

NON-BANK FINANCIAL INSTITUTIONS REGULATORY AUTHORITY (NBFIRA)

PENSIONS PRUDENTIAL RULES In terms of Section 50 of the NBFIRA Act

PFR1 Funding Valuation Rules

Effective March 1, 2012

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1. Introduction

1.1. Pension Prudential Rules

1. The NBFIRA's Pension Prudential Rules set out the prudential requirements for regulated pension and provident funds operating in Botswana.
2. This note sets out material that may form the basis of PFR1.

1.2. Definitions

3. In these Requirements, unless the context indicates otherwise:
4. "Act" means the Pension and Provident Funds Act, Cap 27:03, and a word or expression to which a meaning has been given in the Act, has that meaning;
5. "Best-estimate assumption" means an assumption that:
 - a. Is realistic;
 - b. Depends on the nature of the business concerned; and
 - c. Is guided by past experience, as modified by any knowledge or expectation of the future, including events, such as changes in tax or legislation, which impact the expected experience of the fund.
6. "Board" means the board of a trustees of a fund as defined in the Act;
7. "Defined contribution fund", means a fund in which member and employer contributions are fixed, either as a percentage of pensionable earnings or as a Pula amount, and a member's retirement benefit has a value equal to these contributions, net of expenses, accumulated in an individual account with investment return and any surpluses or strains as determined by the person managing the business of the fund. If the rules of the fund define the fixed contributions to include the premiums paid for any insurance of death and disability risks, or the fund self-insures any part of the death and disability risks and the rules define the fixed contributions to include the cost of such self-insurance, the premiums paid for any insurance of death and disability risks and the costs of self-insurance of such risks must be deducted as expenses when determining the contributions that will be credited to the member's individual account.
8. "Defined benefit fund" means any other fund.
9. "Fair value" means the fair value of an asset determined by reference to the Statements of Generally Accepted Accounting Practice;

2. Prudential Funding Valuation Rules

10. The funding valuation rules, as set out in PFR1, are broadly based on the South African pension fund funding valuation requirements, which are consistent with the funding rules adopted by the International Organisation of Pension Supervisors. The reasons for adopting this framework include the desires for harmonisation and for efficiency in designing a framework for Botswana.
11. The funding valuation approach is broadly based on the Professional Guidance Note 201: Pension and Provident Funds – Actuarial Valuation Reports and Related Topics issued by the Actuarial Society of South Africa. The reason for adopting this framework is the desire for harmonisation and for efficiency in designing a framework for Botswana. We acknowledge the work of the Actuarial Society of South Africa and the Financial Services Board in South Africa which gave rise to the approach outlined here.
12. There are four key components to the pension fund funding valuation rules:
 - a. Valuation of Assets
 - b. Valuation of Liabilities
 - c. Determinations of contingency reserves
 - d. Assessment of financial soundness

2.1. Objective of Valuations

13. The objective of the funding valuation is to determine the financial soundness of an ongoing fund, by investigating:
 - a. The financial progress of the fund since the previous valuation, including a review of the assumptions used in the valuation against the experience of the fund;
 - b. The adequacy of the funding level (i.e. the ratio of the value of the accumulated assets to the accrued liabilities) to provide security to members in respect of the funding of their past service benefits and the degree to which this security is affected by contingency reserves established by the trustees;
 - c. The adequacy of the future contribution rates, to ensure the fund's ability to meet its obligations in future; and
 - d. Possibly, in the case of a defined contribution fund
 - i. Determining the investment return to accrue to members' individual accounts;
 - ii. Apportioning expenses between members' individual accounts;
 - iii. Advising on the parameters used to project benefits to retirement age; and
 - iv. Advising on the adequacy of the benefits likely to emerge for members.

2.2. Funding Valuation Approach

14. The financial soundness of a fund should be valued in accordance with the requirements set out in PFR1. Assets are valued at fair, or market, value. Liabilities are valued on a basis consistent with the valuation of the assets using best-estimate valuation assumptions. The liabilities are supplemented by solvency and other contingency reserves which introduce a level of prudence in the valuation result. It aims to ensure that the pension fund should have sufficient assets to meet all its future benefit obligations if actual experience conforms to the valuation assumptions.

