

THE RISE AND FALL OF THE MONOLINE/BOND INSURERS: ICARUS OF THE 21ST CENTURY

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Abstract

The financial meltdown that began in 2007 revealed the problems with monoline/bond insurance. Bond insurers, whose business models are dependent on a AAA-credit rating, were exposed to risks that threatened those ratings. Specifically, these insurers had four sources of risk: increasing the proportion of structured finance in the insurance portfolio, increasing the proportion of structured finance in the investment portfolio, selling credit default swaps, and providing guaranteed investment contracts. These exposures provided a mix that became toxic once the structured finance market faltered and their credit ratings fell. We review the prior academic literature on monoline/bond insurance, and provide an account on the rise and fall of the monoline/bond insurers including a case study on the survivors. We examine the history, risk exposures and the regulatory framework of these insurers and the future post the 2008 crisis for bond insurers.

Introduction

Financial guarantee insurers, more commonly referred to as bond insurers, became intertwined with the economic crisis of 2008 primarily due to four strategic decisions. Firstly, these insurers wrote bond insurance to enhance the quality of the super-senior tranches of collateralized debt obligations, most notably those backed with residential mortgages. Secondly, some of these insurers participated as counterparties in credit default swaps, selling an assurance of payment to the buyer of a swap if the credit quality of a collateralized debt obligation deteriorates. Thirdly, these bond insurers sold guaranteed investment contracts to the municipal bond or structured finance security issuers in cases in which the issuer did not require all the proceeds initially. Finally, these insurers invested in both municipal bonds and structured finance. In fact, some invested quite heavily in bonds that they insured, including collateralized debt obligations backed by residential mortgages. In all of these decisions, adverse selection and moral hazard significantly aggravated the risk to these insurers. Moreover, the regulatory framework applied to oversee was not adequate to monitor bond insurer operations, capital adequacy, and risk. Financial guarantee insurers, also known as bond insurers or monoline insurers, have operated in relative anonymity until the deterioration of the financial markets in 2008, precipitated by defaults in the subprime mortgage market, pushed these firms to the limelight. These firms were the earliest victims of the 2008 financial crisis melt down beginning in the summer of 2007. Historically, financial guarantee insurers (monoline insurers) have operated in a largely ignored, but profitable, line of insurance. Regulators and investors underestimated monoline insurer's increased risk from expansion into correlated product lines, as well as the effect and extent of their dependency on credit ratings. The purpose of this paper is to review scarce academic literature on bond insurance and the operations and regulations of bond insurers. This paper attempts to determine how they evolved from the highest performing, most solvent property/casualty insurers to their quick demise during the 2008

financial crisis. We examine whether these bond insurers had sufficient capital to support their activities, and we explore the adequacy of the monoline insurance regulatory framework. We also study the extent that moral hazard and adverse selection may have contributed to the decline in bond insurers' financial condition.

We organize the paper as follows. In section 2, we provide a literature review and an overview of the bond insurance industry including a history of the significant events that shaped the industry. In section 3, we discuss the monoline insurance regulation. In section 4 we discuss the key players and their exposures. In section 5 we discuss what happened during the 2008 financial meltdown. In section 6, we discuss policy implications. Finally, in section 7 we conclude the study.

Monoline History

A (monoline) bond guarantee insurance company promises to make payments associated with the insured security over the lifetime of that security for a specified fee. The debt issuers of a structured financial product may decide to obtain such insurance; From the point of view of the debt issuer, this insurance is advantageous to the extent that it makes the security issued safer and thus lowers the interest payments required by investors in such a security. The bond insurance or monoline insurance sector consisted of nine main firms. They are MBIA, Ambac, FSA, FGIC, SCA (quoted as XL Capital Assurance), Assured Guarantee, Radian Asset Assurance, ACA Financial Guarantee Corporation and CIFG. Most companies were based and supervised in the US states of New York or Wisconsin, while there were also subsidiaries and similar companies in Europe, including in the United Kingdom and France, with pass porting rights in the case of other European countries. Thus, while the sector was largely based in the United States, its business was international. In this context, about one fifth of the business reported on the balance sheets of the nine main firms were qualified as international, and securities guaranteed by financial guarantors were held in portfolios around the world. The business model of bond insurers is to guarantee the servicing of the bonds or asset-backed securities they insure or "wrap", thus effectively lending their high credit rating to less creditworthy debt issuers for a fee. Hence, the credit ratings of bond insurers are crucial to their business model and traditionally most bond insurers held the highest triple-A rating from the three major rating agencies Moody's, Standard and Poor's, and Fitch Ratings. In addition, to reduce the likelihood of the occurrence of the risk that the debtor defaults, the bond insurer assists in the structuring of the debt issues, insisting on various covenants that provide a variety of rights and remedies available to the bond insurer to address issuer or servicer financial problems or deteriorating asset performance. Moreover, the bond insurer monitors the performance and alerts the issuers in situations when servicing difficulties may arise. Moreover, in some cases, the bond insurer intervenes - in advance of actual claims - to transfer servicing, redirect cash flows or enhance the coverage of insured securities to improve performance or mitigate losses. Refer to Table 1.

While bond insurers typically retain most of the risk that they underwrite, they use reinsurance selectively, although much of that reinsurance occurs within the bond insurance sector (thus limiting the protection to be had for the sector as a whole). Traditionally, the business of bond insurance was confined mostly to guaranteeing bonds issued by municipalities. Bond insurance is acknowledged to have begun in 1971 with the insurance of a USD 650 000 obligation bond for the Greater Juneau (Alaska) Borough Medical Art Building. By 2003, almost half of all municipal bonds issued in the United States were insured. Moreover, defaults were very limited in

municipal bonds, allowing the bond insurance companies to operate with very a very thin capital bases. Subsequently, however, in response to the increasingly competitive conditions in the municipal bond insurance sector, bond insurers began to increase their exposure to risk in structured financial products. In addition, there was a regulation change in the United States in the late 1990s that facilitated bond insurers to expand beyond their specialty business of insuring municipal bonds to the areas of more complex structured financial products.

Over the past few years, bond insurance have played an increasingly important role as both protection sellers in asset-backed structured products and leveraged synthetic structures (mostly CDOs) and as providers of secondary guarantees for certain structures. While the regulatory capital base of bond insurers has grown over the past few years, this growth rate was eclipsed, by that their structured finance business. The relative involvement in this type of business differs across individual companies, however. The insured or “wrapped” part of the CDO attains the credit rating of the financial guarantor, which is typically higher than the shadow ratings of the securities for which the guarantor provides the payment guarantee. The shadow rating is determined by the credit rating agency. It is not published by the agency unless the debt issuer specifically requests or consents to its publication. It is based on the credit quality of the underlying CDO assets. Essentially, bond insurance is similar to other credit enhancements embedded in the structure of CDOs, such as diversification, over-collateralization, cash-trapping triggers and subordination.

