Article Title: ARCHIVE | Criteria | Insurance | General: U.K. Life Embedded Value Securitization Criteria Data: (EDITOR'S NOTE: —This article is no longer current and was archived on Dec. 22, 2017.) 1. Securitizing embedded value in life insurance products is an exciting development in the ever-evolving universe of structured financings. But these products bring with them risks that are not seen in more traditional structured finance assets. This article details these risks and, using existing securitizations as examples, gives our approach to the rating analysis of life insurance securitizations. General Methodological Approach To Rating Life Embedded Value Securitizations 2. We analyze life embedded value securitizations from two distinct perspectives: noteholders and policyholders. It is useful to consider the risks to cash flows emerging on a securitized block of life insurance policies by analyzing the nature of the risks that adversely affect different contracts. Unlike corporate assets where near-term factors tend to determine profitability and cash flows, embedded value securitizations, which include many very long-term policies, are affected by "look forward" considerations that are closely mapped to regulatory solvency requirements. As regulatory surplus emerges only after all policyholder obligations and long-term solvency tests are satisfied, life embedded value securitizations should strictly be termed "VIF monetizations." The position of noteholders dependent upon emerging surplus for the payment of interest and principal is therefore a de facto subordinate one relative to policyholders despite the absence of explicit legal subordination of the notes. The following sections serve to illustrate the number of risk factors that, either separately or in combination, affect the emergence of surplus from a pool of life insurance policies. Investment return risk 3. Usually the most important part of the surplus emerging on savings policies is either the life company's share of the investment income earned on the placement of policyholders' premium payments or, for unit-linked contracts, its commission earned on the value of policyholder assets under management. Although it may appear mathematically straightforward to calculate expected returns over a period, equity market or interest rate fluctuations can intervene to complicate matters by subjecting investment returns to peaks and troughs. 4. A major consideration is the possibility of an equity market crash occurring shortly after issuance of the securitization notes, when the servicing obligation is at a maximum. To justify an investment-grade rating, the available cash to service the notes has to be sufficient not merely on average, but in each and every year, irrespective of prevailing market conditions. A reserve account may provide a backstop to any shortfall in the level of surplus emerging in a given year relative to the coupon and principal repayment requirements under the notes. 5. Timing issues can become key considerations, particularly following a market crash when, rightly or wrongly, many policies may be surrendered as "under performing." Persistency risk 6. The fall in valuations and in absolute levels of income discussed above may then be compounded by increased early surrenders serving not only to create an immediate cash call but also to deprive the insurer of the future profits that would likely have been generated for the company had that policy remained in-force. The effect of this change in the VIF in a book of term life policies before and after a 5% increase in lapsation is shown in charts 1 and 2. Chart 1 Chart 2 7. All else being equal, long-term life policies in countries such as the U.K. tend not to be cancelled in the short to medium-term as policyholders are usually aware that they will likely incur explicit surrender penalties as well as possible tax charges on any capital gains. In the absence of explicit guarantees on the level of early pay-outs, policyholders are also normally conscious that the level of any payment following early cancellation is essentially left to the insurer's discretion, and will probably be on the low side of expectations given the application of buy-sell spreads on unit-linked business and, more opaquely, the periodic imposition of "market value adjustors" to lower any early pay-outs during periods when investment markets are particularly depressed. 8. This being the case, numbers of policyholders may not go as far as to surrender their savings policy but they may cease making any further payments, causing their policies to become "paid-up." Particularly if the accrued policy value is modest and the insurer's profit margins small (as would be the case with a 1% commission "stakeholder" plan) there is a significant risk of the dormant policy becoming loss-making for the insurer, with normal administration costs exceeding the low commission income. 9. Meanwhile, in addition to many policies becoming paid-up, most life companies can, on average, nonetheless expect to see something approaching 10% of all their in-force policies surrender each year, with the policyholder claiming full cash reimbursement of the surrender value. 10. A key question concerning surrenders is often "are these new or old policies that are being surrendered or being left paid up?" Early surrender or cessation

