Article Title: ARCHIVE | Criteria | Insurance | Life: Liquidity Model For U.S. And Canadian Life Insurers Data: (EDITOR'S NOTE: —This criteria article is no longer current. It has been superseded by "Insurers Rating Methodology," published July 1, 2019.) 1. As some of the more notable insurer insolvencies of the early to mid-1990s demonstrated, the perceived lack of liquidity was the key factor leading to regulatory intervention. In retrospect, many of those insurers ultimately had sufficient assets to satisfy most policyholder and creditor claims. Although liquidity has generally improved since then, Standard & Poor's Ratings Services believes the life insurance industry remains challenged with costs associated with both liquidity and illiquidity as a result of these turbulent times of global competition, consolidation, demutualization, and volatile investment results. A company that makes a distinct entry into less-liquid assets to reach for higher yields risks a downgrade if the liquid-asset-to-risk-adjusted-liabilities ratio declines below the minimum standards for the rating level. 2. Policyholders are increasingly likely to surrender policies if they perceive that their insurer is experiencing financial difficulty. However, despite its importance, liquidity has not received nearly the prominence that risk-based capital has--a measure regarded by many, including the NAIC, as the prime measurement of solvency. Having an appropriate level of liquidity means being able to meet maturing obligations promptly and take advantage of market opportunities. As such, liquidity risk is most visible when a company's business position is under stress. In the widely publicized failures of Mutual Benefit Life Insurance Co. and Executive Life Insurance Co. of California, policyholders were surprised by these companies' lack of liquidity. Standard & Poor's Liquidity Model 3. Standard & Poor's liquidity model measures an insurer's liquidity under both immediate and ongoing stress scenarios, with the lower measurement of the two used for rating purposes. As with Standard & Poor's capital adequacy model, however, this process could involve substantive analytic adjustment, reflecting that although liquidity may be heavily influenced by overall investment profile and product surrenderability characteristics, other factors—such as distribution channels and target markets—could also play key roles. Liquidity analysis focuses on the relationship between an insurer's liquid assets and the liabilities that are subject to a sudden shortening of term rather than focusing on an insurer's total of liquid assets in isolation. Insufficient liquidity occurs only if the two become unbalanced. 4. In formulating its liquidity strategy, management faces a trade-off with respect to investment return because maintaining a high level of liquidity typically necessitates investing in larger amounts of short-term, low-yield assets. In recent years, to mitigate liquidity requirements, insurers have attempted to build features into their policies—such as market-value adjustments and penalties—to discourage surrender activity. However, this remains a challenge in today's extremely competitive business environment, with the need to maintain high credit rates and consumer pressures for surrenderability features. Standard & Poor's believes that in general, the industry's liabilities are far more liquid than many companies realize. 5. Standard & Poor's review of a company's liquidity encompasses several factors: Reserves and deposit fund liabilities. Surrenderability, provisions, and restrictions associated with these liabilities. Asset portfolio, to determine convertibility to cash under a variety of stress scenarios. Ongoing operational cash flow. Other influences on a company's cash flow, such as debt obligations, dividend needs of the parent, or potential contingent liabilities. 6. In some cases, individual companies might be able to dispose of assets more quickly than is generally expected in a particular market. However, Standard & Poor's experience has shown that the potential for unscheduled withdrawals varies significantly, by both retail and especially wholesale classes of business and by the importance of accumulated cash value relative to the premium or deposit paid. In addition, this potential can be affected in differing degrees by surrender charges and market-value adjustments. Risk-Adjusted Liquidity Of Liabilities 7. Standard & Poor's liquidity model compares a life insurer's liquid assets with a risk-adjusted calculation of its liabilities subject to scheduled and unscheduled withdrawals. The model examines an insurer's liquidity under two stress scenarios: immediate and ongoing. Each establishes a base time frame during which a company must meet its obligations. In addition, each scenario assumes a company must hold acceptably liquid assets to meet potential and certain obligations for an additional year beyond the base time frame. 8. The immediate scenario implies a drop-dead situation (similar to that experienced by Confederation Life Insurance Co.), in which a company experiences immediate and unforeseen stress from withdrawals and surrenders within a month. The ongoing scenario implies a similarly stressful situation but spread over the course of a year. When analyzing the model's results, Standard & Poor's

