Article Title: ARCHIVE | Criteria | Insurance | Specialty: Standard & Poor's Introduces Criteria for Insurance Securitizations Data: Over the past few years, the financial community has created an entirely new class of security that bridges the gap between the insurance industry and the capital market. These so-called CAT bonds, or "Act-of-God bonds," have been used mainly by insurers to create a financial hedge against the costs of catastrophe losses. However, the techniques involved can be adapted for other insurance risks, much as the entire class of CAT bonds can be viewed as merely an evolution from asset-backed securities and other types of asset securitization transactions. How the Transactions Typically Work Normally, insurers transfer risk in excess of the amount they are willing to accept to commercial reinsurance companies, and the emergence of structured insurance transactions may not reduce the role of reinsurers in the insurance business. Nevertheless, due to the vagaries of the reinsurance/insurance company relationship, many insurance companies wish to develop an alternative to traditional reinsurance. Similarly, it can be noted that reinsurers can either play a part in these transactions or can also use structured techniques to help diversify or reduce risk from their insurance book. In most of the structured insurance transactions that have been sold to date, the transaction features a special-purpose reinsurer (SPR) that acts as the centerpiece. The reinsurer was originally set up to perform one transaction only, although we anticipate that in future transactions the SPR will be used for multiple transactions. That transaction will be to accept risk from an insurer in excess of the amount it wishes to retain. When the reinsurance treaty has been agreed on by both parties, the insurer will have an asset, the potential reinsurance recoverable from the SPR, which it might wish to sell to another party. The securitization and sale of this asset is how these transactions are created. Using what has become standard structured finance technology, the SPR will raise funds in the capital market. These funds, or a portion of them, will be used to secure the reinsurance contract the SPR will enter into with the insurer in question. The investors will receive a coupon based on the premium the insurer pays for its reinsurance (plus other fees). If no covered event occurs, the investors receive their coupons to reward them for the assumption of risk. If a covered event occurs, the investors stand to lose all or part of their investment in the transaction. Typically, the coupon has been significant, in keeping with the degree of risk in the transaction. In cases where the rating only addresses principal payments, Standard & Poor's will highlight such ratings with the 'r' symbol to denote that the rating does not address coupon payments. In some cases, to make the offering attractive to certain investors, the transaction will be structured with more than one tranche (one or more as described above), which include full risk transfer aspects, and the other, commonly referred to as the senior tranche, in which the investors' stake is fully protected. In the fully protected tranches, a portion of the proceeds of the bond issue is invested in zero-coupon treasuries, which in a number of years (commonly 10) will mature at the face value of that portion of the offering. Thus, on this tranche, if no event occurs, the investor receives the higher coupon to compensate it for the assumption of risk (although at a level lower than a full risk transfer tranche), and if the event does occur, the investor will get his or her full principal back, but the security will be extended in maturity. Naturally, there can be many variations on this basic theme, but after about three years of transactions, this description fits in a general way the types of transactions we have seen that have successfully been sold in the capital markets. The Four-step Process Standard & Poor's Uses to Evaluate and Rate CAT Bonds Step 1: Evaluation of the structure. As with all structured finance transactions, we spend a great deal of time evaluating the structure of the transaction. We will take into consideration the legal documents that govern the operations of the SPR and other trusts and entities that are part of the transaction. Key issues are: 1) the legal basis of the SPR, i.e., does it have the legal authority to transact the business at hand, and are its contracts enforceable?, 2) the control of funds, i.e., at all times funds must be invested only in permissible investments, and 3) the process for evaluation of a valid claim, i.e., normally a modest period is allotted after the final maturity of the security (typically six months) for all claims to be presented, and even then, the claims must be validated by a responsible third party. In addition, our analysts will analyze the structure of the transaction to determine and verify that all parties will receive all funds due them when those funds are expected, and that no legal impediments exist to inhibit the free flow of funds. It is also important that these contacts are not legally defined as insurance contracts so that purchasers might be deemed to be "insuring" others. When analyzing the structure, we review the process by which the interest component is calculated. We must be comfortable that the

