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Office of the Comptroller of the Currency
250 E Street, S.W.
Mail Stop 2-3
Washington, D.C. 20219
OCC Docket ID OCC-2012-0009; RIN 1557-AD46

Jennifer J. Johnson, Secretary
Board of Governors of the Federal Reserve System
20th Street and Constitution Avenue, N.W.
Washington, D.C. 20551
Docket No. R-1442; RIN No. 7100 AD-87

Robert E. Feldman, Executive Secretary
Attention: Comments/Legal ESS
Federal Deposit Insurance Corporation
550 17th Street, N.W.
Washington, D.C. 20429
FDIC, RIN 3064-AD96

Title: Regulatory Capital Rules: Standardized Approach for Risk-weighted Assets; Market Discipline and Disclosure Requirements

Ladies and Gentlemen:

Genworth Mortgage Insurance ("Genworth")[1] welcomes this opportunity to submit our comments to the Office of the Comptroller of the Currency, the Board of Governors of the Federal Reserve System and the Federal Deposit Insurance Corporation (collectively, the "Agencies") on the joint notice of proposed rulemaking (the "Standardized Approach NPR" or "NPR") to revise and replace the Agencies' current risk-based capital rules.[2] The Standardized Approach NPR proposes replacing the current risk weights for residential mortgage exposures with various criteria that divide residential mortgage exposures into two categories based on product features and assigns risk weights within those categories based

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[1] Genworth Mortgage Insurance is a business unit of Genworth Financial, Inc. (NYSE: GNW), a leading Fortune 500 insurance holding company dedicated to helping people secure their financial lives, families and futures.   Genworth Financial, Inc. has approximately 6,500 employees and operates through three divisions: Insurance and Wealth Management, which includes U.S. Life Insurance, Wealth Management and International Protection segments; Global Mortgage Insurance, which includes U.S. and International Mortgage Insurance segments; and the Corporate and Runoff division. This comment is being submitted by the U.S. Mortgage Insurance segment.

[2] Standardized Approach for Risk-Weighted Assets; Market Discipline and Disclosure Requirements, 77 Fed. Reg. 52,888 (Aug. 30, 2012).

on loan-to-value ratios ("LTVs"), without recognition for private mortgage insurance ("private MI" or "MI").[3]

If implemented, the NPR proposal would eliminate the long-standing practice of providing capital credit for loans with private MI. Capital requirements for low down payment mortgage loans held in portfolio will increase – in many cases significantly – making those mortgages more expensive and mortgage credit, especially for sustainable low down payment loans, less available. The hardest hit will be first time home buyers, minorities and others who cannot afford down payments of 20% or more. If implemented, the NPR proposal could drive more mortgage lending to programs in which the Federal government assumes mortgage credit risk.

As further discussed in the detailed comments that follow, Genworth urges the Agencies to make the following changes to the NPR:

- Continue to allow capital credit for residential mortgages with mortgage insurance issued by "financially sound" insurers;
- Revise the residential mortgage risk weights to reflect the value of MI as an effective loss mitigant; and
- Adopt a simple, transparent process for designating "financially sound" MI providers, based on an objective measure of ongoing claims paying ability (e.g., the claims adequacy test, or "CAT Model"); and requiring the MI provider be a licensed insurer authorized to write new business by the Department of Insurance in its state of domicile.

Section One of this comment provides an overview of our recommendations; Section Two provides a detailed response to question 6 of the NPR; and Section Three provides detailed discussions of issues related to our recommendations. As we will describe in detail, Genworth's recommendations are based on extensive analysis of loan level performance data.

For ease of reference, a glossary of defined terms is included in Exhibit A.

I. Overview of Recommendations.

<u>Continue to allow capital credit for residential mortgages with mortgage insurance issued by "financially sound" MI providers.</u>

Eliminating the recognition of private MI would significantly increase bank capital requirements on low down payment mortgages. As proposed, the NPR would replace the current standard – which imposes a 50% risk weight for most mortgages (including those with LTVs of 90% and greater, if covered by private MI) and a 100% risk weight for the remainder – with risk weights that range from 35% (for very low risk loans with large down payments) to 200%. The risk weights are based on LTV and product features. *In a significant departure from existing rules, private MI would no longer be recognized to reduce a loan's risk weight.*

The NPR provides that Category 1 loans are residential mortgage exposures with standard features such as 30-year maximum terms, no negative amortization and fully documented income. Category 2 mortgages (mortgages that do not meet the Category 1 terms) would

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[3] The Agencies solicit comments regarding the recognition of MI in question 6 of the NPR.

have risk weights that begin at 100% where LTVs are up to 80%, and increase to 200% where LTVs exceed 90%.[4]

Loans insured by the Federal Housing Agency or guaranteed by the Veteran's Administration or Rural Housing Department ("Government Loans") would continue to receive a *zero* risk weight, regardless of LTV or product features.

