



AMERICAN ACADEMY *of* ACTUARIES

**Report of the Invested Assets Work Group regarding the C-1 Framework**

**Presented to the National Association of Insurance Commissioners'  
Life Risk-Based Capital Working Group**

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The American Academy of Actuaries is a 17,000-member professional association whose mission is to serve the public and the U.S. actuarial profession. The Academy assists public policymakers on all levels by providing leadership, objective expertise, and actuarial advice on risk and financial security issues. The Academy also sets qualification, practice, and professionalism standards for actuaries in the United States.

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The American Academy of Actuaries Invested Assets Work Group (AIAWG) is a work group of the American Academy of Actuaries Life Capital Adequacy Subcommittee (LCAS). The AIAWG monitors and responds to life insurance industry investment practices with respect to life company risk-based capital (RBC) treatment. In that regard it should be noted that all references to RBC in this paper are intended to be limited to Life RBC. The AIAWG is not making comments, observations or evaluations with respect to RBC for property and casualty or health insurers.

The AIAWG through the direction of the LCAS reviewed the C-1 framework of the life company RBC formula. This project was initiated to determine whether a comprehensive review of C-1 RBC should be pursued. While the AIAWG and LCAS do not have empirical evidence to suggest that the formula is not working, we believe a comprehensive review of the C-1 component is warranted. Our conclusion is based on a reasoned, subjective evaluation based on our expertise in risk management.

This report is being provided to the National Association of Insurance Commissioners (NAIC) Life Risk-based Capital Working Group (LRBC WG) for their review and consideration to gauge interest in a broader and more comprehensive project to modernize Life RBC as it relates to investment risk. We are aware of the significant effort involved in a major review of C-1 and believe some direction from the regulatory community is prudent before engaging in a more comprehensive review. We recognize that there are legitimate and practical reasons for not pursuing a comprehensive review, but we believe that a more comprehensive review of C-1 would complement some of the issues being raised through the NAIC's Solvency Modernization Initiative (SMI) and Rating Agency Work Group.

This report is arranged in seven sections:

- I. Executive Summary
- II. Purpose of Risk-based Capital and the C-1 Component
- III. Objectives in Establishing C-1 Risk-based Capital
- IV. Description of Investment Risks and Treatment in Current RBC Formula
- V. Evaluation of Current RBC System for Investment Risks
- VI. Recommended Areas for Review
- VII. Conclusion

## **I. Executive Summary**

The current approach for determining capital requirements for life insurers was designed in the early nineties. Several refinements have been made to the formula since that time; however, the C-1 component for capturing certain investment risks has only seen piecemeal refinement. While the life insurance industry appears to have weathered the recent economic crisis better than some other sectors of the financial services industry, it would be implausible to attribute the relative success of the US insurance industry to any one of many factors, such as the LRBC formula.

Given our experience with risk management, we question how well the current C-1 component captures the investment risks for life insurers. We do not have empirical evidence to show that the formula is not working as intended. But we know that the original design of the C-1 formula now functions in an environment characterized by much different capital markets as well as different insurer investment and risk management practices. Changes to the RBC formula, and the C-1 component in particular, have been ad hoc rather than being considered within the overall context of the risk and solvency position of companies doing business today. With major shifts in the capital markets and life insurer's business practices over the past 20 years, risk can materialize in a different manner than previously anticipated in the current C-1 component. .

Because of these developments, we are concerned that the current C-1 component may not fully capture all material investment risks or recognize current trends in investment and product portfolios, as well as modern risk management practices. Therefore, we have concluded that a comprehensive review of the C-1 component is warranted.

Our findings in this report are based on a review of the C-1 component of the RBC formula within the context of the original purpose of RBC, the criteria for a robust risk management system and the investment risks managed by life insurers. These characteristics were used as a basis to assess the strengths and gaps of the RBC formula's current structure and ultimately to develop our recommendations.