interest to the noteholders is calculated in an independent, reproducible, and verifiable manner. The interest payment often is made out of the available net income of the SPR calculated in accordance with U.S. GAAP standards. Available net income is often defined as the premium income (i.e., the premium paid by the subsidiary to the SPR for the reinsurance policy) plus investment income on the securities pledged as collateral under the treaty, minus underwriting losses and expenses. All items in this calculation are either fixed in dollar terms or as a percentage of the premium income, except for the incurred but not reported (IBNR) component of the underwriting losses. All property/casualty companies must estimate losses that have been incurred but may not yet have been reported. These can be losses that might occur on the last few days of an accounting period, or those that may not be manifest for many years. A major concern to Standard & Poor's in regard to the IBNR component is that it may not specifically meet our criteria of independence. If the IBNR is set by the insurance company,the concern is that it may have an incentive to inflate the IBNR estimate, thereby reducing the interest paid to the noteholders. Standard & Poor's can be comfortable with the IBNR's independence aspect in some instances because of the quota share nature of a treaty. In addition, the motivation for doing the securitization in the first place is to create greater capacity in the traditional reinsurance market. Note, to the extent the IBNR is overstated and such losses reported, the available capacity under the treaty may be reduced on a dollar-for-dollar basis. Furthermore, the IBNR calculation may not reduce the amount of interest paid to the noteholders. Rather, it may merely defer the interest to the final payment on note maturity. Second, it is important that the calculation of interest payments must be reproducible by an independent party. Clearly, the insurer will establish the IBNR component, but once that is done, the calculation of interest must be transparent. Finally, the calculation of interest must be verifiable. Outside parties, using the same information, should be able to verify that the calculation of interest is accurate. The ceding insurer must be rated at least as high as the debt because often the annual premium payments (which would be invested in permitted investments) are used to pay a portion of the interest payment to the investors, hence the investors have a credit interest in the insurer. Over the past 20 years, structured technology has been evolving in many areas and Standard & Poor's experience in both those areas and insurance analysis is invaluable in evaluating these new securities. Step 2: Evaluation of the model. For catastrophe bonds, the underlying credit risk is the risk of a catastrophe of a given size occurring. Over the past 10 years, the science of catastrophe modeling has made great strides, and there are now several firms in business with a very good record in estimating the losses from catastrophes. Because Standard & Poor's rates many insurers all over the globe, we have had numerous opportunities to become familiar with these modeling firms and their models. However, when we are using the outputs of the models to evaluate an insurer that often has other business risks and opportunities, we tend not to dwell on the results of the model. Rather, we use a process that captures all the risks of an insurer and weighs those against assets, including the asset of being a going concern. In the case of a CAT bond, however, the risk is narrowly defined as the risk of an insured catastrophe loss of a given size occurring, or not. In this case, it makes sense to use the latest technology to evaluate this risk, but we cannot depend solely on the modeling firms' reputations. Our process is to evaluate the model in significant detail, identifying each of the parameters the model incorporates, and making sure no material parameters are overlooked. For instance, early hurricane models did not incorporate a phenomena referred to as "demand surge." Yet, we know from bitter experience that when a very large catastrophe occurs, the surge in demand often results in a 15% to 20% increase in the cost of all raw materials needed to effect the recovery. Models that do not incorporate demand surge will likely be 15% to 20% inaccurate in their estimates. In addition, modeling firms do not always make conservative assumptions when data is incomplete. Frequently, these models can evaluate 25 to 50 different parameters, thus, the evaluation of the model entails a great degree of scrutiny and expertise to make certain that the appropriate risks have been incorporated in the model. Step 3: Stress-testing the model. Once we have determined that the model does indeed take all material risks into consideration, we must evaluate how well the model incorporates each risk. Frequently, the models use a probability distribution to simulate the differing outcomes that can be expected for each parameter. Often that probability distribution is assumed to be a symmetric distribution—equally likely to be high as low. This makes sense for the normal uses of the models. When the models are used in the normal course of a negotiation between an insurer and its

