓ But with a lower commitment than under DB schemes.	✓ But will be determined by the way the benefit is calculated – i.e., what element is DB and what element is DC.	✓ But with a lower commitment and risk than under traditional DB schemes.	✓ Impact depends on attractiveness of conversion terms relative to market rates.	✓	✓

¹ It should be noted that the calculations in this appendix are for illustrative purposes only.

Appendix 2: The financial effects of closing a defined benefit scheme

Before deciding whether or not to close a defined benefit scheme to new entrants, all stakeholders need to consider the impact of the decision on costs, contribution rates and investment.

Funding principles

In broad terms most pension schemes have a funding policy based on the following principles:

- Past service liabilities (comprising the valuation of anticipated benefit payments to all pensioners and deferred members together with benefits earned to date by employees) are fully met by the accumulated fund of assets, and;
- The ongoing contribution rate is targeted to meet the anticipated cost of benefit payments to employees related to their future service. (Within this calculation some funding policies allow for a gradual ageing of the employee population over time while others – typically for larger schemes – assume that the population will remain static with retiring members being replaced by new members).

In simple terms, if these principles are being followed, then any decision to close the scheme to new members should be immaterial. Past service rights continue to be fully funded by the accumulated assets and the ongoing contribution rate continues – but is applied to a shrinking payroll. The rest of this note elaborates on this fundamental point.

Pension scheme cost

When a scheme closes, the pension contribution rate will normally increase over time. However, this does not mean that the total pension cost increases.

Contribution rates normally increase with age. In a closed scheme, the average age of active members usually increases as time goes by. As a result, the average contribution rate increases. However, the cost of providing benefits to the continuing members of the scheme is going to be the same whether or not the scheme is open. The difference between the open and closed schemes is the way that cost is expressed. This is seen best by an example:

Suppose there are 20 employees in a company, all earning €40,000 per annum. Half of them are age 50, and the defined benefit contribution rate for them is 20%. The other ten employees are aged 30, and the contribution rate for them is 15%.

If they are all in the defined benefit scheme, the costs are as follows:

	30 year olds	50 year olds
Payroll	400,000	400,000
Contribution rate	15%	20%
Cost	60,000	80,000
Total cost	140,000	
Total contribution rate for all	17.5%	

The contribution rate to the open defined benefit scheme is therefore 17.5%.

Suppose that, instead of the above, a few years ago, the defined benefit scheme had been closed to new entrants. Only the 50 year olds are now in the scheme, and the contribution rate is therefore as follows:

	50 year olds
Payroll	400,000
Contribution rate	20%
Cost	80,000

The contribution rate is clearly higher than it would be if the scheme was still open. However, the total cost has fallen from €140,000 to €80,000. This is because, although the contribution rate (as a percentage) is higher, it is being applied to a smaller payroll.

If the 30 year olds are now included in a lower quality defined contribution scheme with a 10% contribution rate, the overall cost will be lower than before, as follows:

	30 year olds	50 year olds
Payroll	400,000	400,000
Contribution rate	10% (DC)	20% (DB)
Cost	40,000	80,000
Total cost	120,000	
Total Contribution Rate for all	15%	

Changes to contribution rates

Changes to the contribution rate of a defined benefit scheme depend on

- The amount of assets of the scheme, and/or;
- The liabilities in respect of service to date.

As an example, the contribution rate may reduce as a result of higher than expected investment returns, which will be proportionate to the value of the scheme assets. Alternatively the contribution rate may increase because the assumed life expectancy is increased, which increases the past service liability.

In a closed pension scheme, the contribution rate is more variable than in an open scheme. However, the amount of the difference, as distinct from the change in the rate, is likely to be somewhat less in a closed scheme.

Suppose a scheme has two members, one who joined a long time ago, one who joined last year. The finances of the scheme are as follows:

	Member 1	Member 2
Age	50	30
Salary	40,000	40,000
Assets	100,000	10,000
Contribution rate	20%	15%

The contribution rate for the scheme is 17.5% pa.

If the scheme makes an investment loss of 50%, i.e. €55,000, which requires an additional contribution of, say, €11,000 per year, the contribution rate will increase from 17.5% to 31.3% pa.

If the scheme had closed to new members a year ago, the finances of the scheme would be as follows:

	Member 1
Age	50
Salary	40,000
Assets	100,000
Contribution rate	20%

If this scheme makes an investment loss of 50%, i.e. €50,000, the additional contribution needed would be €10,000 pa. This would result in the scheme contribution rate increasing from 20% to 45%. Although the additional amount of money needed is slightly less, the increase in the rate is greater because the additional amount is being spread over a smaller payroll.

Closing a scheme to new entrants makes very little difference in the short term to the amount of risk associated with operating the defined benefit scheme. As new members have very little accumulated assets or liabilities, they would not result in any significant variation in the contribution rate: this arises from the assets and liabilities of the existing, longer service members. Measures such as addressing benefit policy, contribution sharing and investment policy are more effective in dealing with these matters. Similarly, total pension cost is unlikely to be affected unless there is expected to be a large volume of new entrants and they are included in a lower quality scheme.

Investment

If a scheme is closed to new members, pensioners and those close to retirement will form an increasing proportion of scheme liabilities. A matching investment policy will, therefore, result in a higher bond weighting in a closed than in an open scheme. Many believe that as a result, the expected investment return in a closed scheme will be lower than in an open scheme. Similarly, the viability of continuing a pension scheme that will ultimately be comprised entirely of pensioner liabilities may be questionable. In many cases, annuity purchase will be the only feasible option. Many Irish pension schemes are funded in anticipation of a continuing equity type investment policy and with an expectation that pensions will be paid from the fund at a lower cost than is associated with annuity purchase. Thus closure may involve an increase in the valuation of pensioner liabilities.

Arguably, an open scheme should follow the same matching policy as a closed scheme, and would thus hold the same amount of bonds in respect of the same members in the closed scheme. In practice, the difference between the investment policies of the two schemes may reflect the equity-type investments held in respect of both the younger members of the open scheme, as well as partial equity investment for older/retired members.

Summary

- A closed scheme may have a gradually increasing contribution rate but, because the rate is applied to a shrinking payroll, the contribution amount is less than it would have been had the scheme remained open;
- The contribution rate of a closed scheme will be more variable than the contribution rate for an open scheme. However, the amount of the variation will be smaller;
- The decision to close a scheme to new members will not in itself reduce the immediate cost and risk of operating the scheme. Measures such as addressing benefit policy, contribution sharing and investment policy are more effective in dealing with these matters. Over a longer timeframe risk (and possibly cost) will be reduced by replacing DB with DC – especially if a high level of new members is anticipated, and;
- A closed scheme is likely to hold a higher proportion of bonds to reflect the older average age of its membership and may be more likely to secure pensions with annuities. Both factors may result in an increase in the valuation of liabilities compared with traditional long-term equity based funding approaches.

Any decision to close a defined benefit scheme in favour of a defined contribution scheme needs to be taken in full knowledge of these impacts in order to measure whether the objectives in closing the scheme are likely to be met.





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