

REGULATORY IMPACT STATEMENT
CAPITAL TREATMENT OF VARIABLE ANNUITY BUSINESS

April 2015

Agency disclosure statement

1. This Regulatory Impact Statement (RIS) has been prepared by the Reserve Bank of New Zealand. It provides proportionate analysis of a revised capital treatment for variable annuity business.
2. The Reserve Bank consulted publicly on a specific capital treatment for variable annuity business between 05 September and 03 October 2014. In addition, the Reserve Bank held two workshops with industry on 29 September and 02 October 2014 in Auckland and Wellington respectively. The Reserve Bank has also considered international regulatory practice on variable annuities and reviewed relevant literature. An exposure draft was released to directly impacted parties in February 2015.
3. While this RIS is written as a stand-alone document, the interested reader may refer to the consultation paper and the set of policy requirements for a more in-depth discussion of some of the points introduced here.

Status quo and problem definition

4. Variable annuities are a life insurance product with unit linked or managed fund investment characteristics and optional guaranteed benefits for the policyholder.¹ In contrast to conventional annuity products, where the policyholder has limited or no decision power over investments or the policy once it has been purchased, variable annuities allow the policyholder to make decisions post purchase, or even to cancel the policy, often with the full return of the original investment guaranteed. They are generally sold as a retirement income product, with the biggest markets being the US and Japan.
5. A variable annuity consists of a policyholder making a lump sum or a series of regular payments to an insurer. The insurer invests these funds on behalf of the policyholder, who is offered a range of possible guarantees (see paragraph 6) e.g. guaranteed regular minimum payment upon retirement. The policyholder will receive this guaranteed pay-out irrespective of whether there is money left in the investment fund. The risk of having to continue to make payments to the policyholder when the funds have been exhausted is a risk the insurer has to manage. Payments above the guaranteed amount depend on the performance of the investment portfolio managed by the insurer or another contracted party. Investments are typically in stocks, bonds or money market instruments. The insurer generally collects fees and charges in addition to the investment payment(s) from the policyholder.
6. Clauses within the contract specify certain minimum guarantees for the policyholder. These may be a guaranteed minimum income, withdrawal or accumulation benefits or the return of the original investment funds that are left to the insured's estate or heirs. These guaranteed benefits are generally reflected in the names given to the different classes of variable annuities. The four most commonly cited variable annuity guarantees are: guaranteed minimum income benefit (GMIB), guaranteed minimum withdrawal benefit (GMWB), guaranteed minimum accumulation benefits (GMAB) and guaranteed minimum death benefits (GMDB). In practice, many variable annuity policies include more than one of these benefits. More exotic variants may lock in benefits at certain points in time: ratcheting is the practice of locking in increases in

¹ Ledlie et al, (2008) 'Variable Annuities', British Actuarial Journal, Vol 14, Issue 2.

assets, while roll ups refer to the guarantee of a certain investment growth rate irrespective of market performance.