2.3. Valuation of Assets

15. Assets are valued at fair value as defined in the Statements of Generally Accepted Accounting Practice. The actuary may use the value placed on the assets in the audited financial statements of the pension fund, subject to any limitations set out in PFR2. Any deviations from fair value must be disclosed in the report.
16. Where the actuary wishes to place a value on the assets different from fair value for the purpose of comparison with the liabilities (such as using a discounted cash flow technique to value the assets), assets should be shown at fair value and the difference between the fair value of the assets and the actuarial value of the assets should be reflected as an investment reserve. Then the actuarial value of the assets will be represented by fair value less the balance in the investment reserve.

2.4. Valuation of Liabilities

17. There is no prescribed method for calculating the liabilities of a fund provided that the funding valuation takes the following into account:
 - a. The method states whether any allowance is made for future new members in the valuation method.
 - b. Salary increases are projected to retirement, explicitly allowing for the effects of inflation, and taking account of the reasonable expectation of members.
 - c. Pensions are increased after retirement, and deferred pensions are increased over the period until retirement, to meet the reasonable expectations of the members arising from:
 - i. Any increases stated in the rules;
 - ii. Any policy established by the trustees;
 - iii. Past practice;
 - iv. Any communication to active members or pensioners.
 - d. The method takes account of minimum benefits on leaving service
 - e. The method states how benefits payable on death and disability have been taken into account, particularly whether the excess of the benefit payable over the member's interest in the fund has been insured.

- f. The Actuary must describe the valuation method used and justify its appropriateness for the individual fund in the PFR6 Actuary's Financial Soundness Report.

Assumptions

- 18. The valuation should be based on best estimate assumptions consistent with the valuation of the assets after taking any investment reserve into account. No deliberate margins of conservatism should be included in the assumptions.
- 19. The assumptions should be set with reference to the following:
 - a. The fund will continue unless the valuation is being conducted at the effective date of termination of the fund;
 - b. The experience of the fund, taking into account of the size of the fund and underlying trends in that experience where the Actuary deems it appropriate to do so as well as statistical evidence relating to:
 - i. Funds in general, or
 - ii. Relevant published annuitant or in-service mortality or morbidity, including the effect of HIV/AIDS, or
 - iii. An investigation performed within a firm of Actuaries in respect of funds advised by that firm, or
 - iv. Where that evidence may relate to demographic items or to economic items such as the equity premium.
 - c. Yields on classes of government or corporate bonds which, in terms of the actuarial method used by the Actuary, determine the discount and/or inflation rates assumed at the valuation date.
 - d. Future expected inflation can be set as the difference between yields on long-term government bonds and inflation-linked bonds if there is a market for the latter, but where no market for inflation linked bonds exists, future expected consumer price inflation rates can be used.
 - e. Salary increases may be set at 1.5% more than inflation plus a promotional and merit scale in advance of this (which has been determined from past experience taking account of the basic expectation of inflation plus 1.5% p.a.). Where the Actuary wishes to use a higher rate, the Actuary must justify why the higher rate is appropriate in relation to the experience of the fund.
 - f. Published mortality and morbidity investigations produced by any statutory or industry body in Botswana or in other jurisdictions where the experience may be similar to that in Botswana or may be adjusted to be so similar (such as investigations published by the Actuarial Society of South Africa, the Institute, Faculty and Society of Actuaries). The Actuary should give consideration to the reasonableness of each actuarial assumption independently and also to the combined impact of all the assumptions.

20. The Actuary is encouraged to discuss his proposed assumptions with the trustees and the employer and any allowance for conservatism that will be included in the solvency reserve. Note that the best-estimate assumptions may not include deliberate margins of conservatism.