Generally, we found varying degrees of cohesiveness of the RBC formula with some gaps for specific types of risk. Ad hoc modifications to C-1 have addressed the risks of residential mortgage backed securities (RMBS) and commercial mortgage backed securities (CMBS). However, the risks associated with certain asset-backed and structured securities such as collateralized mortgage obligations (CMO) have not been evaluated in terms of their RBC treatment as these securities were not major security classes when RBC was first implemented. Bond factors have not been reviewed since inception of the formula; consequently, we do not know if the factors are appropriate given bond default experience in the last twenty years and the increased complexity of securities in the fixed income market. In addition, the total provision for asset risks (i.e., the total C-1 component) may be overstated because there is no allowance for correlation effects across asset classes and limited recognition of risk management or experience rated products.

The body of this report details our findings in these areas. That information is supplemented with a cursory review of the exposure to risks by asset type, as summarized in the C-1 Risk Exposure Grid contained in Appendix 1.

We are aware that we have produced this report at a time of potentially substantial regulatory change in the solvency arena. Many international groups involved in the regulation of the financial services industry, including the NAIC, are engaging in a comprehensive review of the effectiveness of the

solvency frameworks. In certain respects, some of our recommendations are trying to straddle different and conflicting perspectives. Piecemeal changes to the RBC formula driven by a desire for a solvency framework that is considered to be more modern, responsive to flaws identified in the financial crisis of 2007 – 2008, and more consistent with international approaches may be easier to implement in some respects but run the risk of creating a sub-optimal regulatory structure. Regardless of the direction taken by the NAIC and other regulatory bodies, our main point is that efforts to modify the RBC formula should be executed in a coordinated fashion. While the extent of the solvency modernization efforts is not yet known, we believe it is time to review the C-1 component in its entirety.

The actions that could be taken to modernize the C-1 component of RBC range from updating factors within the current formulaic framework to implementing an integrated approach based on a model of an individual insurer's unique asset portfolio composition and investment risks. While the exact nature of an individualized approach is a worthy subject for discussion, we view an individualized approach as representative of a framework that explicitly considers the integrated asset and liability cash flows and risks embedded on an insurer's balance sheet. We favor a set of modifications that fall somewhere in between the current formulaic framework and the individualized approach. Given the stated purpose of RBC to identify weakly capitalized companies, we do not think it will be necessary to overhaul the entire C-1 component. We provide an expanded description of our recommendations that are outlined below within the body of the report.

#### Recommendations:

##### A. Review C-1 Factors

1. Review the necessity to update all C-1 asset factors for current experience
  - a. Determine appropriate evaluation approach, i.e., modeled vs. non-modeled
  - b. Align evaluation assumptions of modeled and non-modeled approaches
  - c. Expand granularity if appropriate (feasible and warranted)
2. Identify and recommend treatment for significant missing risks, if any

##### B. Review Consistency of Risk Measures

1. Review/revise models of each risk factor for calibration consistency
2. Review/revise models for economic scenario consistency
3. Research whether correlation assumptions within and across asset types are appropriate to include in risk evaluation

##### C. Review Effectiveness in Recognizing Risk Offsets

1. Review portfolio management effects (e.g., hedging, diversification tactics and reinsurance)
2. Revise measurement of risks absorbed by policyholders consistent with net risk (e.g., dividends, non-guaranteed elements)

##### D. Review Structural Consistency in RBC Formula Between Assets and Liabilities

1. Review consistency of policy reserve methods and C-1 required capital
2. Review the combination of C-1 and C3 requirements for potential overstatement

## **II. Purpose of Risk-Based Capital and the C-1 Component**

Fundamentally, the purpose of RBC is to provide a quantitative measure to assist in the identification of weakly capitalized companies. RBC is an objective measure of the minimum capital an insurer must hold to support its overall business operations in consideration of its size and risk profile. RBC creates a “reference point,” via the RBC formula, whereby regulators can compare a company’s actual statutory capital position to this regulatory reference point. The RBC formula is part of a broader solvency framework that includes RBC trigger points for regulatory action. The C-1 component of the risk-based capital formula is intended to capture the risks of default of principal and interest or fluctuation in fair value of a life insurer’s assets.