7. A main feature of a variable annuity is that it offers the policyholder protection against downside risk while letting him or her share in upside risk. If market returns are volatile and below expectations, the variable annuity provides a minimum guaranteed pay out, either over a period of time through regular pay-outs or by cancelling the policy and withdrawing the remainder of the investment, e.g. the original investment minus any pay outs that have already occurred. If market returns are good, the net returns are added to the original investment amount, thus increasing the investment fund. Depending on the terms and conditions of the policy, the increase in the value of the investment fund may be locked in, preserving it even when markets become more volatile.
8. For the holder, the value of a variable annuity is similar to that of an option. The value of its guaranteed benefits changes and may at any one time be in- or out-of-the money. Volatile markets increase the likelihood of the variable annuity being in the money as returns may be low and the guaranteed return the variable annuity provides could be worth more than alternative investment options. Similarly, above average longevity increases the probability of the variable annuity being in the money where it continues to pay out the guaranteed minimum withdrawal or income benefits even when all the initial investment has been drawn down. This is also called the insurance phase of the variable annuity. Lower than anticipated market volatility and strong market returns could lead to the variable annuity being out-of-the money.
9. Variable annuities have a risk profile that is highly complex. The main risk categories are insurance risk, market risk and behavioural risk. Life insurance policies in general expose the insurer to these risks but a variable annuity compounds these risks, not least by giving policyholders the option of withdrawing from the policy with potentially no loss to the original investment and by guaranteeing the specified benefits discussed above.
10. This means that the management of the associated assets and liabilities requires more complex modelling than is generally the case for most other life insurance policies. If a life insurer were to offer a variable annuity policy currently, the minimum capital requirement would have to be calculated in line with the Reserve Bank's Solvency Standard for Life Insurance Business 2014 (the Standard) (see Box 1). As it stands, the Standard does not adequately cater for the more complex modelling of the assets and liabilities of variable annuity policies. Some of the assumptions it prescribes may not be appropriate in the context of variable annuities and it does not take into account the effects of risk mitigation tools such as dynamic hedging. The latter is a risk management technique that is often adopted by variable annuity insurers around the world whereby a portfolio of hedges is frequently adjusted to match changes in liabilities. The current standard although allowing for future insurance liabilities, only allows hedges that are in place at the balance date to be recognised and makes no allowance for the effects of future adjustments to the hedging portfolio to mitigate future liability movements due to changes in some of the risks.
11. More specifically, the calculation of the Insurance Risk Capital Charge (IRCC) and the Asset Risk Capital Charge (ARCC), which are set out in Sections 3.1 and 3.3 of the Standard respectively, may be problematic for variable annuities. Section 3.1 states that the IRCC has to be determined by the methods used to determine the Best Estimate Liability and, where relevant, the Prescribed Solvency Assumptions set out in Appendix A of the Standard have to be used. The method for calculating

the ARCC includes amounts in respect of interest rate risk, foreign exchange rate risk and credit, equity and property risk. Its method of calculation is specified in Section 3.3. It is the use of these prescribed methods and assumptions that may be an issue for variable annuities.

12. The methods prescribed in the Standard may lead to a capital outcome that is less than optimal both from an insurer's point of view as well as the Reserve Bank's. For an insurer wishing to offer a variable annuity policy in New Zealand, it could present an unnecessary barrier to entry if the capital requirement is unduly conservative. For the Reserve Bank and the insurer, it is important that capital requirements are risk-based and that risk is appropriately measured. But the Reserve Bank also has an interest in promoting an efficient insurance sector. A barrier to entry that may not benefit the soundness of the sector does not fulfil that purpose and risks hindering innovation and the establishment of a variable annuity market in New Zealand. Regulators in other jurisdictions, e.g. Australia, have addressed this issue by incorporating specific requirements for variable annuities into their regulatory capital requirements.

Box 1: brief outline of solvency capital calculation

The Reserve Bank's Solvency Standard for Life Insurance Business 2014 requires insurer to calculate their solvency margin requirement as follows:

$$(1) \text{ Solvency margin} = \text{Actual Solvency Capital} - \text{Minimum Solvency Capital}$$