Valuation of Risk Benefits

21. A current cost method of valuing death and disability benefits before retirement is acceptable provided the fund has insured at least the difference, on average, between the value of the benefit payable and the accrued liability in respect of the member. Where the fund carries part of the insurance itself, a current cost method may still be used, provided the actuary certifies that the provision made within the fund is likely to match or exceed the difference between the total claims and the accrued liabilities in respect of the corresponding members over the coming year.
22. The Actuary must explain the implications of the method selected for the valuation of risk benefits on the accumulation of reserves and comment on the likely future trend of such costs, particularly if it is expected to increase (e.g. as a result of aging, AIDS, etc).

Stabilisation Reserve Accounts

23. Where reserves are held to stabilise costs in future, the Actuary should release these reserves at a rate consistent with the trustees' intentions. The Actuary should comment on the period for which the current level of subsidy can be maintained.
24. Where reserves are held to stabilise rates of investment return accrued to individual member accounts, the actuary should comment on the extent of stabilisation that is possible and the degree to which this has influenced the investment strategy.

2.5. Contingency Reserves

25. The Actuary may incorporate margins for prudence into the valuation: provided that these margins are quantified separately from the accrued liabilities and the corresponding provisions are held in specific contingency reserves. The recommended amount to be included in each contingency reserve account should be determined using actuarial principles.
26. All contingency reserves should be approved by the board of trustees and the board of trustees should be empowered in the rules to establish contingency reserves for the purposes for which the reserves are required.
27. When discussing contingency reserves with the board the Actuary should inform the board of the competing interests of former members, existing members (including pensioners) and the employer and the impact that the determination of the quantum of contingency reserves to be set aside will have on those competing interests.
28. The Actuary should exercise his professional judgement in advice given with respect to contingency reserves based on the principles outlined above and after considering all of the risks involved.
29. The reasonableness of each contingency reserve should be considered in isolation and in combination with any other contingency reserves (including the solvency reserve), taking into account any interdependence of the risks involved. The Actuary should certify this as part of the valuation report.
30. The Regulatory Authority will normally accept contingency reserve accounts that are motivated by the board of a fund in consultation with their actuary provided they are within the limits set in Appendix 1. A board in consultation with their Actuary may request a higher limit to be approved in writing and with such supplementary reports as the Regulatory Authority may require.
31. The following types of contingency reserve accounts may be established. This list is not meant to be exhaustive:

Data Reserve

32. The board may establish a contingency reserve account to make provision for data errors to an extent which the Actuary deems reasonable after assessing the quality of the data submitted for the valuation. The Actuary must justify the amount to be credited to the reserve.

Risk Reserve

33. A risk reserve may be established if the fund carries all or part of the death and disability risks and provided the benefit is paid for on a current cost basis and has not been funded for in the liabilities of the fund. The amount of the reserve may represent the margins permitted to an insurer in terms of the Insurance Prudential Rule 1L.
34. A risk reserve financed by contributions, defined specifically in the rules for this purpose is often the difference between a fixed percentage of payroll and past actual insurance premiums, even if the death and disability benefits are fully insured.

Processing Error Reserve

35. Processing errors can include provision for mismatching and for timing differences in the actual investment or disinvestment of moneys from the times when they are deemed to have occurred in the calculation of benefits or the accrual of investment returns. This is particularly relevant where funds offer members individual choice of investment portfolio, and there is a possibility that switch instructions are not exercised timeously or members' instructions are not received timeously.
36. The magnitude of the reserve must be motivated with reference to the past experience of the fund or to a statistical model which is relevant to the fund.

Contribution Reserve

37. The Actuary may set up a contingency reserve account equal to the present value of future service benefits less the present value of future contributions; where a prospective benefits funding method has been used, the employer contribution is defined in the rules, or stakeholders agreed to stabilise the future contribution rate in a defined benefit fund at a particular level.
38. Such a reserve is expected where a fund is closed to new entrants, and the funding method aims to stabilise the contribution rate in future.

Expense Reserve

39. The Actuary may set up an expense reserve to handle fluctuations in the future expenses of the fund or to provide for future increases in expenses, particularly where the rules of the fund define a contribution paid by the employer towards expenses and the historic expenses (including risk premiums) are lower than this.