The increased capital charges that would result from the proposed changes to mortgage risk weights and the withdrawal of recognition for private MI would translate to more expensive mortgages, tighter mortgage credit and less low down payment lending supported by private MI. Or, many banks will simply limit portfolio lending to Government Loans because of their zero risk weight. This will often result in higher costs to borrowers (since, as further discussed below in "The NPR would shift more lending to Government Loans" section, loans with FHA insurance are often more costly than comparable loans with private MI), and will expose the Federal government to more mortgage credit risk. The NPR includes no empirical data to support the elimination of recognition of private MI in determining a mortgage's risk weight. Indeed, Genworth believes that available data do not support such a change, and we discuss herein the extensive analysis of loan level performance data we have undertaken.

<u>Revise the residential mortgage risk weights to reflect the value of MI as an effective loss mitigant.</u>

We urge the Agencies to continue to recognize private MI and to adopt the following risk weights set forth in Table 1 for loans with standard MI coverage amounts.[5] MI reduces the severity of losses when a mortgage default results in a loss, because the private MI provider assumes the "first-loss" position. (Since the housing crisis began in 2007, private MI providers have paid approximately $33 billion in claims to Fannie Mae and Freddie Mac.[6])

The significant benefits of mortgage insurance have been recognized for decades by the Agencies through their implementation of the first Basel accord. Congress has also long recognized these benefits through the statutory requirement in Fannie Mae and Freddie Mac's charters that loans with LTVs above 80% purchased or guaranteed by either GSE have credit enhancement -- with MI being the predominant mechanism relied upon to satisfy that requirement. The Federal Housing Finance Agency (FHFA, the GSE regulator) includes increased reliance on private MI as an element of its strategic plan for the GSEs, and most proposals on housing finance reform by members of Congress and housing policy experts call for the ongoing use of private MI. The value of mortgage insurance also has been recognized globally, evidenced, for example, by the Canadian and Australian government and private MI programs. More recently the international Financial Stability Board ("FSB") cited the "prudent use of mortgage insurance" as one of five recommended practices for mortgage lending.[7]

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[4] For a complete description of Category 1 and Category 2 mortgages, see NPR at 77 Fed. Reg. 52,939 (Aug. 30, 2012).
[5] Mortgage insurance generally is structured to cover losses on a defaulted loan up to a stated percentage of the outstanding loan amount, plus certain foreclosure related expenses. Standard coverage amounts for the LTVs as bucketed in the NPR are: 17 - 38% for LTVs above 60% up to 80%, 12 - 25% for LTVs above 80% up to 90%, 30 - 35% for LTVs above 90% up to 100%.
[6] MI claims paid and claims receivable. Source: Fannie Mae and Freddie Mac SEC filings.
[7] "FSB Principles for Sound Residential Mortgage Underwriting Practices", Financial Stability Board, April 2012. The five practices recommended in the FSB report are: (1) effective verification of income

Based on the reduction in severity under standard MI coverage amounts and assuming that the risk weights by product and LTV in the NPR are adopted in the final rule, risk weights for loans with private MI should be adjusted as set forth in the table below.

Table 1: Risk Weights for Residential Mortgage Exposures – Giving Effect to Private MI

Loan-to-value ratio (in percent)	Category 1 residential mortgage exposure (in percent)		Category 2 residential mortgage exposure (in percent)	
	No MI	With Standard MI Coverage	No MI	With Standard MI Coverage
Less than or equal to 60	35	35	100	100
Greater than 60 and less than or equal to 80	50	35	100	100
Greater than 80 and less than or equal to 90	75	50	150	100
Greater than 90	100	50	200	100

Adopt a simple, transparent process for designating "financially sound" MI providers, to include an objective measure of ongoing claims paying ability (e.g., the CAT Model), and requiring the MI provider be a licensed insurer authorized to write new business by the Department of Insurance in its state of domicile.

The NPR proposal to eliminate credit for MI in the capital regime suggests a level of uncertainty with respect to the ongoing ability of MI providers to pay their claims. Consequently, it is reasonable to require that each MI provider meet a financial viability hurdle to qualify the loans it insures for favorable capital treatment. As envisioned, qualification would be based on an insurer's authorization to write new business by the Department of Insurance in its state of domicile, and application of a highly stressed claims payment capacity requirement. Genworth developed the CAT Model to address the latter.