Literature Review

The Bond insurance literature is sparse and plagued by unavailable data issues. Early research by Thakor (1982), develops a model where issuers’ purchase of bond insurance signals their underlying credit quality. Nanda and Singh (2004) show a tax-based explanation for the existence of bond insurance: the insurance allows indirect tax arbitrage, with the insurer maintaining the tax-exempt status of the interest payments to the investor in the event of an issuer default. Denison (2003) empirically analyses which issuers elect to issue bonds with bond insurance and shows that lower-rated (BBB) issues are much more likely to be sold with insurance. Moreover, issuers in markets that are ‘crowded’ with issues from the same state are likely to be sold with insurance. The results are interpreted as suggesting that insurance is purchased to make bonds attractive to a wider audience and reduce market segmentation. Gore, Sachs, and Trzcinka (2004) investigate the relationship between municipal financial disclosure and bond insurance, comparing the low-disclosure state of Pennsylvania with the high-disclosure state of Michigan. They show that bonds in Pennsylvania are more likely to be sold with bond insurance and bond insurance substitutes for enhancing the attractiveness of municipal issues. Butler, Fauver, and Mortal (2008) investigate patterns of municipal corruption, and find that higher corruption levels are associated with lower-rated bonds, higher yields, and greater use of bond insurance. Butler et al (2008) and Gore et al (2004) shows that bond insurance is used to enhance the attractiveness of municipal debt issues to counteract either financial opaqueness or potential corruption on the part of the issuer. Neale and Drake (2009) trace the history of the bond insurance industry and, using MBIA (a bond insurance company) as a case study, construct a narrative for the industry’s struggles during the 2008 crisis based on exposure to housing-related structured financial instruments. Martell and Kravchuk (2009) focusing on 58 bonds from July 2008 to May 2009, find that the creditworthiness of the liquidity provider has a significant impact on the bond spreads, but that the credit quality of the bond insurers for the instrument does not. Gorton (2009) describes

a mechanism by which changes in insurer creditworthiness explain the market valuation of the underlying security.

Insurance Regulation

Throughout the 1970s and 1980s, bond insurer's played an important role in the market for municipal bonds, especially in the face of significant defaults including the Washington Public Power Supply System default in 1983. Bond insurer's insured up to 50 percent of all municipal bond issues in some years. However, in 2008 the lowered credit rating of bond insurers increased concern over the value of this insurance, resulting in a decline in the demand for municipal bond insurance. Only 18 percent of municipal bonds issued in 2008 were insured.

According to the New York Department of Insurance (NYDOI), all bond insurers are either domiciled or licensed to do business in the State of New York. The regulation of bond insurer's is determined in large part by the State of New York. In 1989, the State of New York passed laws specifying that financial bond insurers must operate as monoline insurers. In other words, multi-line property and casualty insurers cannot sell bond insurance. The purpose of this monoline requirement is to restrict the practices of bond insurers, but also to clearly delineate between surety, fidelity, and financial guarantee lines of insurance. Though considered monoline insurers, these insurers have diversified their risk by expanding from providing credit protection solely for public finance to providing credit enhancement for structured finance products. Structured finance products include collateralized debt obligations (CDO) and consumer receivables. Permissible guarantee insurance includes many types of financial guarantees, including default of the obligor of municipal bond issues, corporate obligations. This is encouraged by New York's Appleton Rule, which when applied to the requirement of monoline financial guarantee insurers, prohibits a multiline insurer from writing any insurance in New York if it writes financial guarantee insurance outside of New York [New York Insurance Law, Article 11]. Refer to Table 1.

Many states follow this requirement of monoline bond insurers. However, some states, such as Florida, also permit other property and casualty insurers to write bond insurance if certain conditions are met [Florida Statutes §627.973(2)]. In 2004, the NYDOI revised the insurance code so that insurers could insure CDO-squared securities. A CDO-squared (CDO²) is a collateralized debt obligation with tranches of *other* CDOs as the underlying asset. This revision in the code widened the range of insurable securities to include riskier structured finance products. Eventually, CDO's even more complex, backed by CDO's re-packaged creating extremely complex instruments were allowed to be insured.

The pricing of bond insurance reflects the long-tail nature of this insurance: if an insured bond defaults, the insurer is responsible for the interest and principal repayment on the insured security. The loss on any defaulted security is therefore the present value of these commitments. Historically, bond insurers have collected premiums on the bond insurance that outweighs the losses, resulting in a profitable line of business. The enlargement of the insurance portfolio to include structured finance products adds another long-tail line, but specifically on the structured portfolio. The insurer provides insurance to "wrap" the super-senior and senior tranches, but not the entire set of tranches of collateralized debt obligations. As with all insurance products but specifically this product, the problem is that it is important for the premiums to reflect the risk associated with the security; if premiums are not sufficient for the risk, this will eventually affect the insurer's profitability. With CDS on CDOs, insurers were writing protection on very large notional amounts for very small premiums.

For example, in the Complaint filed by MBIA against Merrill Lynch, MBIA alleges that Merrill Lynch purposely misrepresented the quality of four CDOs in order to obtain very low premium payments, “averaging less than 8 basis points (0.08%) annually” for credit default protection of \$5.7 billion. At the time of the Complaint MBIA estimated they had “several hundred million dollars” in expected losses as a result. MBIA states that Merrill Lynch represented the CDOs as “backed primarily by “high grade” (credit quality at “A-“ or above) debt collateral” when the actual quality was below investment grade, with some assets being well below expected quality resulting in “day-one expected losses” to a product that MBIA priced based on a very remote chance of loss. Refer to Figures 1, 2 and 3.

Subsequently, the NYDOI permitted insurers to create special purpose vehicles (SPV) to accommodate selling CDS; these SPVs became the sellers of the CDS. Insurers sold CDS directly or through their SPV. Bond insurers used SPVs to guarantee CDS because SPVs permit more favorable contract terms and require little capitalization. In addition to payment default, these contract terms include payment triggers including bankruptcy, ratings downgrades, and restructuring. These triggering events are beyond the scope of the traditional bond insurance policy. Regardless of the structure that the bond insurer used, because the bond insurer is a guarantor of the SPV, the bond insurer was ultimately responsible for the CDS. Unfortunately, the use of SPVs reduced the amount of transparency in the bond insurers’ financial statements, resulting in limited disclosures around SPVs in many years.