where

$$(2) \text{ Minimum Solvency Capital} =$$

$$\text{Total Solvency Requirement (TSR)} - \text{Policy Liability}$$

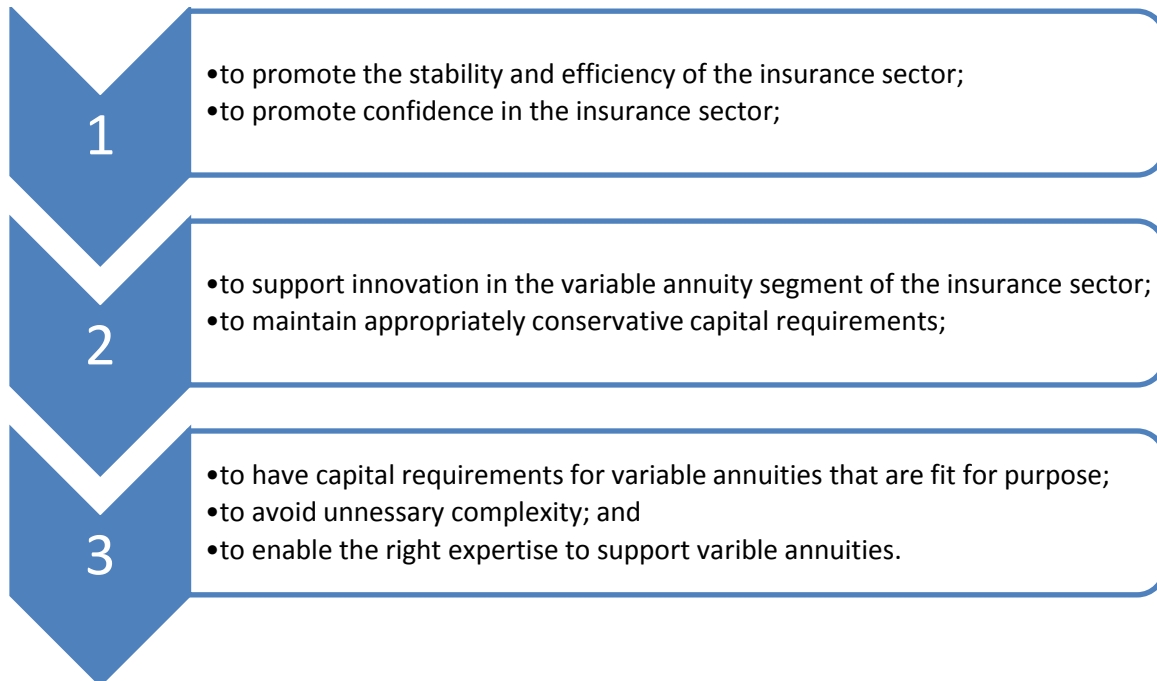
$$(3) \text{ Total Solvency Requirement} = \text{Insurance Risk Capital Charge} + \text{Catastrophe Risk Capital charge} + \text{Asset Risk Capital Charge} + \text{Reinsurance Recovery Risk Capital Charge.}$$

Objectives

13. The main objective for the Reserve Bank in terms of the prudential regulation of the insurance sector is to promote the stability and efficiency of and confidence in the insurance sector.
14. In achieving the stability and efficiency objectives, prudential regulation at times has to make trade offs between the two. In the case of variable annuities, the current requirements may achieve the stability objective but not the efficiency objective (e.g. where the capital requirement may be too high). A further objective is therefore to support the efficiency of the broader insurance sector and especially the variable annuity segment by fostering innovation. However, the stability and confidence objectives can only be achieved if insurance products are backed by prudent capital requirements. Maintaining appropriately conservative risk based capital requirements is also an important objective.

15. Given the complex nature of variable annuities, it is important that the Reserve Bank's capital requirement can adequately take into account the specificities of variable annuities. At the same time, however, capital requirements should not be unnecessarily complex. Related to this is also the need to support the right level of expertise to be applied to variable annuities both in terms of calculating the regulatory capital requirement and by industry in managing the risks and complexities associated with portfolios of variable annuity policies.

16. Combined, these objectives produce the following hierarchy of objectives:



Options

Status Quo

17. The first option consists of not making any specific allowance for variable annuity business within the current solvency standard or by issuing a new standard. This is the baseline option against which other options are assessed. It would clearly not address the issues raised in the problem definition. That is, the standard would not be able to adequately take into account the complexities associated with variable annuity policies. The liability calculation would be based on the methodologies and prescribed assumptions contained in the Solvency Standard for Life Insurance Business 2014. As explained above, these methodologies and assumptions are not always appropriate for variable annuities.

