

Article Title: Criteria | Insurance | Specialty: Regulation XXX Structured Solutions Data: (EDITOR'S NOTE: —On April 1, 2020, we republished this criteria article to make nonmaterial changes. See the "Revisions And Updates" section for details.)

1. The introduction of U.S. Regulation XXX and Actuarial Guideline AXXX (also known as Actuarial Guideline 38) affected statutory reserves for term life policies and—to a lesser degree—universal life policies with secondary guarantees. As a result, U.S. life insurance companies have looked to the capital markets to provide both capacity and customized solutions to assist them in solving these problems.
2. This article presents the general process and key elements that S&P; Global Ratings uses to rate the Regulation XXX structured transactions and AXXX structured transactions.
3. This paragraph has been deleted.
4. As part of setting up the capital-market solution, insurance companies need to consider the impact of debt issuance on their capitalization and structural design for complete and timely payment of interest and principal. S&P; Global Ratings' ratings address the timely payment of interest and principal of the notes collateralized by the assets held in trust in support of the Regulation XXX excess reserves. The rating-evaluation process begins with an analysis of the insurance company's capital structure to determine if the transaction should be viewed as financial or operational leverage. This is a critical aspect of the evaluation because the economics of the transaction might not work if the debt issued is considered to be financial leverage (see "Methodology: Treatment Of U.S. Life Insurance Reserves And Reserve Financing Transactions," published March 12, 2015). S&P; Global Ratings then reviews the legal and structural components of the transaction, the models evaluating the underlying cash-flow assumptions and risks, and the evaluation of the potential for rating-agency capital relief. S&P; Global Ratings will have discussions with the insurance company's management and actuarial staff, the underwriters, and the third-party model providers.
5. This paragraph has been deleted.
6. Paragraphs 6-11 have been deleted because they have been superseded by "Methodology: Treatment Of U.S. Life Insurance Reserves And Reserve Financing Transactions," published March 12, 2015.
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How Does S&P; Global Ratings Evaluate the Structured Transactions?

12. First, S&P; Global Ratings will apply a series of deterministic stress scenarios to test the robustness of the cash flows. The intention is to measure the likelihood that obligations (i.e., payment of the interest and principal) promised under the contractual agreement with the note holder will be completely paid on a timely basis. The stress scenarios used to evaluate the cash flows will vary depending on the insurance company and the block of policies. A team of actuaries, structured finance analysts, and insurance corporate analysts at S&P; Global Ratings will evaluate:
 - The underwriting guidelines.
 - The actual versus expected experience of mortality, lapses, and investment performance of the block.
 - The company's business profile, earnings capacity, distribution systems, management, and actuarial and underwriting strengths.
 - Other factors that affect the financial strength of the company and the level of reserve redundancy inherent in the underlying block of policies.
13. In addition, S&P; Global Ratings requires that a third-party actuarial consulting firm calculate the cash flows used in the deal model. S&P; Global Ratings would then validate the assumptions and the models.
14. Following the evaluation of the cash flows, S&P; Global Ratings will review the legal documents, the regulatory environment of the ceding company and captive, the structure features, and the credit risk of the structure.

What Are the Risks and the Stress Scenarios That S&P; Global Ratings Applies to Rate These Transactions?

15. To understand the risks embedded in the transaction and the cash flows, S&P; Global Ratings discusses with the management and actuarial team of the company and the third-party actuarial consulting firm the characteristics of the block of policies, the historical underwriting performance, and the base case assumptions used to calculate the economic reserves versus the statutory required assumptions. Among the key characteristics of the block of insurance policies, S&P; Global Ratings reviews the distribution by:
 - Age.
 - Sex.
 - Policy size or face amount band.
 - Policy duration or plan (e.g., Term 10, Term 15, Term 20, Term 30).
 - Underwriting class (e.g., super preferred, preferred, standard non-smoker, standard smoker, substandard, etc.).
 - Other factors.
16. The characteristic of the block and historical experience as well as the underwriting policies, underwriting skills, and the distribution channel or marketing strategy are among the key factors used to determine the level of stress used to test the volatility of the cash flows. First, S&P; Global Ratings would request a third-party actuarial consulting firm to run deterministic stress scenarios based on large adverse