Capital requirements should be considered within the context of the entire balance sheet, notably policy reserves. Statutory reserves are intended to provide for reasonable and plausible levels of risk, while capital is intended to provide for significant, excess risks, but not catastrophic levels of risk. Reserves fund expected conditions and include measures of anticipated experience plus a margin for uncertainty. Generally, statutory policy reserve levels are conservative over the span of economic cycles and over a plausible range of expected experience. Risks included in statutory reserves are a subset of the risks included in the determination of capital requirements.

The C-1 component establishes capital requirements for certain investment risks, notably default risk. The risks contained in the C-1 component are a subset of broader investment risks that include risks from interest rate changes and other events causing asset deterioration. Traditionally, the main risk captured in C-1 RBC is credit risk, as measured by the potential loss to capital from default on debt and debt-like instruments and the risk of depreciation on other assets valued at market (e.g., common stock). Because reserves include an implicit allowance for defaults and other asset-related risks, C-1 RBC establishes capital requirements for risks in excess of those covered in reserves.

## **III. Objectives in Establishing C-1 Risk-Based Capital**

In quantifying the level of capital required to support an insurer’s investment risks, the AIAWG proposes the following objectives to guide the refinement of C-1 RBC:

### **A. RBC should capture the major risk characteristics of an asset**

The amount of required capital should be sufficient to identify weakly capitalized companies, and be aligned with a stated statistical measure that is calibrated with a confidence interval or conditional tail expectation (CTE) and an associated time horizon. The framework for establishing capital requirements should be based on risk-adjusted cash flows and quantitative risk analysis, independent of the accounting method. The amount of required capital will be based on a translation of this fundamental risk analysis into an amount consistent with reporting requirements and the applicable accounting framework.

From a practical perspective, regulatory C-1 RBC rules and methodologies should weigh the tradeoffs between simplicity and accuracy in calculating required capital. Factors to consider include the materiality of the risk exposure and costs to implement alternative methods.

## **B. Priority of measuring the incidence of risk should be consistent with the accounting method**

The selection of a risk measurement method should align with an asset's accounting method. In determining the capital requirements, an asset held at book value places less emphasis on interim asset value changes from market spreads, general interest rates and ratings downgrades while placing more emphasis on whether an asset is ultimately "money good" per the terms of the original agreement. The capital requirements for assets held at market value should recognize the risk of fluctuation on a current reporting basis irrespective of whether the asset's value might eventually recover.

## **C. Investment risk charges should be structurally consistent with other provisions for risk**

A component-based approach to RBC (as opposed to an aggregate risk model) requires careful treatment of asset and liability risks to avoid double counting or inadvertent exclusion of risk charges. If an asset's risk is already associated with a liability and measured with it, such as for C-3 Phase II testing, then it should not be measured again as a part of C-1 risk. Additionally, as an excess risk to the amount held in reserves, C-1 should be calculated consistently with the underlying amount that is already in the reserves.

## **D. Capital requirements should reflect asset mix**

Capital requirements for investment risks should vary with portfolio composition, if practical to measure, and relevant to the purpose of RBC. In principle, capital requirements should consider diversification among and within sectors, issuer concentration, asset maturities and correlation of risks. Assets held to hedge specific risks should be combined with the offsetting position to determine required capital.

## **E. Capital requirements for investment risks should adapt flexibly to changing circumstances**

As a system, the C-1 component should be managed with the assumption that it will constantly evolve. Its design should allow flexibility to handle new and evolving types of assets. While retaining relative stability of the system as a whole, evolving investment practices and asset holdings should be considered on a continuous basis as they become material enough to warrant modifications and change.

## **F. RBC should minimize duplicative processes**

As a system, RBC should be designed to minimize requirements which generate duplication of testing, modeling, and duplicative risk reporting. With increasing sophistication and capabilities of risk analysis instances could arise where assets are being tested in multiple formats, e.g., Principle-Based Approach to reserving, asset adequacy and capital modeling. Approaches to RBC that recognize this potential and coordinate with other measures are preferred.