Investment Reserve

40. The Actuary may establish an investment reserve to hold the difference between the fair value and an actuarial value of assets where the latter has been set with reference to expected value in the long-term. The Actuary should comment on the intended future use of such an investment reserve and its adequacy for this purpose. When markets are priced very cheaply relative to expected long-term returns, this reserve could hold a negative balance, in which case the Actuary must state in the report what action will be taken if markets do not recover prior to the next statutory actuarial valuation.

Solvency Reserve

41. The use of best-estimate actuarial assumptions as described above, without a solvency and/or investment reserve, suggests that the fund is equally likely to be in surplus or in deficit at the next actuarial valuation. A solvency reserve, read with an investment reserve if one is held, introduces a level of prudence into the valuation. The size of the solvency reserve will be influenced by the recognition of particular risks inherent in the asset valuation method adopted and in the interplay between the valuation parameters chosen and the risks to which the fund may be exposed.

42. In particular, where the solvency reserve is established to protect the fund against risks implicit in the investment strategy, the actuary must deduct the value of any investment reserve, from the amount in the solvency reserve, subject to not reducing the solvency reserve below zero.
43. The solvency reserve can be determined using a discontinuance matched approach by applying a stochastic approach or by applying risk resilience tests. The Actuary may also request permission from the Regulatory Authority to adopt any other more appropriate generally accepted actuarial method of determining an appropriate level of solvency reserve.

Discontinuance Matched Approach

44. The discontinuance matched solvency reserve represents the difference between the price that the fund could reasonably be expected to pay an insurer to take over the accrued liabilities of the fund and the accrued liabilities determined on best-estimate assumptions. It is calculated as the difference in the fund accrued liabilities calculated assuming a matched investment portfolio (combination of bonds and cash) and the best estimate fund accrued liabilities which have assumed the actual investment portfolio.
45. The discontinuance matched accrued liabilities should be valued using the following assumptions:
 - a. In respect of members in service (including those beyond normal retirement age, who are expected to retire immediately at the valuation date):
 - i. A discount rate before retirement equal to the current yield on fixed interest gilts adjusted for any tax payable (taking into account the matched investment strategy) less 0.5% p.a. to allow for the cost of a matching strategy;
 - ii. The real salary increase assumptions used by the Actuary in the current statutory valuation (which will include allowance for merit and promotional salary increases) plus price inflation (assumed to be the difference between the current yield on fixed interest gilts and that available on index linked gilts or the consumer price index at the date of valuation modified in respect of expected trends if there is no market for index linked gilts)
 - iii. If mortality and morbidity decrements are used in the best-estimate valuation for active members' benefits, then pre-retirement mortality and morbidity assumptions generally used by insurers for non-profit policies in respect of employed lives, may be used in calculating the liability for the purposes of the solvency reserve;
 - iv. Other demographic and family statistics as used in the best-estimate valuation; and
 - v. Post-retirement assumptions as set out below in respect of pensioners;

plus

- b. In respect of pensioners and deferred pensioners (i.e. members who are no longer in service and for whom further contributions will not be received but who have left their benefits in the fund expressed as a pension payable from normal retirement age):
 - i. A discount rate after retirement equal to the current yield on fixed interest gilts of suitable duration to the pensioner liabilities less 0.5% p.a. for the cost of maintaining a matched portfolio;
 - ii. Pension increases that will satisfy the reasonable expectations of pensioners and deferred pensioners as described in the best estimate liabilities, with inflation set as either the difference between the yield on long-term gilts and the yield on comparable duration index linked gilts, if available, or the current consumer price index modified in respect of expected trends, if there is no market for index linked gilts;
 - iii. Mortality assumptions generally used by insurers for non-profit annuity policies in respect of pension fund annuitants and mortality assumptions for active members for deferred pensioners
 - iv. Other demographic and family statistics used in the best-estimate valuation; and
 - v. Allowance for the expenses of the payment of pensions;
46. Instead of the calculated cost of the liabilities in respect of pensioners and deferred pensioners, the Actuary may use the actual cost (net of any commission) to purchase these liabilities from an insurer.