Credit default swaps are often confused with bond insurance. However, bond insurance and credit default swaps differ in several ways. First, regulators do not consider credit default swaps as insurance, even though bond insurer’s report the proceeds from the protection sale as premiums. This is important because regulators are evaluating solvency from CDS the same as from bond insurance, even though the payout structures and underlying risk of These SPV entities were initially referred to as transformers and some FGIs referred to them as conduits. Specifically, SPVs could include some terms in policies that financial guarantee insurers were prohibited from using.

The NYDOI September 2008 letter is primarily concerned with the underwriting business of bond insurers and, beginning January 1, 2009, significantly restricts bond insurers’ ability to provide guarantees on CDS and insurance on CDOs. The NYDOI also advised that credit default pools, which it defined as a pool of CDSs, are similar to asset-backed securities and are therefore permissible. An opinion in June of 2000, by the NYDOI’s Office of General Counsel, which was part of the regulatory framework until January 2009, clarified that a CDS is not an insurance contract – and hence, is not subject to the same regulation as bond insurance – if the payment is not conditional upon a monetary loss. These rulings opened the CDS insurance market wider to financial guarantee insurers. NYDOI specified that a CDS was not an insurance contract and a CDS was not considered doing business as insurance.

New York State Insurance Department Circular Letter No. 19 dated September 22, 2008. The Association of Financial Guarantee Insurers report monoline insurers operate under a *zero-loss* or *remote-loss* underwriting model. Risk-based capital standards would examine bond insurers’ compliance with risk-based capital (RBC). However, the NAIC’s *2007 Overview and Instructions Forecasting Property and Casualty Risk-Based Capital* notes that monoline bond insurer’s, mortgage, and title insurers are not subject to these guidelines. The NAIC refers to the insurer’s state of domicile for questions regarding RBC and its applicability to exempt insurers. A review of bond insurers’ statutory annual statements from the past ten years verifies bond insurers do not report RBC estimates.

In essence, to summarize: In response to the 2008 crisis and the monoline insurer downgrades, the National Association of Insurance Commissioners (NAIC), the body for state insurance regulators in the US, announced that it would begin rating municipal bonds based on the creditworthiness of the localities issuing them rather than on the ratings of the bond insurers. In 2008, the New York Department of Insurance (NYDI) embarked on a rescue effort of most of the monoline insurers to permit their obligations relating to municipal bonds to remain viable. For example, in August 2008, MBIA Inc. reinsured a \$184 billion portfolio of municipal bonds insured by rival FGIC under a “cut through” transaction brokered by NYDI. The NYDI’s Circular Letter No. 19 imposed some limits on bond insurers that were effective beginning in 2009. Due to the extreme difficulty of pricing and valuing risk on several structured finance products, the NYDI now prohibits monoline insurers from insuring pools of CDOs that are composed of other CDO pools or any portion of other CDO pools, with some exceptions.

2008 Financial Crisis

The deterioration of the financial market affects both sides of bond insurer’s operations: underwriting and investments. State regulators limit the risk exposure of bond insurers’ investment portfolios somewhat in the states in which they do business. Under-writing aside, bond insurers have expanded their business in recent years giving them the direct exposure as credit insurers of structured financial instruments. Deterioration in the general financial condition of bond insurers resulted in further devaluation of insured securities, as well as triggered payments for CDS’s. Refer to Figures 1, 2, 3, 4, 5 and 6.

The deteriorating condition of bond insurers began to surface in the summer of 2007, when ratings agencies downgraded higher quality subprime residential mortgage backed securities’ (RMBS) tranches as a result of rising mortgage defaults. The number of unexpected mortgage defaults increased, the number of ratings downgrades of CDOs or their tranches also increased, leading to increased scrutiny of Bond insurers. Prior to its January 31, 2008 downgrade to AA, FGIC enjoyed a AAA credit rating. On November 24, 2008 their S&P rating had fallen to CCC and their Fitch rating to CCC-. Researchers argued that the default risk of the insurer affected the pricing of the insurance contract; a 1 percent increase in default risk resulting in a 20-30 percent lower price. Contributing to this is that the insured, in this case the bond issuers, found it difficult to diversify among insurers. In 2007, according to SNL Financial, the top four bond insurers capturing over 77 percent of the market consisted of Ambac Assurance Group holding 25 percent, MBIA Group 24 percent, Financial Security Assurance Group 19 percent and Financial Guarantee Insurance Company comprising the remaining 9 percent. Of these four insurers, only Financial Security Assurance Inc. retained its AAA rating from all three rating agencies in 2008. Refer Table 2.

Adverse Selection & Moral Hazard

The causes of the monoline/bond insurer market meltdown during the 2008 financial crisis was multi-faceted and complex. An inherent risk with any type of insurance is adverse selection. Some of the problem is due to hidden information that manifests in the form of adverse selection arising from information asymmetry when the insurer contracts with the investor or dealer. In structured finance products, the trust/dealer buys insurance so that the rating agencies rate the tranche’s securities as AAA. In this case, adverse selection from active information asymmetry

occurs when the loan seller/servicer misrepresents the quality of or does not provide full disclosure to the bond insurer of the assets comprising the CDO pool. The dealer has more information than the insurer regarding the pool of securities underlying the CDO, and has the incentive to overstate their safety. The insurer is at a disadvantage regarding information on the pool and therefore may not price the insurance correctly. Bond insurers do not usually assess all the thousands of underlying securities and the thousands of underlying loans of super-senior level CDOs. They instead rely on the arranger's representations of credit quality. However, it can be argued that bond insurers are informed participants in this market and as such, they should perform their own due diligence of the actual underlying assets during the underwriting process and not rely on broker/dealer representations and rating agencies reports. Residual information asymmetry arises because of incomplete knowledge of all involved parties as to the full extent of the risks, but the insured has a better understanding than the insurer. The inherent conflict of interest between insured and insurer also results in the additional problem of providing the insured an incentive to invest in projects with excessive risk in which they may not have otherwise invested in the absence of insurance. In other words, if the seller/servicer was unable to transform subprime and other residential loans into a marketable asset through securitization and insurance, it is doubtful that they would have continued to purchase these assets from the mortgage originators. The pricing of insurance for structured finance products and the pricing of credit default swaps are challenging. First and most basic, is the conflict of interest among, and the separation of, financial intermediaries that exists from the time the mortgage is originated to the time it is bundled in its final form and insured in a CDO or a CDS by the insurer.