focuses on the scenario that produces the ratio showing lower liquidity. 9. In applying the model, Standard & Poor's receives a breakdown of a company's liabilities by product category, and for each category, Standard & Poor's applies various risk factors that reflect the potential for withdrawals. These risk factors represent Standard & Poor's belief about the percentage of policyholders who would actually remove funds under each scenario if such withdrawals were completely unrestricted. Standard & Poor's views traditional life policyholders as slower to respond to company news and market conditions than other types of customers. Therefore, the related liabilities are given a 30% risk factor in the immediate scenario, meaning only 30% of traditional life policyholders who can surrender freely will do so within one month. However, Standard & Poor's increases the factor to 50% in the ongoing scenario (with a one-year base time frame), similar to the factor for interest-sensitive life. Although traditional life policyholders are less likely than universal life policyholders to surrender or exchange their policies immediately, they have become more aware of the risks of potential insurance company vulnerability because of the highly publicized failures of the past few years. In addition, the movement in the industry away from career agents could lead to less loyalty among policyholders during financially stressful times. 10. Interest-sensitive life receives a higher risk factor in the immediate scenario (50%) compared with traditional life because of the different profiles of individuals who buy these products. Some interest-sensitive life policyholders might not require the insurance feature and might buy these products for investment purposes. Therefore, they could be faster to react to adverse conditions than traditional life buyers. However, ultimately, those who buy traditional or universal life insurance for insurance purposes would be expected to behave in the same manner. 11. Pension plans and GICs are likely to be a company's most vulnerable liabilities if they are fully surrenderable, because they are purchased by sophisticated marketplace buyers for purely investment purposes. Investors in these products are the most financially aware of a life insurer's customers. Therefore, under a stress scenario of any sort, Standard & Poor's assumes that 100% of the contract holders who could surrender with little or no penalty would do so. 12. Deferred annuities, held by individual contract holders, are assumed to be 100% liquid over the long term, so the factor in the ongoing scenario is 100%. However, in the immediate scenario, the factor is 90% because not all contract holders will exit quickly. 13. Variable products, as part of the insurer's separate accounts, are not charged with other general account products. However, any funds invested in fixed buckets of variable products are captured in the general account categories. 14. Regarding products that have no cash value build-up—such as term life, group life, accident and health, and disability insurance—Standard & Poor's applies only a 50% risk factor to any unearned premium reserve or premium stabilization reserve that might need to be refunded. However, certain individual disability products are structured to build some cash value. For these products, a separate charge on any cash value involved, not on the entire reserve, is applied, similar to the charges on traditional life business. In addition, a 100% risk factor is applied to health claims reserves because these obligations mature within one year and are a call on liquid assets. Table 1 Liability Risk Factors LIABILITY IMMEDIATE SCENARIO (%) ONGOING SCENARIO (%) Traditional life 30 50 Term life 50% of unearned premium reserve 50% of unearned premium reserve Interest-sensitive life 50 50 Deferred annuities 90 100 Single-premium immediate annuities 100 100 Other individual annuities 100 100 Supplementary contracts 30 50 Individual accident and health 50% of unearned premium reserve 50% of unearned premium reserve Individual disability 50% of any cash value 50% of any cash value Structured settlements 100 100 Guaranteed investment contracts and funding agreements 100 100 Group annuities and other deposit funds 100 100 Group accident and health 50% of premium stabilization reserve and unearned premium reserve 50% of premium stabilization reserve and unearned premium reserve Group life 50% of premium stabilization reserve and unearned premium reserve 50% of premium stabilization reserve and unearned premium reserve Group long-term disability 50% of premium stabilization reserve and unearned premium reserve 50% of premium stabilization reserve and unearned premium reserve Health claims reserves 100 100 Withdrawal Provisions And Restrictions 15. Standard & Poor's considers the withdrawal characteristics of the liability portfolio when applying the above risk factors. Unsurrenderable liabilities receive no liquidity charge because the risk factor is multiplied by zero. Conversely, a 100% surrenderability factor is applied to liabilities with little or no withdrawal restrictions that, as a result, receive the full risk-factor charge. If a product carries a market-value adjustment of some sort, Standard & Poor's considers the

company to have some protection, as certain provisions and market conditions can cause policyholders to bear a loss on their original investment. Policyholders who might sustain a loss would be less likely to surrender in these cases. Similarly, significant surrender charges (5% or greater) also provide protection to a company undergoing stress because policyholders may decide to wait out such a situation in light of a large penalty. Therefore, for liabilities with these provisions, the model reduces the company's amount at risk by half. For example, a universal life policy with a market-value adjustment provision would receive a 50% risk factor multiplied by a 50% surrenderability factor, resulting in an overall 25% charge. Smaller surrender charges are less likely to stem policyholder withdrawals and do not earn any such credit. Table 2 Surrenderability Factor PROVISION FACTOR (%) No surrenders allowed 0 Market-value