Stochastic Asset Modelling Approach

47. The solvency reserve may consist of an amount based on stochastic modelling of the possible insolvency of the fund at various dates in the future, measuring such insolvency as the inability to pay the fund benefits (taking into account the reasonable benefit expectations of members, pensioners and deferred pensioners in respect of contractual and discretionary benefits) based on parameters selected by the Actuary in consultation with the board of the fund and the employer. Such modelling should take account of the investment strategy of the fund (and in particular its asset mix), the willingness and ability of the employer to accept variation of the contribution rate, and any flexibility allowed by the Regulatory Authority in terms of current funding levels, in order to accommodate short-term fluctuations in asset values.

Risk Resilience Approach.

48. The solvency reserve may consist of an amount derived by applying a risk resilience approach. The amount would be obtained from the impact on the funding level of
- a. a fall in the stock market of 20%;
 - b. a change in the yield on long-term government bonds of 1.5% (up or down);

- c. a corresponding consistent change in the values of other asset classes;
- or some combination of the above:

Provided that the actuary may vary these levels subject to full disclosure to the Regulatory Authority, which may reject tests that they feel are overly conservative or overly optimistic.

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2.6. Financial Soundness

49. The funding level is the ratio of
 - a. The fair value of the assets less the investment reserve, if any, and less any current liabilities, to
 - b. The fund's accrued liabilities plus the balances in reserve accounts (including contingency reserve accounts, but excluding the investment reserve) that the Actuary considers necessary in order to meet the liabilities of the fund.
50. The Actuary must certify if the fund is financially sound or not. If the fund is not financially sound, the Actuary must recommend measures to restore the fund to financial soundness.
51. A fund is financially sound if the funding level is 100% or higher and the employer is paying a contribution rate sufficient to secure the future service benefits of the fund.
52. A fund may be certified as financially sound where the funding level is 95% or higher and the employer is prepared to pay the contribution to secure the future service benefits of the fund and to amortise any deficit over a period of 3 years in the case of an experience deficit, or 9 years in the case of a deficit arising because of benefit improvement, a change of assumptions or funding method..
53. If the funding level is below 95%, the fund is not financially sound and the trustees must lodge a plan with the Regulatory Authority to restore financial soundness within a period agreed with the Regulatory Authority. This plan should result in the funding level increasing fairly smoothly to 100% over the period of the plan. (Some variation can be allowed as individual members or groups of members retire.)

2.7. Reduction in Contributions

54. If the rules and the financial status of the fund permit it, and a reduction or temporary suspension in contributions payable by member or employer or both is proposed, the Actuary must be satisfied that the fund will in all likelihood still be in a sound financial condition at the next statutory valuation.
55. In such circumstances an indication should also be given by the Actuary as to when contributions will need to be resumed or increased again and to what level.

2.8. Particular Considerations for Defined Contribution Funds

56. In many cases the primary activity performed in a defined contribution fund valuation will be the determination of how investment returns and expenses, including premiums paid for the insurance of death and disability benefits, will:
 - a. Be accrued to individual member accounts across the period since the last valuation, such that the fund is financially sound at the valuation date, and
 - b. Will accrue in future, such that the fund will remain financially sound.