#### **IV. Description of Investment Risks and Treatment in Current RBC Formula**

A summary of investment risks in the securities available in the capital markets can be delineated in the following manner:

1. Credit - Risk that an issuer, counterparty or reinsurer will default by not performing in a manner consistent with its contractual obligation as applicable to repay principal and/or interest or to satisfy a counterparty or reinsurer payment.
2. Deferral - Risk that issuer may suspend dividends/coupons or the expected redemption schedule without triggering a default.
3. Fair Value Depreciation – Risk of market price fluctuation of an asset not due to interest or credit related effects. Technically, this is not a specific security risk but is the outcome of many other possible risks. It is treated as a specific risk under Life RBC to allow for the affect on surplus of assets that are held at market value under statutory accounting.
4. Call/Early Redemption/Prepayment - Risk that the security will pay principal earlier than expected (e.g., as could happen in a falling or already low interest rate environment).
5. Extension - Risk that the security will pay principal later than expected (e.g., as could happen in a rising or already high interest rate environment).
6. Currency - Risk that a non-dollar-denominated bond (i.e., a bond whose payments occur in a foreign currency) has uncertain U.S. dollar cash flows affecting current income and asset value. The uncertainty of the cash flows and asset value is dependent on the foreign exchange rate at the time the payments are received or the bond is valued.
7. Leverage - Risk that is associated with increasing the volatility of periodic payments. Leverage can come from the debt structure or embedded options in loans, which may subject the asset to a multiplied effect on profit/loss from small quantitative changes, e.g., a leveraged inverse floating rate note where variable interest payments change by a multiple of the inverse of the change in a specified interest rate. Using leverage, principal repayment terms may also be structured to increase their uncertainty, which increases credit risk. This particular use of leverage is factored into a security's credit rating.
8. Liquidity - Risk that assets cannot be traded with the expected bid/ask spread, anticipated price continuity or sufficient depth, thus causing price realization or execution that is unfavorable or nonexistent.

The most significant C-1 risks inherent in each type of security – credit, deferral and fair value depreciation, can be found in the Risk Exposure Grid in Appendix 1. The presence of a C-1 risk charge for each risk by asset type and an appraisal of RBC treatment are provided in the grid.

Risks other than credit, deferral and fair value are reflected in the C-1 factors in varying degrees. For instance, the risk of asset and liability mismatch affecting life and annuity products due to changes in interest rates arising from calls, early redemption, pre-payments and extension risks is covered under C-3.

Security-specific risks involving leverage and currency risks may only be partially covered under RBC. Certain security-specific risks are not explicitly prescribed in RBC requirements for C-3 modeling; therefore, the modeling performed to determine the C-3 Phases 1 and 2 may not capture these security-specific risks. Generally, assets with currency risk are not modeled for the C-3 Phase 1 testing, but those assets may be included in the modeling for C-3 Phase 2. The payment volatility risk

of a leveraged security may be included under the modeling for either C-3 Phases 1 or 2. Similarly, the currency risk and the payment volatility risk of a leveraged security are covered in the C-3 requirements to the extent those assets back the products that are modeled under C-3.

Liquidity risk is appropriately omitted from the RBC requirements because capital provisions, or rather, the assets backing those capital provisions, would not provide much additional protection in the event of a liquidity crisis. The type of assets, rather than amount of assets held, is more important in managing liquidity risk, along with access to funding mechanisms and other liquidity sources. More assets will increase RBC, but will not mitigate liquidity risk if those assets cannot be sold to meet cash needs in a liquidity crisis.

## **V. Evaluation of Current RBC System for Investment Risks**

### **A. System Overview**

Most capital requirements for an insurer's investment risks are determined by applying average factors to statutory values. Starting in 2009, capital requirements for RMBS (residential mortgage backed securities) are based on the modeled values for the securities in an individual insurer's portfolio as compared with carrying values using a common set of assumptions for all insurers. A similar approach is being applied for CMBS (commercial mortgage backed securities) having started in 2010. The RBC factors for all other asset types were developed from models of asset portfolios where projected cash flows were based on industry experience over varying time frames.