The CAT Model is a risk-based financial model that assesses a private MI provider's ability to pay claims under conditions of prolonged and severe housing market stress (based on actual experience from the housing market stress that began in June 2007 through June 2012 (the "Housing Stress")) with a ten-year stress duration. As applied to a particular MI provider, the CAT Model produces a ratio (the "CAT Ratio") indicating the extent to which the MI provider is able to pay claims throughout the stress period and remain financially sound. Use of the

and other financial information, (2) reasonable debt service coverage, (3) appropriate LTVs, (4) effective collateral management, and (5) prudent use of mortgage insurance.

CAT Model would complement MI providers' state regulatory capital requirements (described in the "Regulatory capital requirements" section below). If, based on these indicia of financial soundness, an MI provider is deemed financially sound, then mortgages insured by that provider should receive full risk weighting credit according to Table 1 above.

II. Detailed responses to question 6.[8]

Banking organizations should be permitted to continue recognizing private MI when calculating the LTV of a residential mortgage asset. Private MI not only reduces a banking organization's capital charges, it reduces losses when a loan goes into default and affords a banking organization the benefit of the risk discipline imposed by a private MI provider. Continuing to recognize private MI will encourage use of a product that places private capital in a first-loss position, help keep mortgage credit flowing to creditworthy low-down payment borrowers, and ensure efficient pricing for those low down payment mortgages. These are especially important outcomes for traditionally underserved borrowers and first time home buyers.

Despite these benefits of private MI, the Standardized Approach NPR, as currently proposed, does not recognize MI for any residential mortgage exposures "due to the varying degree of financial strength of mortgage providers."[9] There is little doubt that the residential mortgage market, including mortgage insurers, faced substantial problems during the most recent financial crisis. However, there also is little doubt that properly underwritten MI from financially sound MI providers mitigates default risk and provides a valuable source of private capital to mitigate bank losses from mortgages. Given this history, Genworth has worked to identify problems in the MI industry and, more importantly, to identify solutions to those problems. Accordingly, banking organizations should be permitted to continue recognizing private MI when calculating the LTV ratio of a residential mortgage asset for financially sound MI providers.

Like other participants in the housing market, private mortgage insurers have suffered significant losses as a result of the housing market crisis. The growth of risky, exotic mortgage loans (including negative amortization and no and low documentation mortgages), weakened underwriting standards (exacerbated by failure to adhere to even those standards), and reliance on expectations of home price appreciation to qualify a borrower for a mortgage, all contributed to significant losses in the residential mortgage market. Further, automated underwriting systems and mortgage insurers' increased willingness to delegate their insurance underwriting decisions to lenders – without a corresponding increase in quality control and audit programs to oversee delegated lenders – meant that many loans were approved without a thorough review of a borrower's credit history, capacity to pay, or the value of the collateral.[10]

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[8] In question 6 of the NPR, the Agencies solicit comment on whether to allow banking organizations to recognize mortgage insurance for purposes of calculating the LTV ratio of a residential mortgage exposure under the standardized approach. They also ask what criteria the Agencies could use to ensure that only financially sound mortgage insurers are recognized. See NPR at 77 Fed. Reg. 52,899 (Aug. 30, 2012).

[9] See NPR at 77 Fed. Reg. 52,899.

[10] See, e.g., Patricia McCoy, et al., Systemic Risk Through Securitization: The Result of Deregulation and Regulatory Failure, 41 Conn. L. Rev. 493 (2009). "The expansion of lending without risk controls … increased prices unsustainably and promoted loans that could not be repaid. Eventually, lenders believed their ability to assess risk of loans was so good that they created ever more complicated mortgage instruments with different and complicated metrics of default risk pricing. The result was the nontraditional lending instruments of the past decade such as option ARMs, interest-only ARMs, and no-documentation loans." (p. 503). See, also, Financial Crisis Inquiry Commission, The Financial

As these risky mortgages began to default, MI providers experienced a sharp increase in claims and losses far larger than expected, which placed pressure on MI capital. Some MI providers had problems fulfilling their credit support mission.[11] At the same time, pre-claims investigations revealed significant incidences of fraud, misrepresentation, and failure to comply with MI providers' guidelines, which in turn led to rescissions of mortgage insurance that caused some third parties to question the industry's willingness to pay claims.