The seller/servicer structures the asset-backed securities and has the incentive to use a large proportion of lower quality loans in these securitizations, passing the risk along to investors and insurers. Because bond insurers operate under a near no-loss underwriting standard, the seller/servicers have incentives to hide information or not completely reveal the composition of the asset pools or the risk of the underlying assets.

Second, another risk associated with structured finance products is risk of moral hazard. A securitized asset has an underlying pool of assets. In the case of mortgage-backed securities, originators sell these mortgages to dealers to package, resulting in moral hazard problems. When a lender loans money and holds the mortgage, the lender earns a profit through the long-term relation with the borrower. However, in the model of recent, when lenders originate-to-sell, they sell the loan to dealers, often without recourse. The ability to profit in the short-term from origination and then pass along the risk to others led to shoddy lending standards and documentation. The originators and dealers pass along this risk in the pipeline until investors and the insurers share these risks. The bond issuer generally pays a one-time fee to the insurer to purchase insurance on the bond and increase the bond rating to the insurer's credit rating level, until recently the highest or AAA level. If the bond insurer does not adjust the value of the bond investment to reflect this self-insurance then the investment asset value reported is too high. On the other hand, in the event of payment default by the issuer, the bond insurer has effectively reduced their exposure to these claims.

Survivor Story of the Monoline meltdown (Assured Guaranty)

The case study on Assurance Guaranty identifies in detail the key factors and best practices post and pre crisis that led to its survival as the market leader in monoline insurance. While Assured Guaranty has experienced significant loss claims arising from the financial crisis (primarily first-lien and second-lien RMBS), the company did not have high exposure to some of the worst

performing products, namely ABS CDOs. As its competitors collapsed and the industry suffered a severe contraction, Assured Guaranty emerged as the only financial guarantor in existence prior to the onset of the financial crisis still active in the marketplace. Five strategic moves made by Assured Guaranty during (and since) the financial crises were particularly critical to its ability to survive the crisis and position the firm as the market leader:

1. Conservative Underwriting Practices: Pre-crisis Assured Guaranty followed conservative and prudent underwriting practices compared to the other monoline insurance companies. Hence, they were able to maintain their AAA rating during the crisis, although execution risk of their business strategy remained, the company made significant progress in establishing its direct financial guaranty insurance franchise. Furthermore, most rating agencies viewed positively the firm's enhancements to its corporate governance, operating infrastructure and risk management processes especially since their IPO in 2004. The company continued to maintain high quality underwriting standards and strong risk adjusted capitalization post crisis. In addition, over several quarters following the crisis, their volume and diversity of business underwritten increased, as did the list of institutional investors that purchased its wrapped transactions.

2. Raised Capital Early in the Credit Crisis: Assured Guaranty raised more than \$1.7 billion of capital since December 2007 to fortify its balance sheet and make acquisitions. In December 2007, they issued common stock for net proceeds of approximately \$304 million. In February, 2008, they announced a commitment from Wilbur Ross to invest up to \$250 million in equity, subject to regulatory approval, with an additional commitment to invest up to \$750 million at Assured Guaranty's option. In 2009, they issued \$1.2 billion of common equity and equity-units to increase capital and finance the acquisition of Financial Security Assurance Holdings Ltd. (FSA). These capital transactions 1) helped the company to ease potential customer concerns during a time when losses at competitors were mounting, 2) provided additional capital for growth and 3) offset paid claims from in-force business, which totaled approximately \$2.7 billion (net of representation and warranty recoveries) since the beginning of 2008.

3. Acquired Business from Weakened Competitors: As Assured Guaranty's competitors began to falter, the company took advantage of the opportunity to grow its business, via reinsurance, re-assumption of ceded risk and acquisitions: In December 2007 the reinsurance of \$29 billion par exposure from Ambac Assurance Corporation and in January 2009, the reinsurance of \$13 billion par exposure from CIFG Assurance North America, Inc. Moreover, in July 2009 the acquisition of FSA and in January 2012 they announced the acquisition of Municipal and Infrastructure Assurance Corporation (MIAC), a licensed financial guaranty insurance company, from Radian Group. Re-assumption of \$38 billion of par exposure from reinsurers since January 1, 2009, also resulted in the receipt of more than \$440 million in premiums. These opportunistic transactions served to cement the company's place at the top of a dislocated industry.

4. Aggressively Pursue Put-Back Claims: They aggressively pursued put-back claims against mortgage originators for breaches of representations and warranties on mortgage loans in insured RMBS transactions. Through September 30, 2012, Assured Guaranty obtained recoveries of approximately \$2.8 billion, consisting of cash, expected future reinsurance recoveries from two mortgage originators and payments that flowed through transaction waterfalls. These recoveries significantly mitigate the total amount of claims paid since the inception of the credit crisis.

5. Monetize Investor Skepticism: Assured Guaranty has used the dislocation in the financial markets and institutional investor skepticism about its claims paying ability, to repurchase securities it has insured at a significant discount to par value. Through September 30,

2012, the company has repurchased \$1.8 billion par value of Assured Guaranty-wrapped bonds on a consolidated basis for approximately \$885 million, which reduced the economic impact of expected future claims. While this claims mitigation strategy was an effective use of capital, it indicates that, in these cases, institutional investors heavily discounted the value of the company's insurance wrap. With \$5.9 billion of consolidated qualified statutory capital and \$12.5 billion of total consolidated claims-paying resources in the third quarter of 2012, Assured Guaranty commands a dominant market position in the financial guaranty insurance sector.

As the company looks to exploit its position of market leadership, Assured Guaranty faces a number of challenges that serve to mitigate that leadership position and pressure its credit profile. Having retreated from its erstwhile primary target market of structured finance to focus predominantly on insuring municipal bonds, Assured Guaranty must now deal with the same challenge that led many of its previous "muni-only" competitors to diversify into the structured finance product market in the first place. Namely, insuring municipal bonds may be only moderately profitable even if high leverage is employed and historical loss patterns continue.

This challenge is compounded by lesser opportunity even within the municipal market, where Assured Guaranty's focus is primarily on smaller issuers in the mid-to-low investment grade space – perhaps one-third or less of the total US public finance market. Structured finance business, which accounted for a meaningful portion of Assured Guaranty's pre-crisis activity, has virtually disappeared. While Assured Guaranty benefits from its position as the most active player in a smaller industry, its overall business activity, as measured by the present value of gross premiums written, remains well below pre-crisis levels.