adjustment 50 Surrender charges greater than or equal to 5% 50 Surrender charges less than 5% 100 No surrender charges 100 16. The application of the risk and surrenderability factors provides an indication of a company's total potential obligations under the stress scenarios. These scenarios assume that everyone who could logically retrieve cash from the company would do so. However, recognizing that some potential surrenders will not occur, Standard & Poor's built a measure of covariance into the model by multiplying the potential obligations by 70%. This assumes that the other 30% of the company's potential obligations remain with the company through the stress period. Determining Liquid Assets 17. Standard & Poor's examines the liquidity of an insurer's investment portfolio to estimate the level of coverage of its potential liability requirements. In this process, assumptions must be made as to which assets can be counted on to be readily convertible to cash at all times. Cash and short-term securities receive full credit, as do U.S. government securities. Publicly traded, investment-grade corporate and government bonds receive 100% credit in the ongoing scenario, but have a 2% or 4% "haircut" in the immediate scenario based on credit quality. Standard & Poor's model gives little credit for below-investment-grade quality issues because there could be credit- or market-driven factors that affect the liquidity of noninvestment-grade securities at any point in time. In the ongoing scenario only, public bonds rated 'BB' receive 25% credit, and private 144A bonds rated 'BB' receive 20% credit. Table 3 Allowable Asset Factors IMMEDIATE SCENARIO (%) ONGOING SCENARIO (%) Cash and short-term investments 100 100 U.S. government securities 100 100 Agency pass-through mortgage-backed securities 90 90 COLLATERALIZED MORTGAGE OBLIGATIONS Very accurately defined maturities, planned amortization classes, and targeted amortization classes 90 90 Sequentials 80 80 Z tranches 0 50 NAIC '1' commercial mortgage-backed securities 90 90 NAIC '2' commercial mortgage-backed securities 75 90 NAIC '1' public bonds (other than mortgage-backed securities, asset-backed securities, and U.S. government) 98 100 NAIC '2' public bonds (other than mortgage-backed securities, asset-backed securities, and U.S. government) 96 100 NAIC '1' 144A private placements 80 90 NAIC '2' 144A private placements 65 75 NAIC '1' non-144A private placements 70 80 NAIC '2' non-144A private placements 40 50 NAIC '3' public bonds (other than mortgage-backed securities, asset-backed securities, and U.S. Govt) 0 25 NAIC '3' 144A private placements 0 20 Asset-backed securities 90 90 Unaffiliated public investment-grade preferred stock 100 100 Unaffiliated public common stock 70 85 ASSETS IN SECURITIES LENDING PROGRAMS Fully collateralized 100 100 Other 70 100 18. Because MBS have become one of the most prominent classes of investments in the U.S. over the past several years, and given the extremely diverse nature of this category, Standard & Poor's differentiates among them for liquidity purposes. Agency pass-throughs and government-guaranteed securities receive 90% credit, as do the most tightly structured classes, while others receive varying degrees of credit, down to zero for classes Standard & Poor's does not consider liquid. 19. Although there is substantial liquidity in the private-placement market because of the required rating on these instruments by the Securities Valuation Office of the NAIC, there is also a wide variation in the credit quality among investment-grade securities in this market. Standard & Poor's considers NAIC 1 private placements to be more liquid, while those designated NAIC 2 may include private placements with questionable investment-grade characteristics. Similarly, as it is easier to find buyers for securities with readily available information, bond issues registered under Rule 144A are also viewed as having higher liquidity. The model also gives more credit in the ongoing scenario because a company may find buyers for some of its specialized private placements after potential buyers perform a detailed credit analysis. 20. Regarding equities, most insurance companies invest in preferred stock as they would bonds. In general, Standard & Poor's

treats publicly traded preferred stock like corporate bonds. Preferred stocks that are investment-grade and publicly traded are given 100% credit. Publicly traded common stock is also fairly liquid, as companies could likely sell most of their portfolios if under pressure to raise cash. However, as demonstrated over the past few years, short-term market shocks with at least 30% declines in the stock are not unheard of. Therefore, the model gives 70% credit to unaffiliated, publicly traded common stock in the immediate scenario and 85% in the ongoing scenario, allowing for some market recovery. 21. In giving liquidity credit for debt, Standard & Poor's differentiates between debt (government or corporate) issued in a jurisdiction widely accepted as a developed country or as an international financial center from debt issued in other jurisdictions. The developed or international financial centers are: Australia Channel Islands (Jersey and Guernsey) Italy Portugal Austria Denmark Japan Singapore Barbados Finland Liechtenstein Spain Belgium France Luxembourg Sweden Bermuda Germany The Netherlands Switzerland Canada Ireland New Zealand U.K. Cayman Islands Isle of Man Norway U.S. 22. Bonds issued in emerging countries receive the following treatment in the liquidity model: If emerging-market debt is less than 4% of total invested assets, liquidity credit is 10% of the value of the bonds in the immediate scenario and 20% in the ongoing scenario. If emerging market debt is greater than or equal to 4% of total invested assets, liquidity credit is based on the type of debt as follows: investment-grade, 25% (immediate scenario) or 50% (ongoing scenario); below-investment-grade, 0% (both immediate and ongoing scenarios). 