Given this history, the Agencies and other commentators understandably have concerns about the MI industry. However, the fact that there were problems in the MI industry does not mean that all MI should be disqualified as a recognized risk mitigant. Financially sound, properly underwritten MI continues to serve a valuable credit support function for lenders and borrowers, and a valuable source of private capital to mitigate bank losses from mortgages. Therefore, like other players in the residential mortgage market, mortgage insurers must be financially stronger and provide an objective way for regulators and counterparties to evaluate financial strength. We also must reassess products, practices, pricing, and underwriting discipline to provide credit support when it is needed. In light of these concerns, Genworth proposes (1) the CAT Model as an objective measure of a mortgage insurer's financial position, and (2) new contractual certainty regarding rescission practices. As discussed further below, these specific, actionable changes will result in a more stable industry with greater private credit support.

The Agencies should recognize private MI because MI providers are a reliable source of credit loss mitigation, and introduction of the CAT Model will provide a new, objective measure of a mortgage insurer's financial soundness.

Private mortgage insurers serve an important role in housing finance: they bring capital to the market and place that capital at risk in a first-loss position, impose risk discipline through their independent credit underwriting, enable sustainable homeownership without having to amass a 20% down payment, and facilitate efforts to help troubled borrowers to avoid foreclosure.[12]

Mortgage insurers operate under a unique regulatory framework targeted at residential mortgage credit risk. Existing state regulation coupled with oversight provided by counterparties including Fannie Mae, Freddie Mac, and other financial institutions (most of which are regulated by federal agencies that also monitor counterparty exposure), provide a framework that is used to assess a private MI provider's financial soundness. However, in light of the losses suffered by the MIs as a result of the recent housing crisis, MI counterparties would be well served by an objective tool that measures an MI provider's claims paying ability under severe, prolonged stress. The CAT Model is designed to provide

Crisis Inquiry Report: Final Report of the National Commission on the Causes of the Financial and Economic Crisis in the United States, January, 2011. "The Commission concludes that there was untrammeled growth in risky mortgages. Unsustainable, toxic loans polluted the financial system and fueled the housing bubble." (p. 101).

[11] The MI industry, like the rest of housing finance, has been materially impacted by the ongoing housing crisis. Two MI providers have been required by their regulators to stop writing new business, and one MI provider elected to do so. In all cases, those insurers continue to pay claims, in part through cash and in part through deferred payment obligations. The deferral of a portion of claims payments permits orderly resolution of a mortgage insurer.

[12] A comprehensive overview of the role of the MI industry was published by Promontory Financial Group in November 2010. The report is available at http://www.promontory.com/uploadedFiles/Articles/Insights/622%20Genworth%20Study%20I%20-%20Role%20of%20PMI.pdf and included as Exhibit B.

that new, objective measure.

The CAT Model was developed using aggregated loan level performance data for loans insured as of June 2007 by Genworth and the two other MICA member companies (the "MI Insured Book"). The CAT Model assesses a mortgage insurer's ability to pay claims through a "sources and uses" modeling approach that compares resources needed to pay claims under stress to resources available to pay those claims. To be deemed financially sound, an MI provider should have a CAT Ratio of 100%. The CAT Model is described in detail in "Measuring claims paying ability through the CAT Model" below and in Exhibit C.[13]

<u>State regulation of private mortgage insurers is one of the criteria that can be relied upon to determine that an insurer is financially sound.</u>

Private mortgage insurers are subject to state insurance regulation specifically tailored to the nature of the risk insured – long-duration, mortgage credit risk. State laws impose loan-level capital and reserve requirements that are held long term. In addition, MI providers are subject to strict limits on investments and limitations on dividend payments, and to provisions designed to address potential operational risk. Many states have adopted a version of the National Association of Insurance Commissioners ("NAIC") Model Mortgage Guaranty Insurance Act (the "NAIC Model Act", a copy of which is included as Exhibit D), which, in addition to imposing strong financial controls, requires that mortgage insurers only engage in the business of mortgage insurance, and imposes limitations on risk concentrations.[14]

State Departments of Insurance, with their power of oversight and practice of performing regular, detailed examinations of mortgage insurers, monitor and enforce insurers' compliance with financial standards.[15] The final rule should recognize MI credit risk mitigation only where the MI provider is authorized to write new business by the Department of Insurance in its state of domicile. The state of domicile asserts the greatest degree of supervisory authority over an insurer, and is best positioned to undertake quantitative and qualitative assessments of companies subject to its jurisdiction.