### **B. Strengths of Current RBC Approach**

1. The RBC Formula is relatively simple to calculate and applies identically to all companies, with some notable exceptions for RMBS, CMBS and interest rate risk.

The current C-1 RBC framework was developed at a time when computing and modeling resources were less sophisticated. The original C-1 framework provided a simple factor-based approach to determining RBC. The factors were determined with modeling designed to capture most changes in asset values that are in excess of expected loss provisions. Parameters that drive the modeling were based on verifiable historical default loss experience and market value volatility experience where available.

2. The framework is transparent and auditable.
3. Capital charges are based on NAIC designations or translated from Nationally Recognized Statistical Rating Organization (NRSRO) ratings based on a prescribed formula.

The current framework is aligned with credit ratings that are assigned by credit rating agencies. While these ratings are sometimes considered imperfect, the agencies strive to maintain the ratings' relevance by considering perceived risks. The current rating of a bond determines its NAIC classification and the required capital factor. The capital factor reflects expected loss in excess of the provision for loss in the reserves. Given the same asset holdings in two different



companies, except as noted next, the capital charge will be the same for each company. The calculations are thus transparent and readily verifiable.

Importantly, in the case of non-agency RMBS, the approach described above of mapping a rating directly to a capital charge was modified in 2009. This same type of modification was done for CMBS in 2010. Without the modification, capital requirements would have been materially different given prevailing conditions and holding values of companies' securities. Making the modification of the method to recognize impairments by using the new methodology that considers carrying value(s) in determining an SVO rating designation provided a meaningful improvement to determining the capital requirement for companies holding RMBS.

#### 4. Capital factors are independent of current economic environment

RBC C-1 capital factors are generally cycle-neutral i.e., for a given rating class, they neither decrease sharply with an economic rebound nor increase sharply with an economic slump. In some cases, adjustments are made to reflect current trends, as with the mortgage experience adjustment factor applied to commercial mortgage loans. But generally, the C-1 factors are primarily independent of the economic environment and would not be characterized as countercyclical or pro-cyclical. The design of the factors leads to reporting stability by capturing potential risk over a range of economic conditions and are therefore considered "business cycle" factors. Their stability is enhanced by being established at a level deemed to be conservative. It should be noted that although the factors are very stable, the amount of capital has a pro-cyclical bias. This is most often caused by deteriorating economic conditions leading to downgrades that generally cause the amount of required capital to increase as financial risk increases.

### C. Gaps in Current RBC Approach

1. Capital charges are based on average factors applied to assets, ignoring differences in the specific investment risks for an individual insurance company.

Risk-based capital factors for bonds were developed based on representative bond portfolios for the life insurance industry in aggregate. These factors thus accounted for the average fixed-income portfolio for a life insurance company, but will likely not account for company-specific bond-allocation strategies at a more granular level such as the placement method, maturity horizon and industry sector.

2. Reliance on NRSRO ratings may omit or misrepresent risks to the extent that NRSRO ratings methodologies omit or misrepresent risks.

The RBC framework places a large reliance on NRSRO ratings and the NAIC classification process to differentiate risk. The NAIC classification process identifies debt-related assets as either "bonds", "preferred stock", or "mortgages", with further distinctions by rating class. Common stock and other equity assets are classified according to statutory accounting principles.

The C-1 RBC factors are aligned with the NAIC designations. In certain instances, risk-based C-1 factors do not account for distinct cash flow characteristics of specific securities. For example, structured securities such as collateralized debt obligations are treated the same as non-callable bonds with the same NRSRO rating. In addition, C-1 factors do not differentiate between public and privately placed bonds or attempt to account for variations in credit risk by expected life (e.g., callable vs. non-callable bonds, cashflow variations due to mortgage backed security prepayments, long versus short term maturity schedules), since these factors are not reflected in the NAIC bond class designations.