18. The effects of dynamic hedging would not be fully reflected in the capital calculation other than the hedges that are in place at the balance date. This could potentially disincentivise insurers from using dynamic hedging if the costs are higher than for static hedging. An insurer argued that the current standard would produce a capital outcome that would be overly conservative and make offering variable annuity policies not economically viable.

19. This option may achieve the stability objective but fail to meet a number of the other objectives. To the extent that the current standard presents an obstacle to the development of a variable annuity market in New Zealand, the efficiency and innovation objectives may not be met. Although the current standard allows a calculation of the Total Solvency Requirement to be carried out, by not allowing more complex modelling the standard is unlikely to fully meet the fit for purpose objective when applied to variable annuity policies.
20. There are no new compliance costs from this option given it represents the status quo. Any costs associated with this option arise from the consequences of potential mis-measurement of capital, or foregoing the potential benefits of innovation in the insurance sector and the associated efficiency enhancements. This includes the benefits from the potential availability of variable annuity policies in New Zealand. For an insurer, these costs include the foregone profits from offering variable annuity policies. For the consumer, they comprise a greater choice of retirement investment options and the direct benefits a variable annuity might offer in terms of managing one's retirement income.

Allowing the use of complex internal modelling – supported by independent advice and statutory funds

21. The second option considered in this RIS is to allow insurers the use of internal modelling when calculating the capital requirements and to take into account the effects of risk management techniques like dynamic hedging and reinsurance. The option includes engaging appropriately qualified independent actuaries to inform the insurer and Reserve Bank on some aspects of the management and capital requirements of the variable annuity portfolio, and the implementation of separate statutory funds to assist in managing the risks of the variable annuity portfolio on the rest of an insurer's business.
22. In order to allow more complex modelling than currently permissible, sections 3.1 and 3.3 of the solvency standard on the requirements of the insurance risk capital charge and the asset risk capital charge would have to be replaced with a set of requirements that specify how and under what conditions internal models could be used to calculate the Total Solvency Requirement for portfolios of variable annuity policies. Administratively, this can be achieved by adding an appendix to the solvency standard or by issuing a solvency standard specifically for variable annuity business and associated conditions of licence.
23. The use of internal modelling would replace the prescribed assumptions of the insurance capital charge and the asset risk capital charge. There is, however, no unique way of modelling the assets and liabilities of variable annuities. There is a choice to be made as to the method to be employed, e.g. stochastic or deterministic. There is also a whole array of risks that can be included in the modelling but not all of these risks are necessarily included in the modelling. Some of the main risks here are market risk, e.g. interest rate risk; foreign exchange risk, equity risk and credit risk, longevity risk and lapse risk. Moreover, the quality of modelling can differ across insurers.
24. Similarly, dynamic hedging involves the regular rebalancing of a portfolio of derivatives to match changes within the asset and liability profile. The frequency of rebalancing and the use of hedging instruments are two of the factors that influence the quality and effectiveness of the dynamic hedging programme.