of ongoing regular premium payments on relatively new, long-term contracts can be the most damaging from the perspective of insurers and securitized noteholders as the VIF calculation assumes both the premium payments to continue and the investments on them to grow; generating profits for the insurer over time. Moreover, early cancellation of a new policy also suggests that the new business strain may not yet have been covered, although the losses in these instances can often be mitigated by claw-backs of commission from the IFA or agent who sold the policy. 11. Any early surrender of a savings policy will create an immediate cash demand for repayment while depriving the insurer of at least some expected future income. Consequently, actuaries need to assume a realistic level of early surrenders when calculating the VIF. We further stress the "best estimate" assumptions, taking particular account of whether the policies being modeled for surrender are risk protection products (e.g., term life) or savings-related consumer products, and just how severe the effect on cash flows and VIF could be if a disproportionate number of the surrenders relate to new savings-type policies. 12. Naturally, it is only when surrenders start to escalate and represent a significant diminution of expected future profits and, hence, of the VIF, that this can become a serious matter both for the insurer and for the holders of securitization notes backed by surpluses emerging. It is normal for persistency to deteriorate after an equity market downturn, in which case the surpluses emerging and the VIF would be doubly affected, both by lower investment returns and by lower persistency. A final consideration would also be that so-called "group" life business acquired as a block from a commercial company in respect of a large number of its employees, which may cause erratic changes in persistency at any given time. The reason is that any large corporation opting to transfer its group business to an alternative insurance provider would trigger the lapse of possibly thousands of individual policies in respect of its staff. 13. On the same block of savings policies the effect on the surplus emerging due to lower investment returns and lower persistency is compared in charts 3 and 4. Chart 3 Chart 4 Mortality, morbidity, and longevity risks 14. In the case studies detailed in this article, the insurers' own actuaries were found to have carried out reasonably conservative estimations of the mortality, morbidity (severe ill-health), and longevity claims likely to arise on the securitized blocks of business during the lifetime of the two transactions. Clearly, the two securitized blocks were dissimilar given the different sizes of some of the larger individual contracts but also more generally given the differing policyholder profiles in respect of age, sex, occupation, average mortality or morbidity payout rates by policy type, and even the medical underwriting and acceptance procedures applied by each insurer. Out of prudence, mortality and morbidity expectations were stressed by up to 50% to monitor the effect that higher claims rates and, as a consequence, somewhat lower policy persistency, would have on the level of surpluses emerging. Clearly, claims payments in excess of expectations in any given year would reduce the level of surplus emerging relative to original expectations. Such reductions automatically lower the level of funds available to service the securitization notes and may compound with other risks as investment returns, persistency, mortality, and morbidity all tend to deteriorate during an economic downturn. Expense inflation risk 15. Operating expense assumptions, and particularly the potential for inflation-driven costs to rise more steeply than fixed premium levels, is a major consideration in the long-term modeling of a life insurance securitization. An additional consideration is that, unlike many of the other risks discussed in this section, operational expenses are a factor over which the insurer's management does exercise direct control. In a transaction, a percentage of the expenses may be covered by an administrative agreement that, in effect, brings a degree of certainty to the level of many future overheads. Where there are no explicit safeguards concerning cost levels, the existence of the reserve account may provide a buffer to protect noteholders from the effects of cost overruns and other adverse factors that may lead to lower annual emerging surpluses. Reputational risk 16. Like banking, insurance is a confidence-sensitive industry. A loss of confidence would cause an insurer to lose some existing good business and make it more difficult to attract new business of reasonable quality at a reasonable price. Case-by-case actuarial analysis is usually required to measure an insurer's exposure to reputational risk. On analysis, it is usually found that the severity of the threat may be diminished or increased by the availability or otherwise of contractual surrender penalties or loss of tax benefits for early cancellation of a contract. Similarly, policyholder behavior may also be influenced by the existence of a policyholder protection scheme or "lifeboat" fund if it means that they can still be certain of having their claims and savings properly paid even if their insurer