professional reinsurers, the model ought not favor one over the other. However, in the structured insurance risk transactions, one of the parties to the transaction, namely the investor, is often not an informed party about the intricacies of catastrophe modeling. Thus, we feel it more appropriate to skew the model slightly in favor of the investor. We feel that this is appropriate because the insurer on the other side of the transaction can be expected to be fully informed about its risks, and this skewing of the model is necessary to even the relationship. We effect such changes by asking the modeling firm to "stress" its model, i.e., if demand surge of 15% is included in the model, we might ask that it be run again with a 20% demand surge, etc. In other cases, the model as run by the modeling firm might use a statistical confidence level of 90%, whereas we might ask for a confidence level of 99%. Step 4: Evaluation of cash flows/default risk. Once we have recalibrated the model to be appropriate to the risks involved in the transaction, the output will be a probability that a covered event will reach the attachment point of the reinsurance treaty. For instance, in 1997's Residential Re's $477 million offering, the reinsurance treaty stipulated that only covered losses in excess of $1 billion were transferred and covered by Residential Re. What was the probability that losses in excess of $1 billion would be incurred? According to the initial runs of the Applied Insurance Research (AIR) model, that probability was about 0.90%; however, after we stressed the model, the probability was more like 1.6%. According to our research, such a default probability is similar to the probability of a 'BB' rated security defaulting within one year. As a result, we rated that security at the 'BB' level. Our final rating took into consideration the initial AIR model and its result, the stressed model's result, the credibility of the data input into the model, and our general concerns about Murphy's Law (if anything can go wrong, it will) and, as a result, rated the principal exposed tranche at 'BB'. The security was sold with a coupon 560 basis points above the risk-free rate, which indicates that pricing is not yet efficient in this market and that investors are not totally comfortable with catastrophe risk on their balance sheets and as such want to be compensated. It can be noted that the 1998 Residential Re deal traded at about 400 basis points above the risk-free rate for similar risk, which is tighter, but still above where 'BB' securities were trading at that time. It is also interesting to note that in the recent volatile markets, where spreads have widened on vanilla corporate bonds, the spreads on CAT bonds have not widened correspondingly, which indicates that these securities may not directly correlate to other assets in the portfolio. As with all securities, other issues that could affect the spread would be the liquidity of the market at the time, the liquidity or perceived liquidity of these securities, the appropriateness of these securities for investors' portfolios, etc. For securitized insurance risk transactions involving earthquake risk, we are slightly more conservative than in our approach toward windstorm risk. This is because the science of evaluating and quantifying earthquake risk is not as well-developed as for windstorm. Based on our considerable experience with insurance company catastrophe exposures, we believe a 1-in-250-year type of earthquake event is consistent with a 1-in-100-year windstorm. Recovery Values Standard & Poor's approach to usage of recovery values is frequently misunderstood. Although we evaluate and take into consideration the recovery values that may be inherent in a securitized insurance risk transaction, we believe our main focus is -- and ought to be -- the probability of a default. Similar to other assets in an investor's portfolio, the rating addresses the probability of losing a single dollar. If, for instance, a CAT bond indemnified an insurer for up to $100 million of loss in excess of a $600-million threshold, we believe the most important information we can provide the investor is the probability of the insured loss's exceeding $600 million. Of secondary importance is whether the total loss is $601 million (in which case, the investors lose $1 million of principal) or $700 million (in which case, the investor loses all the principal at risk). Clearly, the first risk is preferable to the second; however, the experience has been that once these catastrophes occur, it is impossible to contain the loss, and the dollar loss is frequently greater than anticipated. Some analysts combine the probability of default with the recovery value anticipated to create an expected loss value. They then proceed to compare this expected loss with a table of net corporate defaults. To the extent that structured insurance risk transactions have recovery values similar to recovery values for senior unsecured corporate bonds (which average about 43%, according to our analysis), incorporating recovery values will not yield materially different expected losses or ratings. However, if structured insurance risk transactions have materially lower recovery values, then incorporating the recovery value into the default risk statistics will understate the default risk. Further, if actual recovery values are lower than expected (which has often

been the case in recorded catastrophes of recent years), the actual default rate will, in fact, be higher than anticipated! By focusing on the default risk separately, Standard & Poor's analysis presents a more accurate picture of the credit risk inherent in these transactions. This allows a portfolio manager to more consistently evaluate the risks of these bonds with other assets in the portfolio. The Likely Future Evolution of This Market The success of these early offerings has really only proven that these types of securities can be created, and that, at a price, there is a market for them. Currently, the price is not too competitive with traditional reinsurance. However, the traditional reinsurance market is notorious for its cyclicality. Indeed this has been one of the motivating forces behind insurers' desires to create such securities. Thus, when the price