In addition, Fannie Mae and Freddie Mac, in their capacity as counterparties, undertake regular assessments to determine which mortgage insurers are eligible to provide MI for the mortgages they purchase or guarantee with LTVs above 80%. Accordingly, the GSEs provide additional oversight of a mortgage insurer's operational risk capacity, credit underwriting standards, pricing, and claims paying ability. Other federally regulated financial institutions also evaluate the financial condition and operational expertise of insurers that provide MI for their loans.

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[13] The CAT Model is consistent with methodology used to measure regulatory capital for MI providers in Australia and Canada, countries with mature mortgage insurance markets that use risk-based capital models to determine regulatory capital requirements.

[14] See Exhibit E for an explanation of Genworth's reserving methodology, and Exhibit F for a description of the statutory limitations on mortgage insurance investment and dividends.

[15] The NAIC establishes standards for financial reporting and disclosure that permit review, analysis and comparison of meaningful financial information about mortgage insurers. Annually, mortgage insurers must file financial statements and disclosures in all states in which they conduct business, including exhibits and schedules with detailed information on underwriting, investments, reinsurance and loss development. An independent actuarial opinion of the adequacy of reserves is required to be delivered annually, with a summary going to each state, and further detail going to the state of domicile. In addition, statutory financials must be independently audited each year. This information is readily accessible through the MI provider's state of domicile and electronically on the NAIC website (https://eapps.naic.org/insData/). Several states impose additional reporting requirements and establish additional performance standards.

Measuring claims paying ability through the CAT Model.

Genworth believes that the Agencies could adequately assess an MI provider's financial soundness based on the state regulatory framework and on oversight provided by federally regulated counterparties. Still, we agree that implementation of new tools such as the CAT Model would supplement the ability of third parties to assess an MI provider's financial soundness. The CAT Model employs a "sources and uses" methodology to determine whether an MI provider's available resources would be sufficient to pay claims in the event of a severe 10-year stress. The key features of the CAT Model as applied by Genworth are:

- Evaluating an MI provider's book of business on a stand-alone (run off) basis, without relying on premiums from future new business to pay claims on the existing book.
- Calculating premiums on the existing book based on applicable rates and giving effect to premium payment experience and loan prepayment experience, in each case, under stress.
- Calculating claims obligations based on the actual risk insured, recognizing that risk of a loan going to claim varies based on loan features and borrower creditworthiness.
- Assuming that the existing book will experience the conditions of the Housing Stress for the next ten years.
- Calculating a "CAT Ratio" of Total Resources Available (statutory capital, plus loss reserves, plus unearned premium reserves, plus premiums collected and investment income) to Total Resources Required (losses plus expenses).
- Giving effect to rescinded coverage by excluding rescinded loans from Total Resources Available and Total Resources Required.

Applying the CAT Model to determine that an MI provider is "financially sound."

To be deemed financially sound under the CAT Model, an MI provider should demonstrate that its Total Resources Available are sufficient to meet losses as calculated by the CAT Model. Full risk mitigation credit (as set forth in Table 1 above) should be given for MI from a financially sound MI provider (*e.g.*, from an MI provider with a Cat Ratio of 100%).

The CAT Model provides a new, simple, transparent, objective and verifiable means to calculate claims paying ability for risk currently insured when that risk is subjected to severe stress. Basing the CAT Model on the Housing Stress eliminates the need to create complex stress scenarios that require subjective, assumption-based projections.

In order to validate the reliability and predictability of the CAT Model results, Genworth calculated the CAT Ratio that would have been in effect based on actual Total Resources Available and Total Resources Required for each quarter from June 30, 2006 (before home prices began to fall) to June 30, 2012. The CAT Ratios (Total Resources Available / Total Resources Required) that would have been in effect during this time period are set forth in Table 2 below:

Table 2: Genworth CAT Ratios Over Time

Dollars in MM

	2006Q2	2006Q3	2006Q4	2007Q1	2007Q2	2008Q2	2009Q2	2010Q2	2011Q2	2012Q2
Total Resources Required	$4,835	$4,880	$5,055	$5,269	$5,761	$8,519	$8,704	$7,914	$6,195	$5,254
Total Resources Available	$6,069	$5,838	$6,000	$6,226	$6,482	$7,531	$7,898	$6,928	$6,418	$5,899
CAT Ratio	126%	120%	119%	118%	113%	88%	91%	88%	104%	112%