In addition to secular pressures discussed above, Assured Guaranty faces cyclical challenges as well. With interest rates having declined to historic lows and policymakers committed to holding them down for at least the next two years, Assured Guaranty's returns on capital will continue to be pressured. Low interest rates reduce both investment income and the amount of absolute spread available to fund financial guaranty insurance, pressuring premiums, reducing profits that may be needed to cushion future losses, particularly if they are larger than anticipated. Moody's downgraded Assured Guaranty A2 in January 2013 citing that they operate in an industry that has not recovered from the financial crisis and, like its peers, will continue to struggle in the face of declining fundamentals, including a dramatic reduction in insurance usage, modest profitability and still-meaningful legacy risk.

However, Assured Guaranty's ability to write substantial new business has illustrated the market's acceptance of a financially strong monoline insurer with a higher risk profile, albeit clearly the firm has also benefited from currently limited supply of bond insurance. Hence, there may be opportunity for new entrants. The barriers to entry, however, can be high. New entrants need to demonstrate track records, market receptivity and financial support. They are likely to face substantial scrutiny and some skepticism about their business readiness, stated strategy, and shareholders' long-term capital commitment. Nevertheless, new players may be welcomed by the market, because they are perceived as being part of the solution to the current high cost of financing in certain segments of the municipal market. Given the poor performance of existing guarantors' mortgage-related exposures, all potential new bond insurers have proposed to focus exclusively on municipal finance.

In order to succeed, a new entrant would need to combine: 1) Patience –Building an adequate earnings stream takes 5-7+ years. 2) Focus –A new monoline will likely need to insure only municipal bonds, project finance, etc. 3) High perceived value of the wrap –Credit spreads will need to increase from current levels in order to generate return on investment.

Policy Implications

Several important policy implications can be deemed from the rise and fall of the monoline/bond insurers.

Firm level failures mainly depended upon their exposure to CDO's especially backed by residential mortgages (RMBS). Monoline insurers failed to understand the complex structured finance products and as a result, the credit committee was lax in approving structured finance products compared to their more conservative and stringent public finance deal approvals. Underwriting credit default obligations on asset backed securities (ABS CDO) generally, did not provide an acceptable linear payoff profile. This made it more risky for monoline insurers with high leverage since the embedded structural leverage within ABS CDO multiplied what is an already highly leveraged business. Thus, monoline insurance regulators should closely monitor the capital levels and the leverage of these firms and maybe introduce risk based capital requirements for monoline insurers, similar to banks.

Moreover, for some insurers, a significant portion of their investment portfolio was in self-insured bonds. They paid (and received) a premium for a bond with insurance that they would not benefit from in the event that the issuer defaulted. Regulation should specify a limit on the amount of re-investing on self-insured bonds for monoline/bond insurers.

Monoline insurers were able to absorb losses from public finance exposure while regulators cherry picked and saved monoline insurers with large exposures to the same. However, proper sub sector diversification between structured finance, public finance and project finance was important for survival.

There should be regulation on the exposure limits into structured financial, project finance and public finance insurance a monoline/ bond insurer should undertake.

Counterparties were much riskier than they envisioned for structured finance products. Rating agencies and monoline insurers used wrong initial assumptions of probabilities of default and recovery rates to price transactions. Hence, independent and thorough analysis of the counterparty's credit and correlation to the insured instrument and to the insuring party is required. Furthermore, more realistic rating and pricing models need to be implemented by rating agencies and monoline insurers. Thus regulators should request monoline/ bond insurers to conduct their own credit assessments on deals. Need to account for appropriate recoveries and correlations, considering the entire probability space (i.e. the "tail risk"). Any leverage in the transaction, as well as any liquidity issues with the referenced asset should be accounted for. Stress testing must cover not only the likely outcome, but also extreme scenarios.

Furthermore, increased transparency through detailed and timely disclosure requirements is required in the industry as a whole between issuers, investors, monoline insurers, rating agencies and regulators in order to reduce information asymmetry.

We believe that Rating agencies were responsible in two ways: 1. Untimely downgrades. 2. Initially, high rating allocation for structured finance deals by monoline insurers. Therefore, it is evident that rating agencies must be held more accountable for their actions. Companies such as Moody's, Standard & Poor's, and Fitch Ratings came under harsh criticism for assigning their highest ratings to structured finance products, many of which were built around subprime loans that went into default. Moreover, performance of credit rating agencies in providing guidance for investors regarding the quality of the guarantees provided by monoline insurers was also uneven. In this context, there is a long-standing discussion among regulators about whether and the extent

to which the activity of rating agencies needs to be subjected to closer public scrutiny and regulatory monitoring.

A monoline insurer should ideally be a buy-side firm with a buy-side culture, compared to the buy-side firms with sell-side marketing cultures and compensation structures that were in existence pre-crisis.

Conclusions

Conventional municipal and project finance business survived the crisis and monoline insurers were paying claims due to their exposure to structured finance products. If monoline insurers stuck to the old business model of low margin, low default risk, they would have weathered the crisis. The old business model could handle systematic risk and would have received better support from regulators. Recent restructuring of monoline insurers by regulators depict the breakup of monoline insurance companies into two different business areas, one consisting of the more traditional business of insuring municipal bonds and the other one consisting of business related to more complex structured financial instruments, including those involving residential mortgage bonds. The idea behind this proposal was to allow the former to again start writing insurance policies on municipal bonds after such activity suffered in early 2008. The disappearance of monoline insurers has significantly and permanently altered the bond market landscape post crisis. While some monoline insurers, such as FSA and Assured Guaranty, may continue to provide insurance, the role of monoline insurance in the municipal bond markets will likely be significantly reduced. Thus, the risk-pricing paradigm for municipal bonds will be different. Municipalities in many cases, now have to rely solely on their own creditworthiness to attain an AAA rating. According to Standard & Poor's, no AAA-rated or AA-rated municipal bond has defaulted in more than 20 years. Monoline insurance provisions certainly played a role in this. As expected, the issuance of non-insured municipal bonds post crisis has increased significantly while insured bonds have decreased drastically. Without credit enhancement, small scale municipal bond issuers face considerably higher financing costs. Having bond insurance from financially strong monoline insurers could help to improve their market access. Funding costs for smaller or higher risk issuers such as hospitals and housing authorities have been formidably high. While some large institutional investors are more inclined to buy unwrapped paper, core municipal investors such as retail investors and money market funds generally appear to place more value on bond insurance. However, the losses faced by monoline insurers have led retail investors to become more circumspect.