becomes insolvent. 17. The uncertainties surrounding reputational risk for an insurer that has already closed to new business is almost invariably lower than those in respect of a company that still has a high profile due to ongoing sales activities in the marketplace. However, for securitization noteholders, the effect of reputational risk relating to the underlying insurer tends to be limited to the degree to which adverse media reports lead to a significantly adverse change in persistency, as discussed above. Indirectly, a bad press for the insurer may also cause its debt, including securitization notes backed by a block of its policies, to trade somewhat less readily on the secondary markets, implying an element of liquidity risk for investors. Adverse selection risk 18. Insurance is based on diversification and the so-called law of large numbers. If a portfolio is large and reasonably stable, the seemingly random individual occurrences of fire, theft, accident, disease, disability, and death usually take on a less volatile pattern that can be discerned and modeled with remarkable predictive accuracy by actuaries. However, policyholders tend to act rationally (based on their own circumstances), and their perceptions of their best interests may change over time. In the admittedly exaggerated example of private individual health insurance; people who consider themselves to be healthy either do not take out a policy or are inclined to cancel their policies over time. Meanwhile, those considering themselves to be sick are motivated to apply for cover and, if successful, will almost never cancel until they consider themselves to be completely well again. The fight against "adverse selection," as it is called, is therefore a constant battle for insurers, and the smaller the portfolio or the greater the concentration on a single type of contract or risk, the greater the chance of reality intervening to disprove the validity of any "high-level" or generalized claims rate assumptions. Bifurcation risk 19. Itself a sub-set of adverse selection, bifurcation risk is the possibility of apparently homogenous or complementary risks fragmenting and assuming distinctly different profiles over time. For example, the availability of surrender penalties and discretionary rather than part-guaranteed levels of payout on certain lapsed policies means that early cancellation by the policyholder can generate an immediate profit or surplus for the insurer. This occurs when the actual cash payout is less than the accounting liability for accrued bonuses and mortality risk. Meanwhile, other, seemingly complementary, contracts may have slightly different terms that cause them to create a loss for the insurer upon early surrender. Needless to say, enough policyholders are sufficiently astute to ensure that, on average, policies that create a profit for the insurer upon surrender tend to remain more often in-force, while those that create a loss for the insurer tend more often to lapse. Consequently, it is over-simplistic to say that a given percentage of the block would lapse. The more complex question must be what percentage of which policies? 20. Even a single class of policies may have a risk profile that bifurcates from its starting point over time. In term life, for example, the ongoing level of annual surrenders may appear reasonably constant. Actuarial analysis, however, may reveal that the near totality of yearly surrenders relates to people who face little risk of death. This would imply that the percentage of higher-risk policyholders is increasing as a proportion of the whole portfolio, causing the mortality risk in a given pool of policies to grow more quickly in percentage terms than would have been expected had the whole pool of original policyholders (as underwritten) remained in-force and merely aged on a uniform basis. Embedded guarantee and option risk 21. It has in the past been surprisingly common for life insurers both in the U.K. and beyond to seek competitive advantage relative to peers by routinely incorporating various guarantees and options into the policies they sell. Usually deemed innocuous at the time they were provided (and therefore not given a valuation in the report and accounts and very often not charged for in the original policy pricing), many guarantees remain "out-of-the-money," expiring uncalled when the policy matures. The classic case of the failure of Equitable Life in the U.K. in December 2000 nevertheless serves as a warning that some seemingly banal commitments may have the potential to translate over time into a financial obligation capable of destroying an otherwise successful company. Clearly, any due diligence of policies being considered for securitization must search out these embedded guarantee or option risks. Surveillance risk 22. We monitor the structure and the ratings of the securitization notes on a continuous basis both by means of regular service reports and also by ongoing contacts with the various counterparties to the structure. The main thrust of this surveillance is to ensure that actual outcomes remain ahead of or at least in line with the original expectations reached at the time of issuance. 23. Additionally, the responsible analyst has to satisfy a rating committee that surpluses will continue to emerge as planned or, if not, that any safeguards will function appropriately.