The change in CAT Ratios over time illustrates why the CAT Ratio would be a meaningful and useful tool. As Genworth's CAT Ratios fell, Genworth could have taken a number of actions to avoid or mitigate further declines. For example, as seen in the graph below, if Genworth had stopped insuring new Segment Three (Non-Standard) Loans and loans with LTVs above 97%, and paid no dividends, its CAT Ratio in subsequent quarters would not have fallen below 100%.   The CAT Model not only provides an objective measure of an MI provider's financial condition, it serves to identify *possible future stress in a time and manner that permits an MI to significantly mitigate losses.*
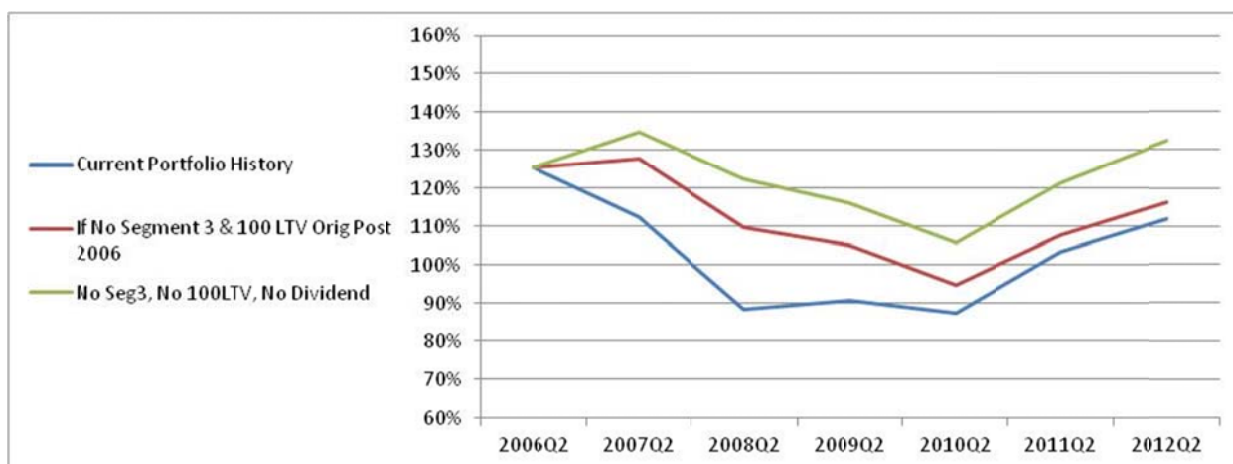
	2006Q2	2007Q2	2008Q2	2009Q2	2010Q2	2011Q2	2012Q2
Current Portfolio History	126%	113%	88%	91%	88%	104%	112%
If No Segment 3 & 100 LTV Orig Post 2006	126%	128%	110%	105%	95%	108%	116%
No Seg3, No 100LTV, No Dividend	126%	135%	122%	116%	106%	122%	133%

In order to be deemed financially sound, MI providers should make available their CAT Ratios and the underlying data quarterly. Genworth would also consider any other third party validations of the data and model deemed necessary by the Agencies.

Recognition of MI for purposes of calculating LTV.

The Agencies solicit comment on whether to allow banking organizations to recognize mortgage insurance for purposes of calculating the LTV ratio of a residential mortgage exposure under the Standardized Approach. Data clearly evidence that MI is a valuable and proven source of credit enhancement that lowers losses and reduces the frequency of default.

Under existing regulations, only two risk weights are applied to residential mortgages: 100% for mortgages with LTVs of 90% or greater that do not have mortgage insurance, and 50% for all other mortgages. Should the NPR's proposal for additional risk weights based on LTV and loan type be adopted, Genworth recommends risk weights for mortgages with MI in accordance with Table 1 above, based on a comparison of the probability of loss to a bank on loans with and without private MI under both normal and stress scenarios. Our analysis

was based on loan level performance data using the CoreLogic Servicing Database, home price data from the FHFA and MI industry experience on distressed transactions.[16]

III. Detailed Discussion of Issues Related to Our Recommendations.

Regulatory capital requirements.

There are two primary regulatory capital requirements for mortgage insurers. First, a mortgage insurer must maintain sufficient capital such that its risk to capital ratio (ratio of risk-in-force to statutory capital (which consists of its policyholders' surplus and contingency reserve)) cannot exceed 25:1 or it may not write any new business absent the granting of a waiver by the applicable state insurance regulator. Second, in addition to the normal provision for losses in the form of (i) case basis reserves for loans that are currently delinquent and reported as such by the lender or loan servicer and (ii) incurred but not reported loss reserves (for loans that are currently delinquent but not yet reported as such), mortgage insurers are required under insurance statutory accounting principles to post contingency reserves, which are funded with 50% of net earned premiums over a period of ten years. The contingency reserve is an additional reserve established for the protection of policyholders against the effect of adverse economic cycles.