57. Investigation will therefore be performed into the adequacy and funding of various reserve accounts which may be used to manage investment returns and expense stabilisation. The Actuary should take the following considerations into account:
- a. Analysis of rates of actual past investment return and expenses, including the premiums paid for insured death and disability benefits, and show the net rate of investment return accrued to individual members' accounts across the period since the previous valuation;
 - b. The appropriateness of the method used to determine the net rate of investment return accrued to individual members' accounts and to apportion expenses and risk costs across individual members' accounts and the various reserve accounts, including the equity of differentiation between groups where different methods are used for different groups of members;
 - c. The current and expected future portion of the contribution that is being saved towards retirement and other funded benefits, which should be disclosed in the report;
 - d. The extent to which future retirement accumulation will be affected by expense inflation, including the inflation of premiums for the insurance of death and disability benefits. The expected future change in the percentage of the contribution allocated to retirement accumulation; where expenses are included in the defined contribution rate;
 - e. Where future benefits have been projected in statements given to members, disclose and comment on the adequacy and sustainability of the assumptions underlying the projection, covering, in particular, the contribution rates, expenses (including premiums paid for the insurance of death and disability benefits), investment return and salary increases, where appropriate. The method used to used to convert capital at retirement into a pension, should be disclosed;
58. The valuation should include an analysis of how the past experience compares with the assumptions underlying the projection of benefits, particularly the portion of the contribution being saved towards retirement benefits and the real return being earned on the assets.
59. The Actuary should consider the appropriateness of the investment philosophy being followed, and the quality of the investments, in relation to the fund's liabilities, taking particular account of the method used to accrue investment returns to individual member accounts and the communication of the investment risk to the member. Where, for example, the Actuary is satisfied that all gains and losses will be passed on to members, and the members understand this, the Actuary need not comment here except to the extent that the investment philosophy might impact members' reasonable benefit expectations.
60. Where a smoothed bonus approach is being used to accrue investment returns to individual member accounts, and part of that return could be cancelled in the event of

significant capital losses, the Actuary must state whether he has taken this into account in the valuation.

2.9. Report

61. The Actuary is required to provide the board of trustees with a report setting out his determination of the financial soundness of the fund. This report must comply with the provisions set out in this rule and must be provided in the format prescribed in PFR6.

2.10. Special Circumstances

62. Valuations of pension funds by be performed for other purposes, including:
 - a. Costing benefit improvements,
 - b. Group transfers of members,
 - c. Winding up.
63. The Actuary should consider whether it is appropriate to fully comply with this rule depending on the purpose of the valuation and the circumstances of the fund. Any deviations should be justified.
64. In special circumstances (e.g. in the case of small funds of say less than 50 members) it may be impracticable to comply with this rule in detail. In such cases the Actuary should justify any deviations or omissions.

Appendix 1: Limits on the Size of Contingency Reserve Accounts that the Regulatory Authority Will Normally Accept

Type of contingency reserve account	Limit
Data reserve	5% of the liabilities subject to a maximum of the adjustment that the Actuary deems it reasonable to make to the liabilities in the valuation because he or she is not satisfied with the data or recognises that the liabilities may be understated because of member instructions that have not been actioned.
Risk reserve	As per insurer in terms of Insurance Prudential Rule 1L.
Processing error reserve	1.5% of the liabilities held in individual accounts for members who enjoy defined contribution benefits. Nil otherwise
Contribution reserve	(x% - y%) Present value of a 1% contribution rate over the control period used in the valuation, where x% is the future service contribution rate required to fund the future service benefits and y% is the rate being paid by members and the employer, combined, both expressed as a percentage of pensionable income.
Expense reserve	In a defined contribution fund, this can be the historical accumulation of a defined contribution directed towards expenses and the actual expenses incurred by the fund, both accumulated with fund return, or For either a defined contribution or a defined benefit fund, an allowance for future expenses not to exceed the present value of the current rate of expense assuming this continues into the future ¹ .
Investment reserve	For a defined benefit fund: The difference between the market value of the assets and the actuarial value of the assets determined on a discounted cash flow approach using the discount rate used to value the liabilities with consistent assumptions regarding growth in rentals, and dividends. For a defined contribution fund: 20% of the market value of the assets.
Solvency reserve	The difference between the values of the liabilities on a discontinuance matched basis and the normal best-estimate basis. Where the result is not available on a discontinuance matched basis, for example because a stochastic approach has been used to determine the reserve, the limit will be 25% of the market value of the assets.

¹ If the current rate of expense is z% of payroll, this would be z%. (Present value of a contribution of 1% of payroll).