Money market funds, also a large segment of the overall U.S. municipal investor base, are more likely to use financially strong monoline insurers, in part because of regulatory requirements for investing in highly rated assets.

To restore the integrity of public finance insurance this line of business must be legally protected from all other product lines and affiliated business operations, including structured finance products and credit default swaps. Second, regulation of financial guarantee insurance must be strengthened significantly. Risk-based capital requirements should be developed for this line of insurance and monitored closely. The correlation among product lines, affiliated business operations, and investments must be considered and included with close attention paid to the effect of all of these on insurer ratings. Regulations of insurer investments must be strengthened and carefully monitored, with close attention given to disclosure of self-insured investments.

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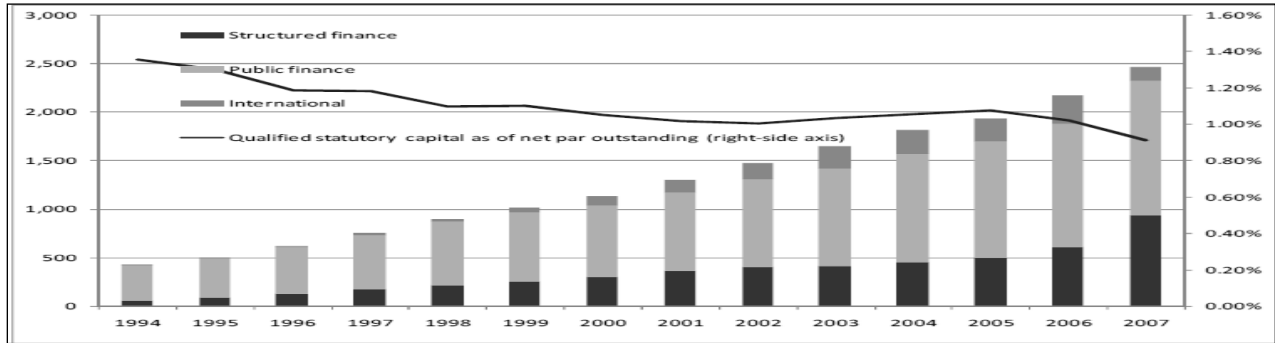
Table 1: Monoline insurer products, pros & cons, key players & investors

Shows the products insured, advantages and disadvantages of monoline insurance, key players and investors in the monoline industry.

1. Products Insured	2. Monoline Pros & Cons	3. Key Players
<ul style="list-style-type: none"> -Sub-prime home equity mortgages. -Manufactured housing finance. -Aircraft leases and equipment trusts. -Commercial mortgage-backed securities. -Credit card receivables. -Auto loans. -Rental fleets. -Health care equipment financings. -Student loans. -Investor-owned utilities. -Credit default swaps. 	<p>2.1 Pros 2.1.1 Issuers' Perspective:</p> <ul style="list-style-type: none"> -Lower overall borrowing costs. -Greater access to capital markets and easier deal execution. -Assistance to structure the debt issue. -Performance monitoring and alerts when servicing difficulties arise. <p>2.1.2 Investors' Perspective:</p> <ul style="list-style-type: none"> -Liquidity. -Reduced default risk of the insured bonds. <p>2.1.3 Insurers' Perspective:</p> <ul style="list-style-type: none"> -Paid to take on credit risk, but the premium or guarantee fee must be adequate for the risk undertaken. -Mostly upfront premium payments. 	<p>3.1 Monoline Insurers</p> <ul style="list-style-type: none"> -MBIA http://www.mbia.com/ -Ambac http://www.ambac.com/ -FSA http://assuredguaranty.com/investor-information/by-company/agm -FGIC http://www.fgic.com/ -Syncora Guarantee http://www.syncora.com/ -Assured Guarantee http://assuredguaranty.com/ -CIFG Guarantee http://www.cifg.com/
<ul style="list-style-type: none"> -Collateralized debt obligations. -Finance projects. -Catastrophe insurance. 	<p>2.2 Cons</p> <ul style="list-style-type: none"> -They use reinsurance selectively. -A monoline insurer downgrade results in an automatic downgrade of all the bonds they've insured. -Reduction of due diligence on the credit quality of the bond issue. -Ultra-low probability events for low premiums require high leverage for attractive returns on equity. 	<p>3.2 Monoline Investors</p> <ul style="list-style-type: none"> -Banks bought credit default swap protection on CDO's. -Mutual funds and insurance companies bought 'wrapped' corporate municipal bonds (i.e. with credit enhancement). -Insurance companies, other institutional investors and Government sponsored enterprises bought wrapped RMBS (Residential mortgage backed securities). -Households, pension funds, commercial banks and insurance companies bought municipal bonds. -When monoline insurers started facing troubles, hedge funds and distressed buyers entered the market to re-insure bonds guaranteed by troubled monoliners. (E.g. Berkshire & Hathaway)

Figure 1: Total Net Exposure by Line of Business (In USD billions)

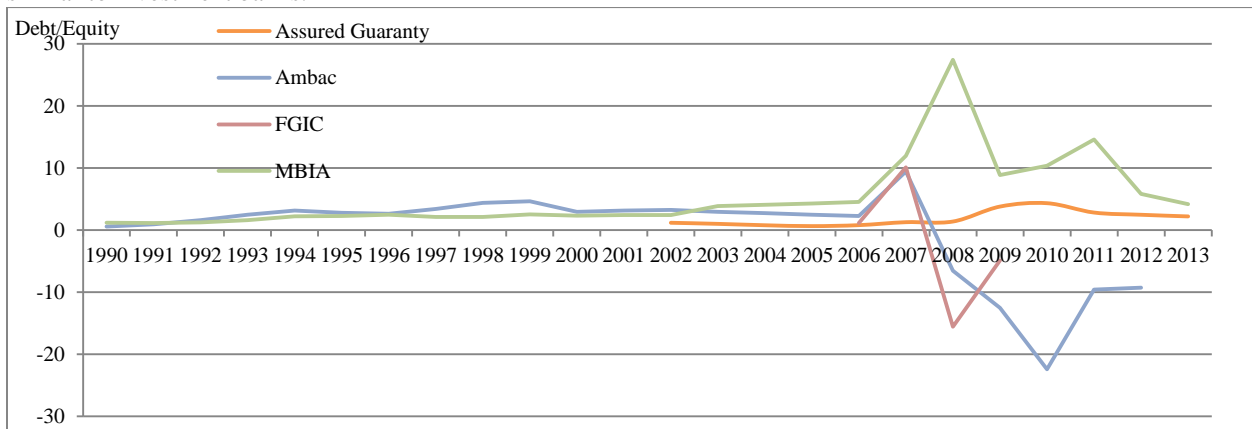
While the regulatory capital base of monoline insurers increased over the past few years, this growth rate was actually decreasing relative to the increase in their structured finance business as shown to some extent by the qualified statutory capital line in Figure 2.