The risk to capital ratio is one of many tools state insurance regulators use to evaluate MI providers. The comprehensive nature of state regulatory oversight enables regulators to retain the flexibility to exercise appropriate discretion regarding the ongoing operations of insurers subject to their jurisdiction. In recent years, several states have used that discretion to issue revocable, limited duration waivers of the 25:1 cap on the risk to capital ratio. States still retain the ability to deem an MI provider to be in "hazardous financial condition" pursuant to criteria that include dynamic ratios such as 12-month trailing losses to remaining surplus. A finding of hazardous financial condition could lead to the revocation of an MI provider's license to insure new business. State Departments of Insurance, including North Carolina, Genworth's state of domicile, actively monitor MI providers' operations and financial condition.

These capital and reserve requirements mean that the MI industry holds significant capital against each loan insured throughout the time a loan is outstanding, and should have the resources necessary to pay claims. In this regard, MI is significantly different from other types of investment and credit enhancement. One of the lessons learned from the housing crisis is that housing markets are not well served by capital markets structures and other loss mitigation schemes that encourage short-term investment without adequate regulatory oversight and capital and reserve requirements. MI represents material amounts of private capital and reserves in a first-loss position that are committed for the long term.

MI is countercyclical credit risk mitigation.

Mortgage insurance premium income, capital and reserve requirements combine to provide countercyclical protections against housing downturns. As illustrated in the graph below, during times of market stress (for example, the "Oil Patch" in the mid 1980s), mortgage insurers experienced high levels of losses and their risk to capital ratios rose accordingly. As

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[16] The CoreLogic Servicing Database includes loan level data on over 130 million residential mortgage loans and covers approximately 75% of the residential mortgage market. (See www.corelogic.com for more information.) Excluding loans with incomplete data resulted in 34 million loans available to sample. Our analysis was based on an originations volume weighted sample of approximately six million loans.

markets stabilized beginning later in that decade, higher earned premiums and lower claims paid enabled the industry to replenish its capital base. The countercyclical model was again tested over the past several years, and as expected, risk to capital ratios have risen in the face of unprecedented losses.   As loan performance improves, tightened guidelines and pricing adjustments (together with recent external capital raises) will restore capital and support new business.

Countercyclical Capital Model
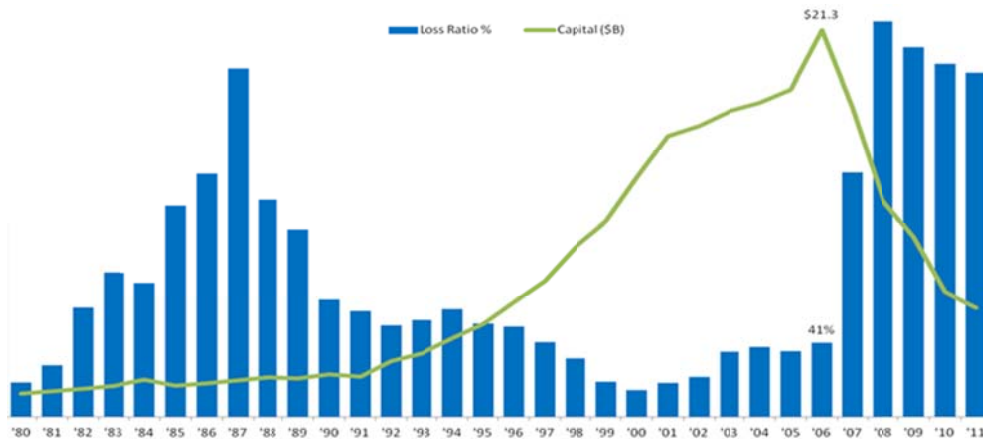
Unlike the FHA, private mortgage insurers do not insure against 100% of loss. Typically, mortgage insurance provides first-loss coverage that covers approximately 25 - 30% of the unpaid loan balance (plus certain additional expenses) of a defaulted loan. By assuming a first-loss position, private mortgage insurance dramatically offsets losses arising from a borrower default. By design, however, the product does not completely eliminate the risk of loss.[17] Private mortgage insurance is designed to be "skin in the game" that offers real economic benefit to lenders and investors while still incenting them to carefully underwrite mortgage loans and holding them accountable for fraud, misrepresentation and lack of compliance in the origination process.