23. Assets involved in securities lending programs are generally allowable as liquid assets, as these programs usually have very short terms. Funds-withheld reinsurance assets that back liabilities reinsured with another company are excluded from the ceding company's allowable asset liquidity calculations because the related assets are no longer considered those of the ceding company. Certainty Of Maturing Obligations 24. The model is also designed to deal with maturing obligations. These include any outstanding debt at the insurance company, GIC and funding agreement maturities, annuity and structured settlement lump-sum payments, anticipated disability income and long-term care benefit payments, and any other scheduled lump-sum payments. These obligations do not receive the benefit of the 70% covariance factor because these are contractual payouts. 25. It is assumed that a company holds acceptable liquid assets to meet potential and scheduled obligations for an additional year beyond the base time frame. Therefore, in the immediate scenario, a company should have ready liquidity for one full year of maturing obligations, while in the ongoing scenario, the requirement is for 100% of all obligations maturing in two years or less. Debt obligations include any publicly issued or private-placement debt, bank debt, or commercial paper outstanding. Benefit obligations include payments anticipated under structured settlements, payout annuities, disability income and long-term care policies, and accident and health claim reserves related to shorter tail obligations. 26. Secure companies, regardless of rating, need only small or no redundancy of liquid assets to cover fixed obligations because of the certainty of the liquidity needs associated with such obligations. This is not the case with other liability needs, such as surrenders, where disintermediation characteristics in the event of stress are unknown and therefore liquidity needs might be more severe. The need for redundancy of liquid assets for scheduled maturities takes into account such risks as market value/book value differences, asset deterioration, and potential losses stemming from asset/liability mismatches. Standard & Poor's liquidity model is calculated by subtracting from allowable assets the amount of liquid assets required to cover scheduled maturing obligations and then comparing the adjusted potential obligations with allowable assets for each of the two scenarios. 27. No redundancy is required for maturing single-premium deferred annuities, structured settlements, accident and health benefit payments, debt, and nonbenefit responsive GICs and funding agreements. A 10% redundancy is required for GICs and funding agreements with put options of more than 60 days. A 15% redundancy is required for GICs and funding agreements with put options of 60 days or less, any benefit responsive GICs and funding agreements, and any other liabilities subject to downgrade triggers. Liquidity Standards 28. The final calculation in the model compares the allowable assets under both scenarios with the adjusted potential and maturing obligations under each scenario. However, a vital part of an insurer's liquidity assessment incorporates adjustments specific to individual companies, both qualitative and quantitative, that could stem from contingent noninsurance liabilities or concentrations among certain allowable assets. 29. This paragraph has been deleted (see the "Revisions And Updates" section). 30. This paragraph has been deleted (see the "Revisions And

Updates" section). Additional Measures 31. Standard & Poor's uses three additional ratios in our analysis of liquidity: (1) emerging markets debt as a percentage of total invested assets, (2) CBOs as a percentage of total invested assets, and (3) an immediate needs ratio. The immediate needs ratio is the ratio of a company's funding agreements with put options of 60 days or less, plus commercial paper maturing within one year net of liquidity backup lines, plus any other liabilities maturing within one year that are subject to downgrade triggers, divided by the amount of liquid assets calculated for the immediate scenario. These ratios are meant to supplement Standard & Poor's analysis of liquidity. Although there are no predetermined expectations as to what any of the above three ratios should be for various rating categories, they are used to help identify companies that are industry outliers as well as liquidity needs that might not otherwise be signaled by the liquidity model. Table 4, entitled "Rating Standards," previously followed paragraph 31 and has been deleted. Revisions And Updates This article was originally published on April 22, 2004. Changes introduced after original publication: Following our periodic review completed on July 21, 2016, we updated the contact information. We also clarified in the title that the article pertains to U.S and Canadian life insurers. We also noted that this criteria article has been partly superseded by the article titled "Insurers: Rating Methodology," published on May 7, 2013. Specifically, paragraphs 29 and 30 and table 4 have been superseded. Following our periodic review completed on July 17, 2017, we updated the contact information and added the "Related Criteria And Research" section. Following our periodic review completed on July 16, 2018, we deleted superseded text that previously appeared in paragraphs 29 and 30 and table 4 from the "Revisions And Updates" section. Related Criteria And Research Related Criteria Insurers: Rating Methodology, May 7, 2013