3. Certain risks are absorbed by policyholders; current RBC formula does not fully capture these absorbed risks.

Risk factors were developed for C-1 independent of asset-liability risks. While some interaction between assets and liabilities is assumed in the covariance adjustment used to determine total capital requirements for all risks (C-0 through C-4 risk categories), the Life RBC formula could be improved with a more integrated treatment of C-1 and C-3 risks. C-1 capital is reduced in limited instances where product features offset C-1 risk, such as for “NY Regulation 128 Products”. The use of offsets in C-1 capital for certain products could potentially be expanded to other products whose C-1 capital does not recognize significant offsetting risks.

4. The RBC formula excludes certain risks and factors that are not routinely updated for market developments. In light of changes to the capital markets and changes in insurers’ risk profiles, we are not convinced that the current capital requirements for investment risks will, in fact, provide for potential risks over a range of economic conditions and believe that a more in-depth analytical review is needed.

- a. Limited flexibility to handle new asset types

The system is not sufficiently robust to address ongoing innovation in financial assets. Newer asset classes are mapped to existing securities based on cash flow characteristics and NAIC designations rather than any fundamental risk assessment through a principle-based approach.

- b. No process to regularly audit models and assumptions

The models underlying the derivation of the C-1 factors include projections of cash flows based on the probability of payments, future defaults and prepayments. The projections are based on future economic environments, and expected default and recovery rates. Default rates and recovery probabilities have not been updated to reflect the changing composition of insurer bond holdings and the asset classes reported as “Bonds” according to NAIC classifications. For example, the average industry blend of NRSRO ratings held within NAIC Rating Category I used to derive the C-1 factors for that category may have changed from the assumed mix. The lack of periodic reviews of model parameters increases the chance that the formula is not doing an adequate job of identifying weakly capitalized companies.

## **VI. Recommended Areas for Further Review**

We have done no empirical analysis which would suggest that the C-1 component is flawed. However, based on our general risk management expertise, we have concerns about the current framework's effectiveness in capturing and establishing provisions for investment risk. We recommend a review of the following areas of the RBC framework:

### **A. Review C-1 Factors**

1. Evaluate the need to update all C-1 asset factors for current experience
  - a. Determine appropriate evaluation approach, i.e., modeled vs. non-modeled
  - b. Align evaluation assumptions of modeled and non-modeled approaches
  - c. Expand granularity if appropriate (feasible and warranted)

A review should determine where the current risk charges are not appropriate, being either too high or too low. The advancement of computing capacity and modeling capability since the inception of RBC can enable refined estimates of risk not previously possible. Given the trend toward principle-based approaches that are tailored more specifically to a company's profile, the potential to expand industry modeling applications of the C-1 risk component beyond RMBS and CMBS warrants investigation. The review should determine appropriate evaluation techniques involving whether securities should use factor or modeling approaches to determine risk with due consideration of the tradeoffs between implementation cost, transparency and flexibility.

Given the expanding mix of modeled risks, the assumptions of modeled and non-modeled (factor-based risk assessments) should be reviewed for consistency. Where appropriate and practical for non-modeled approaches, additional security characteristics should be considered in the basis for the RBC factors. Examples of additional characteristics that could be considered are sector, industry, placement method, and time to payout(s). The availability in reporting sources, e.g., the Annual Statutory Statement, supporting risk data and material risk differences will be issues considered in evaluating the practicality of reflecting certain security characteristics in RBC.

2. Identify and recommend treatment for significant missing risks, if any

Security-specific risk involving leverage and currency risks may not be covered under RBC. This occurs because these risks are not explicitly prescribed in RBC. As described, some security-specific risks may be captured in RBC, depending on a company's modeling practices for C-3. These risks, and methodologies for determining capital charges, should be reviewed to determine if the methodologies need to be revised. If warranted, potential approaches could include RBC changes, additional disclosure, or stress testing.