The ongoing aim, of course, is to ensure that securitization noteholders can expect to receive their interest and eventually their principal with a degree of confidence consistent with the prevailing ratings on the notes. With the lapse of time, most life insurance structures become more predictable as future scenarios crystallize into historical actual results and as the residual "at risk" transaction period reduces. Other risks 24. Other risks can be complex and difficult to identify but nonetheless can be of crucial importance to an orderly and successful securitization. For example, combining the implications of changes in taxation with persistency risk reveals that a reasonably stable tax regime is preferred. Obviously if new fiscal charges unexpectedly come into force these can result in a reduced level of surpluses emerging and, as a consequence, a reduced ability of a pool to service any securitization notes. Not so obvious, however, are that adverse changes to the prevailing tax treatment of a given type of policy can at a stroke trigger a substantial level of surrenders, given the tax-advantaged nature of many life, savings, pension, and annuity products. The freed-up funds are often re-invested in whatever related type of product is then the most tax-efficient. Naturally, during such periods of tax-induced hiatus, there is no guarantee that the funds would be re-invested with the original contract provider, as competitors would undoubtedly try to seize the chance to take some of the business away. Whether or not the company manages to keep the customer, from a securitization perspective, surrendered policies that had previously supported the securitization are simply no longer available. Additional General Considerations In Insurance Securitizations 25. The paragraphs that follow highlight some additional issues often associated with life insurance securitizations. Unique business mix 26. The mix of business being considered for a securitization has a material effect on the eventual stressing and ratings on the notes. The cash flow signature of different classes of life insurance business are different and it is the very blend of business that determines the amount of debt that can be supported by the securitization. The characteristics of the individual policyholders also have significant bearing on the final cash flow surplus, particularly as the clustering of individuals in any intra-block group have strong common tendencies to affect persistency, morbidity, or mortality risks. "Seasoned" policies 27. Structuring specialists considering a pool of insurance risks for securitization are always keen to know whether the policies are properly seasoned. A more focused question that should be asked is "have the underlying risks in the pool settled down into a predictable, measurable pattern of stable cash flow performance, or is this measure still strongly affected by erratic behaviors on the part of policyholders?" From an accounting perspective, early seasoning probably occurs within the first nine months following inception and it may take just under a year to write off any new business strain included in the previous year's profit and loss account. For the purpose of a securitized pool of insurance policies, it takes roughly 48 months for individual policies to be cash flow positive and a weighted-average life on the pool greater than 48 months would be a prerequisite for any closed block financing and this expectation would be greater for a securitization that plans to include future new business when written. Advance rates 28. Another question regularly posed when approaching a securitization is "what is the advance rate?" This refers to the percentage of VIF embedded within a given pool of life contracts that can be converted into cash through securitization. As the service of the debt puts a burden on the sufficiency of cash flows, the greater the amount of debt outstanding over the loan life the lower the underlying ratings assigned in the securitization are likely to be. We acknowledge that the advance rate on life insurance business is simply a reported output influenced by the business mix, policyholder characteristics, the initial underwriting of the policies, the volatility (largely driven by investment risk and embedded guarantees or options), and importantly the amount and structure of the debt being raised itself. This said, we observe that investors appear to have little difficulty in contemplating an advance rate of about 50% to 55% of a pool's VIF, bearing in mind that the discount rate used to calculate the net present value of future profits (the VIF) needs to be an appropriate one. Group support 29. Individual insurers often form part of a larger financial services group. When this is the case, a question always arises concerning the degree to which the strength of the wider group may be brought to bear to support a relatively weaker subsidiary or its obligations. Scenario Testing For Life Securitization 30. When assessing the resilience of cash flows, general and specific considerations are taken into account. General considerations include reputational risks affected by possible mis-selling risk or other adverse media coverage. Specific considerations include the unique mix of business being securitized. A cash flow model of the underlying asset pool is required, which can incorporate the