deviations of the individual risks or scenarios based on a combination of risks moving at the same time in a manner that negatively affects the cash flows. The results of all the deterministic stresses are used to determine the adequacy of the economic reserve and economic capital under highly stressful scenarios covering tail risk events. Term (Regulation XXX). 17. For structured transactions designed to fund the redundant reserves emerging from the application of the Regulation XXX for term life insurance, the main risks that could affect the cash flows are: Mortality (mispricing, trends, volatility, event risk). Persistency or lapse. New business mix. 18. The redundancy of the Regulation XXX reserves are tested using the following stress scenarios: Table 1 Determining the Redundancy of Regulation XXX Reserves RISK DETERMINISTIC STRESS TEST Mortality mispricing (incorrect classification of underwriting class). Large increase (e.g., 25% or more) in mortality in Year 1, remaining at that level forever. Mortality trends. Mortality deterioration every year. Mortality deteriorates at a 1% rate per year compounded. Mortality event risk (catastrophic risk). Pandemic scenario. Mortality shocks of 350% in Year 1 only, or Year 2 only, or Year 3 only, etc. Persistency or lapses. (1) Increase the base-case lapse assumption by a large percentage applied to all years. (2) Decrease the base case lapse assumptions. (3) Lapse shocks. Anti-selection. Lapse increases and mortality deteriorate substantially. Worst-case scenario. Worst-case combination of lapses and mortality stresses, and the worst new business mix (i.e., lapses decrease and mortality deteriorates rapidly). Business mix for new policies. Standard & Poor's will stress the business-mix guideline described in the legal documents to the worst possible combination of age, sex, underwriting classes, and policy size and duration. Universal life (AXXX). 19. For structured transactions designed to fund the redundant reserves emerging from the application of the Actuarial Guideline AXXX for universal life policies with secondary death benefit guarantees, the risks that could affect the cash flows are: Policyholders' behavior and utilization (persistency or lapses). Mortality (mispricing, trends, volatility, event risk). Investment returns (including interest rate volatility, spread volatility, and credit impairments or defaults). New business mix. 20. The stress testing is similar to the one for term-life blocks, except that the reserving for universal life policy obligations is more sensitive to investment performance and policyholder behavior. In addition, the historical experience on the secondary lifetime death benefit guarantees is not a good predictor of future performance because these long guarantees (which behave like term-to-age-100 insurance policies or lapse-supported policies sold in Canada) are relatively new to the marketplace. Insurance companies started to sell these types of long-term guarantees in 2001. Universal life policies with shorter death benefit guarantees, (one year, three years, and even 10, 20, or 30 years) were sold in the past but weren't very popular because most policyholders were focused on the cash-accumulation aspect of the policy instead of the protection benefits. Table 2 Determining the Redundancy of Actuarial Guideline AXXX Reserves RISK DETERMINISTIC STRESS TEST Mortality mispricing (incorrect classification of underwriting class). Large increase (e.g., 25% or more) in mortality in Year 1, remaining at that level forever. Mortality trends. (1) Mortality deterioration every year. (2) Mortality deteriorates at a 1% rate per year compounded. Mortality event risk (catastrophic risk). (1) Pandemic scenario. (2) Mortality shocks of 350% in Year 1 only, or Year 2 only, or Year 3 only, etc. Persistency or lapses. (1) Increase the base-case lapse assumption by a large percentage applied to all years. (2) Decrease the base case lapse assumptions. (3) Lapse shocks. Anti-selection. Lapse increases and mortality deteriorates substantially. Investment performance. (1) Lower return on investments lowering the crediting rates. (2) Investment returns included credit defaults or impairments as well as lower yields. Business mix for new policies. Standard & Poor's will stress the business-mix guideline described in the legal documents to the worst possible combination of age, sex, underwriting classes, and policy size and duration. Worst-case scenario. Worst-case combination of lapses and mortality and investment performance stresses as well as the worst new business mix (i.e. lapses decrease and mortality deteriorates rapidly). Reserving methodology. (1) Look at the economic reserve formula and assumptions and compare them with various reserving methodologies. (2) Look at the term of the no-lapse guarantee. What Are the Limits in Including New Business in the Structure? 21. S&P; Global Ratings is willing to review a XXX-structured transaction with new business modeled if it meets the following criteria: Up to 12 months of future sales are accepted if the policies are sold to similar customers and markets through the same distribution channels. Tightly defined underwriting and business mix guidelines are used for future business. No substitution of future policies into the

structure. New business is limited to 25% of the transaction if it is the first XXX structure done by the company. In addition, the legal documents have to specify the limits and constraints on the mix of business added to the cash flows following the closing date of the transaction. What are Some of the Other Key Areas of Analysis Performed by S&P; Global Ratings? 22. S&P; Global Ratings will also review the legal documents, reinsurance agreements, and, in some cases, the legal opinions to make sure that they are in compliance with S&P; Global Ratings' criteria. 23. In addition, S&P; Global Ratings will review the following: Ceding company state of domicile and the regulatory framework. Captive state of domicile and regulatory framework. Trust holding the assets backing up the excess reserves and its domicile laws. The investment policies and limits. Liquidity risk. Credit risk of the structure. Provisions under the reinsurance agreement. The funding mechanism used to fund the excess reserves. For example, the Dutch Auction's money market securities (backed by a 'AAA' bond insurer), senior unsecured debt, and letter of credits have been used to fund the step up excess reserves. 24. Other programs might be acceptable if they have very low levels of liquidity risks and the probability of the ceding company being forced to recapture is very low. In other words, the ceding company would have enough financial flexibility to recapture the treaty without affecting its financial strength. Revisions And Updates This article was originally published on Dec. 15, 2004. Changes introduced after original publication: Following our periodic review completed on Feb. 25, 2016, we updated the contact information and added the "Related Criteria" section. Following our periodic review completed on Feb. 24, 2017, we deleted outdated sections that appeared in paragraphs 1, 2, 3, and 5, which were either commentary or related to the initial publication of our criteria. We deleted paragraphs 6-11 because they were superseded by "Methodology: Treatment Of U.S. Life Insurance Reserves And Reserve Financing Transactions," published March 12, 2015. Specifically, the analysis of when these transactions are treated as operational leverage was superseded. We also updated the "Related Criteria" list. Following our periodic review completed on Feb. 20, 2018, we updated the contact information and "Related Criteria" section and deleted superseded criteria text and commentary that had previously been moved to an appendix. On April 17, 2019, we republished this criteria article to make nonmaterial changes to update the contact information. On April 1, 2020, we republished this criteria article to make nonmaterial changes to update criteria references in the "Related Criteria And Research" section. Related Criteria And Research Related Criteria Insurers Rating Methodology, July 1, 2019 Methodology: Treatment Of U.S. Life Insurance Reserves And Reserve Financing Transactions, March 12, 2015 Refined Methodology And Assumptions For Analyzing Insurer Capital Adequacy Using The Risk-Based Insurance Capital Model, June 7, 2010 Debt Tranching And Ratings Caps In Global Insurance Securitization, Oct. 6, 2004 Related Research Credit FAQ: The Looming Crisis Of XXX Reserves, March 30, 2004