Source: Standard & Poor's 2007

Figure 2: Debt to Equity ratios for monoline insurers from 1990 -2013

Since 2008, Ambac and FGIC had negative equity resulting in a negative debt/equity ratio¹, indicating substantial claims of payment due and possible bankruptcy, while MBIA had a very high debt to equity ratio impairing their ability to attract additional capital. All monoline insurers except for Assured Guaranty were highly leveraged, very similar to investment banks.

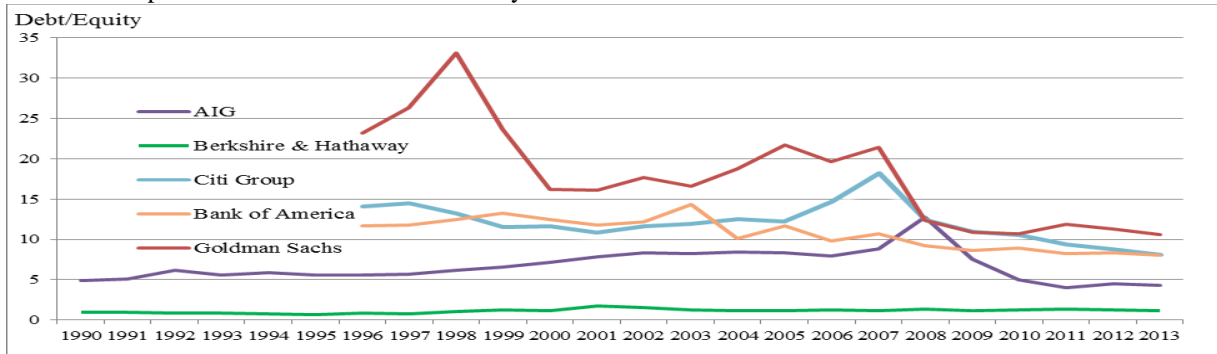


Source: Bloomberg estimates as of July 10, 2014

¹ In general, a high debt-to-equity ratio indicates that a company may not be able to generate enough cash to satisfy its debt obligations. However, low debt-to-equity ratios may also indicate that a company is not taking advantage of the increased profits that financial leverage may bring. Negative debt-to-equity ratio can happen in situations where a company's debt has become significant. This does not mean that the company is insolvent, as a company may have substantial debt (notes coming due soon, refinancing debt, etc.) in the short term while having substantial revenues, as well.

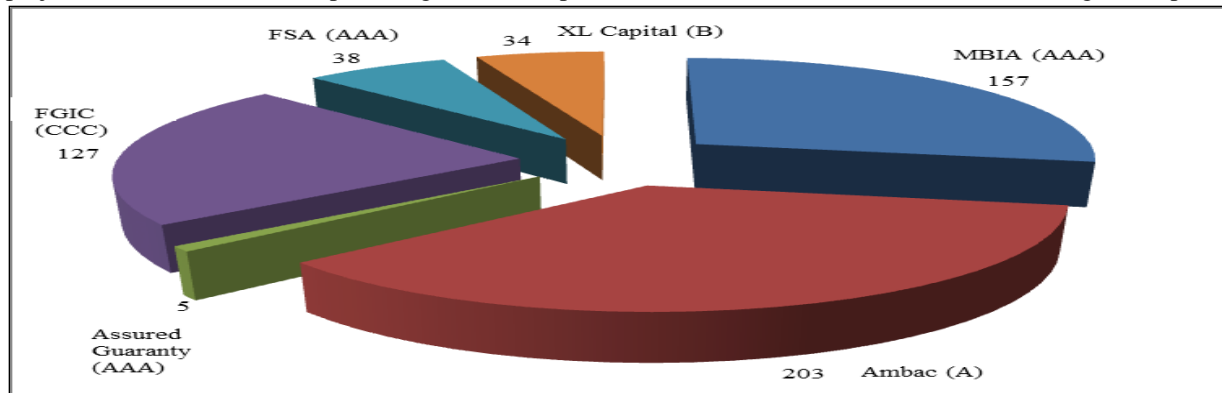
Figure 3: Debt to Equity ratios for monoline insurers from 1990 -2013

Investment banks have high debt-to-equity ratios starting from 2007, whereas AIG, the multiline insurer, shows numbers much lower but a pattern similar to MBIA. Berkshire & Hathaway numbers, although much lower, follow a more similar pattern to that of Assured Guaranty.



Source: Bloomberg estimates as of July 10 2014

Figure 4: Net notional value of CDS's & the S&P credit ratings shown in brackets, as of March 2008 (in USD billion) Shows each of the five downgraded monoline insurers' exposure to CDOs. MBIA and Ambac had the largest portfolios but not necessarily the highest concentration of bad debt. SCA, FGIC, and CIFG had much higher concentrations of projected losses in CDOs as a percentage of total exposure. SCA, FGIC, and CIFG were in much tougher shape².