effects of the salient risk parameters at the block and intra-block level. This can be achieved either by stressing a life insurer's actual electronic policy ledger system and extracting the cash flows or by stressing an actuarial cash flow model built by an independent actuarial consultancy--to see the effect of the debt or stressing. 31. On each policy block, each of the mortality, morbidity, persistency, and various investment risks is independently stressed in turn to establish the salient boundaries where cash flows fail to satisfy policy holder obligations. Simulated effects for stock market crashes and actual surpluses affected by investments on the same block of savings policies demonstrate how reduced cash flows can be generated. The directional effect of each risk on the particular block of policies is noted. The effect is measured in terms of number of standard deviations from the result in the company's base case. The proposed debt structure is overlain to determine the burden of the debt service obligation. Next, intra-block stresses are run on particular sub-segments of the block to determine the effect of increased (or reduced) mortality etc., for example, a sub-segment might involve a block of term-life policies of male smokers under the age of twenty-five. This intra-block stressing determines the effect on the cash flows from particular bifurcating blocks and establishes a sensitivity prioritization for the particular business mix. A series of combined, time-focused stress scenarios are then actuarially determined for each rating category and the portfolio is re-run to determine which tests pass and which fail, when the proposed debt repayment and servicing requirements are included. 32. Notwithstanding the front-end strain mentioned earlier, we consider a small portion of new business (not yet written) to be included in a securitized pool (open portion) so long as the new business mix satisfies stringent guidelines similar to those of the modeled existing pool and this new business is acquired within one year of the launch of the securitization. The theoretical amount of debt (analyzed by iteration) that can be raised for a particular repayment structure can then be determined from observation of the series of passing results at different rating levels. It is worthy of independent note that the proposed debt structure does have a strong effect on both the sufficiency of cash flows to fund long-term policyholder obligations and the short-term volatility impact on cash flows that may affect early-term servicing and repayment of the debt. In traditional cash flow terms, the amount of debt securitized must therefore satisfy both debt service coverage ratios (DSCRs) and long-term policy life cover ratios. In addition, loan life cover ratios (LLCRs) may help establish sufficiency of coverage where transactions are to be wrapped by a financial guarantor. Chart 5 Chart 6 Related Criteria And Research Principles Of Credit Ratings, Feb. 16, 2011 Interest in Life Insurance Securitization Heats Up, Oct. 23, 2001 Appendix 1: New Business Can Delay Profits (Commentary Text From Sept. 30, 2004, Included In The Original Criteria Article) "New business strain" The capital-intensive nature of numerous long-term life products is central to much of the innovative thought now to be going into insurance capital management. The problem is that even good business brings with it a so-called "new business strain." This strain occurs when the cash received and the initial margins being taken as profit by the insurer on a new contract are considerably lower than the cash being paid on sales commissions and administration as well as the non-cash flow accounting expense of establishing an initial mortality reserve. The effect of these costs is that even attractively priced, good-quality new business can generate accounting and cash flow losses for the insurer and which can often persist for the first three to six years of a policy (see chart 6 (chart 1 in the original article)). Meanwhile, the accounting profits and cumulative cash flows on the contract start to become positive and apparent only in the medium-term, as the build-up of charges and premium receipts offset and eventually exceed the initial deficit. Consequently, any insurer that is a new entrant to the marketplace or an established player that is particularly successful in generating substantial, new life business can easily end up reporting accounting results and solvency margins that appear significantly worse than those visible in the accounts of peers who have a mature, profitable book involving relatively little new business. Chart 7 New business strain is not the only problem that a life insurer has to face. Even as the new business strain on a given contract is covered over time by ongoing premium receipts and profit margins, the amount of capital required to support that contract meanwhile increases. The reason is that the regulators define minimum amounts of solvency capital that need to be set against the liabilities relating to each type of policy, a compulsory capital allocation that can rise to 4% of the mathematical reserve liabilities on the more risky classes of business. Reserve liabilities are formulated not only against the growing level of accrued, guaranteed, annual bonuses to be paid at maturity but also in respect of the