## B. Review Consistency of Risk Measures

### 1. Review/revise models of each risk factor for calibration consistency

Factor-based models have developed risk factors based on a period of time over which significant risk could be expected to emerge affecting capital. The calibration points for many investment risks have been chosen in light of the specific risk and how that risk could affect statutory capital. The calibration points for the individual risks contained in the C-1 category are based on different risk metrics and time horizons. To the extent the NAIC's Solvency Modernization Initiative produces specific changes to the Life RBC formula, review of the C-1 category and its individual risk factors should be prioritized with the broader SMI effort.

### 2. Review/revise models for economic scenario consistency

The current C-1 component includes many factors. Each of these factors was developed from models of varying complexity. Also, each model was developed more within the context of "best practice" for evaluating a particular risk on a stand-alone basis rather than placing that risk model within a comprehensive RBC framework. For example, the original bond factors and recent work done for RMBS analysis were done independently from one another and utilized different time horizons. Most C-1 factors were developed in this independent fashion, resulting in many C-1 risk factors being based on different economic assumptions. These assumptions for all factors, modeled and non-modeled, should be reviewed for consistency, and modifications made to utilize consistent economic assumptions among the C-1 capital charges.

### 3. Research whether correlation assumptions within and across asset types are appropriate

When RBC was established, there was limited information regarding correlation of risk among asset types. C-1 capital is based on the arithmetic sum of the risk charges for the individual risk types within each of the C-1o (debt and debt-like instruments) and C-1s classifications (common stock). Although the covariance formula recognizes some offsetting risk across these classifications, 100% positive correlation is still assumed among the different types of securities within each of the C-1o and C-1s terms, potentially overstating total C-1 capital. A review of asset risks should include research of correlation studies to determine if reflecting some level of correlation would be appropriate.

## C. Review Effectiveness of Recognizing Risk Offsets

### 1. Review portfolio management effects (e.g., hedging, diversification tactics, reinsurance)

C-1 capital reflects company specific concentration and diversification effects. The approach for reflecting concentration and diversification should be updated concurrent with the factor update. Further, more advanced risk management practices have emerged which may not be captured in C-1. Various hedging strategies are employed to manage investment risk. Similar to the recent recognition of default risk hedging through credit default swaps, the AIAWG supports the review of risk mitigation strategies and how those

strategies are reflected in C-1 RBC to the extent the refinement improves the RBC's formula capacity to identify weakly capitalized companies. This could involve strategies that employ a hedge directly corresponding to an asset and other strategies that employ hedges that are used to reduce the risks of portfolios of assets or subsets of them.

2. Revise measurement of risks absorbed by policyholders consistent with net risk

RBC allows offsets to some products but not others in conceptually similar situations where policyholder benefits vary with experience. RBC permits offsets for some products (e.g., "NY Regulation 128 experience rated separate accounts" and synthetic GICs) but not others (e.g. participating products, universal life with adjustable pricing, and other experience-rated products) whose risks are also at least partly absorbed by the policyholders. This class of products should be reviewed for consistency with other products that recognize risk offsets to the extent that it is practical to do so to determine amounts of risks being absorbed by policyholders and what corresponding adjustments to RBC would be appropriate.

#### D. Review Structural Consistency in RBC Formula Between Assets and Liabilities

1. Review consistency of policy reserve methods and C-1 required capital

RBC C-1 factors are designed to be an add-on to reserves that are adequate for their stated purpose. The original determination of the C-1 bond factors assumed an offset for the provision of an annual Asset Valuation Reserve (AVR) contribution. The sum of policy reserves and prescribed RBC can be thought of as a total asset requirement. Due to different methodologies and assumptions used to derive reserves and capital there can be inconsistencies between them. This structural aspect of RBC should be reviewed concurrent with an update of the C-1 factors to minimize inconsistencies where practical, given that different assumptions are used for reserves and capital, to assure an appropriate total amount of assets are held.

2. Review the combination of C-1 and C-3 requirements for potential overstatement

There is some concern that defaults under the current system might be double counted in determining total capital requirements for a life insurer. C-3 RBC includes defaults on assets but does not allow the inclusion of AVR as a reserve in C-3 testing. The potential for double counting would include both standard C-1 capital, plus additional capital that might be required by inadequate C-3 results caused by modeled asset defaults.