25. It is therefore important that any internal modelling approach takes account of the residual risks and any new risks it introduces, e.g. model risk, and that they are reflected in the capital outcome. This can be achieved by linking the capital outcome to the quality of the modelling and the hedging. It is equally important that certain minimum quality thresholds are met.
26. This option therefore envisages a key role for the Reserve Bank as regulator to determine who is allowed to use the variable annuities appendix or separate standard and that capital reflects these quality aspects.
27. The Reserve Bank is conscious of the strong links that exist in the insurance sector between New Zealand and Australia. A set of requirements that includes a capital calculation that is aligned with Australia would be preferable provided it is in New Zealand's interest. It is therefore proposed that this option is as best aligned with Australian requirement as possible. Where dynamic hedging is used, for example, it means that capital is calculated in a similar manner to Australian requirements. That is, it is a weighted average of the capital outcome with and without the effects of dynamic hedging included.
28. The absence of a variable annuity market in New Zealand means that there is currently a lack of expertise in managing and assessing the risks associated with variable annuity policies amongst insurers, actuaries and also the Reserve Bank. This option addresses that by including a requirement that the modelling of variable annuity portfolios and the capital calculation is reviewed and informed by an independent actuary who is suitably qualified and can demonstrate sufficient expertise of assessing the risks of portfolios of variable annuities. This role is in addition to that performed by the appointed actuary. The report written by the independent actuary is intended to inform the insurer's risk management strategy and the Reserve Bank in determining the capital requirements for the insurer.
29. Given the complexities involved and the novelty of variable annuity insurance policies in New Zealand, this option also includes the requirement for an insurer to have a separate statutory fund for its variable annuity portfolio. This is intended to isolate its variable annuity portfolio from its other life insurance and non-life insurance business.
30. The main features of this option are:
 - The insurance risk capital charge and the asset risk capital charge are replaced by a Capital Charge for Variable Annuities determined using a methodology set out in an appendix or separate solvency standard that permits the use of internal modelling to estimate the capital requirements;
 - an insurer is free to choose their risk mitigation strategy;
 - the effects of dynamic hedging can be taken into account;
 - a variable annuity insurer has to have and maintain a risk management strategy that is approved by its governing body;
 - the insurer has to commission a report by an independent actuary that analyses the risk management strategy including the hedging programme if relevant. The insurer must obtain a notice of non-objection from the Reserve Bank regarding the choice of the independent actuary. The report prepared by the independent actuary has to be submitted to the Reserve Bank;

- the independent actuary's assessment must be done prior to the launch of a variable annuity product and at least every three years. The assessment must be updated if there is a material change to the product offering that affects the product's risk profile or if the risk mitigation strategy is materially changed or at the request of the Reserve Bank;
 - some aspects of the solvency capital requirement will be determined by the Reserve Bank taking into account actuarial expertise as provided by the Appointed Actuary and the independent actuary and any other relevant information;
 - a variable annuity portfolio has to referable to a separate statutory fund; and
 - an insurer must notify the Reserve Bank if it is carrying on variable annuity business and may only launch a variable annuity product if it has the approval of the Reserve Bank of New Zealand which needs to be satisfied in respect of the matters noted above.
31. This option would address the efficiency aspects by allowing the capital requirement to reflect the complex nature of variable annuity policies and by allowing the effects of dynamic hedging, if chosen as part of the risk management strategy, to be recognised in the capital calculation. This should support innovation in the insurance and retirement income sectors. By linking the capital requirement to the quality of the modelling and that of the wider risk management strategy, the objective of maintaining appropriately conservative capital outcomes is also met. The appendix, or separate standard being specifically for variable annuity policies, means that it is suitable for those products. The calculation of the capital charge is reasonably accessible, although the internal modelling may be highly complex. The quality of that modelling, however, benefits from the review of an expert independent actuary, thus meeting the objective of having the right expertise involved.
32. The benefits of this option are that the Reserve Bank's solvency standards are made more suitable for variable annuities. This should support the development of a variable annuity market, at least in the sense that any prudential requirements are set at a necessary level to ensure that the capital outcome remains appropriately conservative. This should foster innovation by offering those insurers willing to enter the market to realise its potential and provide consumers with a greater choice of retirement income products. It should be stressed though that the emergence of a variable annuity market will depend on a range of factors, most of which are outside the scope of the Reserve Bank's remit.
33. Insurers would be able to use their internal modelling and risk management tools in calculating their capital requirement. This should ensure appropriate measurement of the risks and may potentially reduce regulatory costs for the insurer compared to the current situation. There are some compliance costs that arise from this option. The requirement to commission reports by an independent actuary is one of them. The requirement to have a separate statutory fund for variable annuity policies is largely a book-keeping construct but it may involve some minor set up and compliance costs.