mortality risk. As life policies routinely run for decades, the liability represented by accrued guaranteed bonuses and mortality reserves can continue to escalate even for an insurer that has ceased to write any new business. The nature of recapture after the new business strain is different over the long-term between term-life and life-savings policies, as shown in charts 7 and 8 (charts 2 and 3 in the original article). Transfer of risk through securitization Consequently, new business strain and regulatory solvency requirements constitute formidable barriers to entry and exit in the life insurance sector, and they represent a continuing financial burden for insurers even when blocks of business are in run-off. When general levels of capitalization fall towards the regulatory solvency minimum, there is a risk of active regulatory intervention in the insurer's operations, which can cause the company to cease writing profitable new business. It is this proximity to the regulatory solvency minimum that obliges sometimes painful remedial action. And it is against this backdrop that the securitization of life insurance blocks is emerging as a viable means to transferring risk away from areas relying on the insurer's capital base. Most life companies have at least two financial issues--new business strain and regulatory solvency requirements--that are potentially well-suited to structured solutions given the strong, reasonably predictable future cash flows that are inherent in any large pool of averagely priced life insurance policies. To date, two life companies in the U.K., National Provident Institution (NPI) and Barclays Bank PLC, have undertaken securitizations. The first occurred in 1998 when NPI securitized part of its "value of in-force" (VIF) and the second in 2003 when Barclays Bank merged its two life businesses, Woolwich Life Assurance Co. Ltd. and Barclays Life Assurance Co. Ltd., into New Barclays Life and securitized the surplus emerging. The future of securitization in the U.K. life insurance sector Although any conclusions concerning life insurance securitization must take account of how few transactions have actually come to market either in the U.K. or in Europe as a whole, the potential nonetheless remains high for the increased use of securitization solutions. Given their depleted solvency levels following the equities market decline in 2003, a number of U.K. life insurers now have the need as well as the mechanism to de-risk their balance sheets and improve capitalization, potentially by packaging seasoned blocks of policies and their associated cash flows in a securitizable manner. Indeed, securitization may be of most interest to the growing number of insurers who have pulled out of certain lines of business, such as with-profits plans, and placed the associated, long-term liabilities and their cash flow funds in an orderly run-off. Moreover, current indications are that insurers are starting to consider some very different types of securitization. Catastrophe bond securitizations are already common, whereby the occurrence of a defined level and type of catastrophic loss allows the issuer to capitalize rather than pay back the proceeds of the bond, in effect treating such proceeds as a reinsurance recovery. Although catastrophe bonds normally relate to property losses, Swiss Reinsurance Co. has sponsored a life sector equivalent – the December 2003 $400 million Vita Capital Ltd. notes – by which noteholders would lose their capital in the event of pandemic, war, or other event causing Swiss Re to incur 800,000 or more cumulative death claims over and above actuarially expected levels across a given set of countries over a fixed period of time. It therefore seems that there is considerable potential to harness the established concepts of structured finance and to apply them to new issuers, new classes of business, and new investor bases. Yet certain industry-specific considerations remain constant. In particular, as a regulated industry, insurance is subject to regulatory intervention of varying degrees of implicit or explicit severity should the authorities ever come to consider that the best long-term interests of policyholders are being compromised. Nevertheless, regulators in most countries aim to operate on the basis of consensus and balance, and usually recognize that ongoing, diversified forms of access to the capital markets is a support to the long-term financial strength of the insurers over which they have oversight responsibility. However, in times of severe stress, regulators might not hesitate to set aside any structure, transaction, mechanism, or agreement that risks undermining the position of insureds relative to investors, whether shareholders or noteholders. In other words, in primary insurance (but perhaps less so in secondary insurance, i.e., the wholesale world of reinsurance), investors must always assume that they are subordinate to the proverbial "widows and orphans" as policyholders, the protection of whose interests must always constitute the regulators' primary concern. Appendix 2: Change History We originally published this criteria article on Sept. 30, 2004. We republished this article following our periodic review completed on Dec. 28, 2016. As a result of our review, we updated criteria references and contact information.

Previous Editor's Note: (We republished this article following our periodic review completed on Dec. 29, 2015. As a result of our review, we deleted commentary not relevant to the criteria, including references to historical transactions in paragraphs 4, 14, and 15, causing us to update the chart numbering. We included paragraphs numbers, and updated the article title from "Survey of Life Embedded Value Securitization in the U.K." We also updated the contact information for the criteria officers. This criteria article, along with "Regulation XXX Structured Solutions," published Dec. 15, 2004, superseded "Securitization Of Future Emerging Surpluses On Life Insurance Policies," published Sept. 30, 1998.) We deleted the reference to "The Role of Regulation and Government Support in Rating European Corporate Securitizations," Oct. 4, 2004, from paragraph 2 and the Related Criteria list, because this criteria article is no longer current. All criteria and related articles are available on RatingsDirect, our Web-based credit analysis system, at www.ratingsdirect.com. The criteria can also be found on our Web site at www.standardandpoors.com.