## VII. Conclusion

The AIAWG has monitored the changes in investment risks for life insurers and the corresponding changes to the Life RBC formula over the last several years. Given changes in the capital markets and changes in insurers' risk profiles, we are not convinced that the current capital requirements for investment risks make sufficient provisions for capital requirements

over a range of economic conditions. While some changes have been made to the capital requirements for investment risk, we believe that a more comprehensive review of the investment risk components of the RBC approach is warranted. The NAIC's Solvency Modernization Initiative, in conjunction with other activities within the international regulatory community, provide a timely window to review the NAIC's approach to establishing regulatory capital requirements for investment risks.

APPENDIX 1

C-1 Risk Exposure Grid

Asset Category		Asset Type	Credit	Deferral	Fair Value Depreciation	
		Cash	N	N	N	
Bonds		Government Bonds	Y	N	N	
		Municipal Bonds	Y	N	N	
		Corporate Bond - Public	Y	N	N	
		Corporate Bond - Private	Y	N	N	
Securitized	Agency Backed	CMO - VADMs, PACs, TACs	Y	N	N	
		CMO - Sequential Pay	Y	N	N	
		CMO - IO, PO	Y	N	N	
		CMO - Other	Y	N	N	
		CMO - Z-tranche	Y	N	N	
		MBS - GNMA	Y	N	N	
		MBS - FNMA, FHMC	Y	N	N	
	Non Agency Backed	RMBS - Non-agency	Y	N	N	
		CMBS	Y	N	N	
		CDOs, CLOs	Y	N	N	
		ABS (credit card, auto, other )	Y	N	N	
		Structured Securities	Y	N	N	
	Loans / REO		Mortgage Loans - Commercial	Y	N	N
			Mortgage Loans - Residential	Y	N	N
Mortgage Loans - Farm			Y	N	N	
Real Estate			Y	N	Y	
Equity		Common Stock - Public - Unaffiliated	N	N	Y	
		Common Stock - Public - Affiliated	N	N	Y	
		Common Stock - Private - Unaffiliated	N	N	Y	
		Common Stock - Private - Affiliated	N	N	Y	
Misc.		Preferred Stock	Y	Y	P	
		Hybrids	Y	Y	P	
		Surplus Notes - Unaffiliated	Y	Y	N	
		Derivatives - liability hedges no collateral	Y	N	P	
		Derivatives - asset hedges no collateral	Y	N	P	
Collateralized Arrangements		Derivatives - liability hedges w/ collateral	Y	N	P	
		Derivatives - asset hedges w/ collateral	Y	N	P	
		Repurchase Agreements	Y	N	N	
		Securities Lending	Y	N	N	

Key:	
Presence of Risk	RBC Handling of Risk
Y = Yes, risk always exists for this asset type	Reflected (may or may not be appropriately measured)
P = Possibly risk exists for this asset type	Partially reflected
N = No, risk does not exist for this asset type	Least reflected

Notes:

Bonds are rated “reflected” because the factors were modeled specifically for bonds. But the AIAWG acknowledges that the adequacy of the factors is unknown because they have not been re-evaluated since their establishment.

Credit risk of non-agency RMBS and CMBS are rated “reflected” based on recent modifications that model expected losses and consider holding value. Conversely, other securitized assets such as CDOs, CLOs and structured securities are rated “least reflected” because they are based directly on the NRSRO rating without modeling.

Generally, assets are rated “partially reflected” because they are newer types of assets that usually contain unique features that are different from the baseline corporate bonds that are used as a benchmark to gauge their risk based on a mapping of the NRSRO rating. The assets in the Loan/REO category have their own set of factors that are not mapped from the bond factors. But there are acknowledged concerns with treatment of commercial mortgage loans that are currently under review.

Derivative credit risk is rated “reflected” because it is tied to the rating of the counterparty. But fair value depreciation risk is rated “partially reflected” because risk capture of derivative price risk depends on whether a product association causes it to be modeled under C-3.