A factor based or standardised approach

34. Instead of letting insurers use internal models one could contemplate devising a factor based approach. That would mean prescribing standardised factors to be used when calculating the Total Solvency Requirement. It would be similar to the set of prescribed assumptions of Appendix A but with more factors to cover each of the main risks. For example, the prescribed assumptions contain a prescribed longevity assumption of 90 percent of the best estimate assumptions for mortality plus an additional 2 percent per annum rate of mortality improvement per annum. In theory, a similar approach could be adopted for each of the risks to which a variable annuity is exposed. The factors would have to be calibrated to take the complexities of variable annuities into account and cover all the main market, insurance and behavioural risks.
35. While this approach might lead to an approach that is more suitable to variable annuities than is currently the case, and may be more transparent and accessible it is unlikely to result in sufficient flexibility to recognise the wide range of product features and embedded options within variable annuity portfolios i.e. be insufficiently risk based. Variable annuities come with a whole range of features such as different withdrawal or cancellation rights and guarantees in the form of minimum payouts, roll ups or ratchets. Each of them can significantly alter the risk profile of a variable annuity policy. Combined they produce a high number of possible outcomes, making it impractical to devise a specific factor for each one of those outcomes. In order to calibrate them so that they produce a sufficiently conservative capital outcome for all variable annuity portfolios irrespective of their risk profile, one would have to calibrate them to the most risky outcome within the Reserve Bank's risk tolerance. That would lead to capital requirements that might be right for some variable annuity portfolios but could be overly conservative for others. One could, of course, use less conservative factors but that could lead to some variable annuity portfolios being undercapitalised for the risks that they represent.
36. Computationally, this option would also be very difficult for the regulator to devise. Somewhat related to the discussion in the previous paragraph about the risk calibration is the issue of taking account of the different variable annuity products that exist in other markets. A factor based approach that addresses the risks of plain vanilla variable annuities would be inappropriate for variable annuities with more exotic features. At best taking account of all possible product features would complicate the design of such a framework. However, it could also lead to having to revise the framework as products evolve or to forestalling innovation if new designs are not allowed or take longer to be granted regulatory approval.
37. This option would meet some of the objectives such as making capital requirements more responsive to variable annuities than they currently are, having conservative outcomes and easy to understand capital requirement. However, the extent to which the objectives are met depends on the design of the framework. The biggest drawback is the lack of flexibility. Other drawbacks are the computational difficulties for the regulator and the calibration to take different risks and variable annuity policy designs into account.
38. While a factor based approach could improve on the current situation, this is by all means not a given. It could mean less flexibility than the current requirements might allow. This could lead to costs or less than optimal capital requirements for some variable annuity providers, depending on the design of their variable annuity policies.

Choice of option

39. The Reserve Bank's preferred option is to allow the use of internal modelling by issuing a separate solvency standard in respect of variable annuity business, i.e. option 2, in conjunction with conditions of license to support on-going requirements for approved variable annuity insurers. It is the most flexible option and appears to meet the objectives better than the alternatives of no change and a factor based approach.

Monitoring and evaluation

40. The application of the requirements will be monitored on an ongoing basis. The Reserve Bank will assess each variable annuity proposal on an individual basis and on its merits. Discussions with industry as part of the process for obtaining approval from the Reserve Bank are likely to provide the Reserve Bank with useful feedback on how the requirements work in practice.
41. The requirements have been drafted against a background of an immaterial or non-existent variable annuity market in the New Zealand. Should there be a rapid expansion of variable annuities in New Zealand, the Reserve Bank may decide to revisit the requirements to assess whether they remain fit for purpose. Likewise, any product design developments that significantly alter the risks associated with variable annuities could lead to a review of the requirements. However, given the flexibility ingrained in the adopted approach, the Reserve Bank does not currently envisage that the requirements would have to be amended due to product innovation.
42. The Reserve Bank carries out ex post evaluations of its policies from time to time. The variable annuity requirements are likely to be reviewed at some point. When exactly will depend on the significance of the variable annuity market and competing work demands.

Issue of Solvency Standard for Variable Annuity Business

43. The Reserve Bank issued a separate solvency standard for variable annuity business in April 2015.