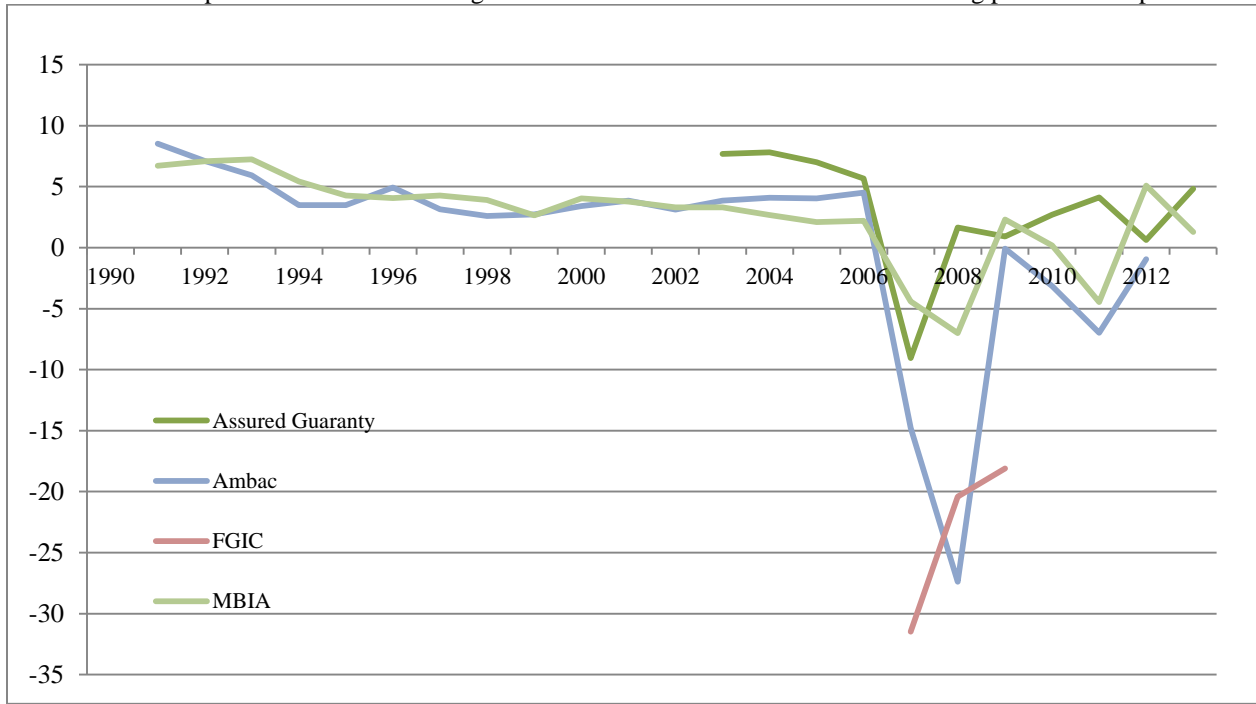


Source: International Swaps and Derivatives Association, Inc.

² All three of these companies suspended the origination of new business and were seeking ways to preserve and/or infuse new capital.

Figure 5: Return on assets for Monoline Insurers from 1990 –2013

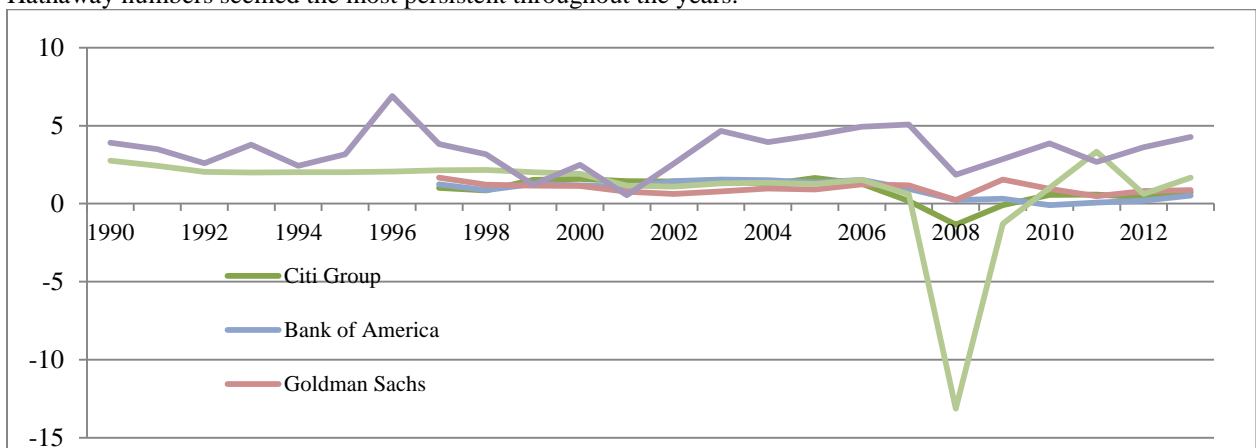
The below graphs compare the monoline insurers against multiline insurance and investment banks showcasing the difference among the return on assets ex-ante and ex-post crisis. Return on assets for all monoline insurers shows negative numbers during the crisis indicating that they were running at a loss. Ambac which had a larger exposure to structured finance products had the most negative numbers with return on assets not turning positive even post crisis.



Source: Bloomberg estimates as of July 10, 2014

Figure 6: Return on assets for Investment banks & Multiline insurers from 1990 –2013

AIG the multiline insurer followed monoline insurers with negative return on assets during the crisis period, running into heavy losses while all investment banks except Citi group maintained positive return on assets. Berkshire & Hathaway numbers seemed the most persistent throughout the years.



Source: Bloomberg estimates as of July 10, 2014

Table 2: Market performance of monoline insurers

Shows the market performance of key monoline insurer's ex-ante and ex-post crisis. This table highlights the delay to some extent, by rating agencies regarding monoline insurer downgrades, especially from 2006 to 2007 with clear warning signs of widening credit spreads, considerable declines in stock price and market value for these companies.

Date	Sep-09	Dec-08	Dec-07	Dec-06	Dec-05	Dec-04
Ambac						
CDS spread	5300	2105	343	11	20	29
S&P Credit rating	CC	A	AAA	AAA	AAA	AAA
Parent stock price	1.68	1.3	25.77	89.07	77.06	82.13
Shares outstanding	288	287	102	106	105	109
Equity market value	483	373	2617	9450	8106	8925
Assured Guaranty						
CDS spread	825	1775	190		36	
S&P Credit rating	AAA	AAA	AAA	AAA	AAA	AAA
Parent stock price	19.42	11.4	26.54	26.6	25.39	19.67
Shares outstanding	157	91	79	73	75	76
Equity market value	3041	1037	2110	1946	1910	1495
MBIA						
CDS spread	3465	2807	342	23	40	34
S&P Credit rating	BB+	AA	AAA	AAA	AAA	AAA
Parent stock price	7.76	4.07	18.63	73.06	60.16	63.28
Shares outstanding	208	273	125	135	134	141
Equity market value	1614	1112	2336	9849	8065	8905
XL Capital						
CDS spread		6584	623	16	21	
S&P Credit rating	R	B	AAA	AAA	AAA	AAA
Parent stock price	17.46	3.7	50.31	72.02	67.38	77.65
Shares outstanding	342	331	178	181	174	139
Equity market value	5974	1224	8973	13005	11753	10767
FGIC						
CDS spread	10733	6112	613	11	19	
S&P Credit rating	CC	CCC	AAA	AAA	AAA	AAA
FSA						
CDS spread	660	1421	86	11	19	21
S&P Credit rating	AAA	AAA	AAA	AAA	AAA	AAA

Note: Shares outstanding is quoted in millions.