for risk transfer reinsurance rises, which it inevitably will, this form of risk financing will likely become a commonplace tool used by insurers and reinsurers to manage their exposure to catastrophe losses. Moreover, as the capital market has become comfortable with these securities, it has asked for more product, so a diversified portfolio can be assembled. Investment bankers and insurers are currently hard at work creating such structures, and we at Standard & Poor's are keeping pace so we will be able to rate such structures as they are developed. Insurance Risks Securitizations Approximately 35 structured insurance risk transactions have been completed over the past several years. We can break these transactions into six segments as follows: 1. Ground-breaking transactions. These transactions were completed early in the process and, although they seem somewhat simple compared with today's transactions, they laid the groundwork for those more sophisticated transactions to be completed. Among the first of these types of transactions was the Nationwide Mutual Insurance Cos.' Contingent Surplus Notes issued in 1995. In this transaction, Nationwide, a mutual insurance company that might have some difficulty borrowing money in a timely manner in the aftermath of a catastrophe loss, set up a trust that borrowed $400 million in the capital markets. The trust's sole purpose was to stand by to purchase a surplus note from Nationwide that would be issued when Nationwide incurred a catastrophe loss or certain other events. In the meantime, the trust invested its assets in 'AAA' rated securities and incurs a small spread loss, which Nationwide covers. This was the first publicly placed security in which the capital markets were allowed to invest, even indirectly, in specific insurance company catastrophe exposures. It made the capital markets aware of this type of security and signaled the capital markets' interest in financing these risks. 2. Hybrids. Shortly after the first of the above type of transaction was created, several organizations created securities that attempted to bridge the gap between a normal security and the yet-untested insurance securitizations. The best-known of these were the CatEPuts issued by several companies under the auspices of Aon Capital Markets, which trademarked the concept. In a CatEPut, the investors buy a Put from an insurance company. Under certain circumstances, the insurance company has the right to "put" common or preferred equity to investors. If the predefined catastrophe loss would occur, the insurance company involved is assured of fresh equity from the investment community. Although these structures did not really involve risk transfer, they did serve to broaden investor awareness of this risk. 3. Straight securitizations. In 1996 came the first of the true securitizations, with a one-to-one relationship between an insurance company selling its risk above a certain level to the capital markets. The best illustration of this type of transaction were the two securitizations sold by USAA in 1997 and 1998, each for approximately $500 million of risk. In these cases, the risk being transferred was the risk of one insurance company and the investors were participating in excess of a $1-billion loss incurred by that insurance company. USAA retained 5% and 10%, respectively, of those losses. These transactions served to truly get capital markets investors into the business of accepting catastrophe risks from insurance companies. Because of the excess spread involved in these transactions, the capital markets found them to be very attractive. In fact, both Residential Re I and Residential Re II were oversubscribed. 4. Portfolio securitizations. Gradually, the concept of securitizing catastrophe and other insurance risk through this type of structure became much more acceptable in the marketplace, and certain reinsurance companies chose to use this methodology to securitize a portion of their portfolios. The first illustration of this was St. Paul Reinsurance Co., which securitized approximately $68 million in late 1996. In 1998, Swiss Re thrugh Swiss Re New Markets floated several issues securitizing portions of its portfolio. 5. Transformers. In 1998, several investment banking firms set up reinsurance companies. For example, Lehman Re was set up by Lehman Brothers and Arrow Re was set up by Goldman Sachs. In these cases, the banks are

attempting to augment their ability to sell insurance risk into the capital markets. The investment banks have a very good relationship with the capital markets and have ample buyers of these securities at this point. However, their main concern is obtaining enough risk from insurance companies. Rather than force insurance companies to enter into complex structured finance transactions, Lehman Re and Arrow Re will be able to offer insurance companies a traditional reinsurance contract. However, the clear purpose of the reinsurance relationship will be to build a portfolio at Lehman Re and Arrow Re that will be securitized into the capital markets. By "transforming" reinsurance risk into capital transactions, these companies expect to be significant players in the reinsurance and insurance securitization businesses. 6. Modern securitizations. Finally we have come to the modern era in insurance securitizations. Bankers are trying to use more sophisticated and accepted structured finance techniques for insurance securitizations. If successful, they will be able to make these securities much more acceptable to a large portion of the capital markets. And they may offer companies solutions not currently available in the reinsurance market.