When a loan goes to foreclosure, the private mortgage insurer is responsible for paying a claim. As a result, mortgage insurers have a clear financial incentive to work to keep borrowers in their homes. This directly aligns the interest of the mortgage insurer with the best interest of the borrower, and the MI industry has developed expertise in loss mitigation that is evidenced by its decades-long track record of actively working to keep borrowers in their homes. From 2008 through the second quarter of 2012, the industry facilitated loan workouts with approximately 575,000 borrowers on mortgage loans with an aggregate principal balance of approximately $109 billion.[18] Genworth has invested significantly in resources, tools and technology focused on keeping borrowers in their homes. We have workout specialists who work directly with borrowers and servicers to facilitate the best

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[17] The following is a high level example of how private MI mitigates, but does not eliminate, investor losses. Assume a $200,000 home with a mortgage of $180,000 (a "90 LTV" loan) that goes into default, and a property value at the time of default of $120,000. The mortgage insurer would pay a claim of approximately $45,000 (25% coverage on the $180,000 loan). After receiving the claim payment, the investor would have a loss of $15,000.

[18] Based on Mortgage Insurance Companies of America (MICA) member company data.

outcomes for homeowners at risk of foreclosure, and use programs that include borrower outreach as well as programs targeted to borrowers at risk of imminent default and borrowers who have received loan modifications and are at risk of re-default. From 2008 through the second quarter of 2012, Genworth has helped approximately 110,000 homeowners avoid foreclosure, facilitating more than 90,000 home retention workouts and nearly 20,000 short sales and deeds-in-lieu of foreclosure. See Exhibit G for more information regarding Genworth's loss mitigation programs.

The best way for a mortgage insurer to avoid paying a claim is to insure high quality, low risk loans that do not go to default. The industry has historical data and deep expertise in data analytics that it uses to understand and assess the likelihood of a future default based on loan characteristics, macroeconomic assumptions and a borrower's credit profile.

Mortgage insurance reduces frequency of default.

Third party data and independent analysis thereof demonstrate empirically that loans with mortgage insurance are less likely to default than comparable uninsured loans.[19] Using the CoreLogic Servicing Database, Genworth analyzed 4.9 million low down payment loans originated from 2003 to 2007 (the "MI Impact Analysis") to compare default rates of above 80% combined LTV ("CLTV") loans with MI to above 80% CLTV loans that were structured as an uninsured first lien coupled with a piggyback second.[20] Controlling for origination year, geography, level of documentation, loan purpose, FICO score and CLTV, insured loans became seriously delinquent 32% less often than loans with piggyback seconds. Of loans that did become seriously delinquent, insured loans returned to current status (cured) 54% more often than loans with piggyback seconds. As a result, borrowers with insured loans stayed in their homes 40% more often than those with piggyback seconds. The MI Impact Analysis demonstrates that mortgage insurance significantly mitigates the risk that a loan will become delinquent and go into default. The data make it clear: with proper underwriting and mortgage insurance, low down payment lending can be done without exposing banks to excessive risk.

As a follow up to the MI Impact Analysis, at Genworth's request, Promontory Financial Group, LLC ("Promontory") undertook a study assessing the performance of mortgage loans with piggyback seconds versus the performance of insured loans, in all cases for loans originated from 2003 to 2007. Promontory examined over 5.6 million mortgage loans included in the CoreLogic Servicing Database with CLTVs above 80%, studying both the presence and timing of delinquencies. Promontory assessed the relative performance of insured loans and loans with piggyback seconds over time, controlling for loan characteristics that are indicators of the risk of delinquency, including documentation level, loan purpose, owner-occupied status, CLTV and FICO score. They also included local unemployment rates, market interest rates and home price indices, factors Promontory believes significantly explain borrower propensity to default. After controlling for this extensive set of factors, Promontory found that loans with mortgage insurance consistently experience lower severe delinquency rates (ever 90 days past due) than comparable uninsured loans with piggyback seconds. (The complete Promontory study is included as Exhibit H.)

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[19] Mortgage insurance is written pursuant to a legally binding master policy issued by a mortgage insurer. Under the terms of the master policy, an originator is bound to adhere to mortgage insurance credit criteria in order for a loan to be eligible for mortgage insurance.
[20] The MI Impact Analysis is included as Exhibit I.

The statistical methodology employed by Promontory enabled them to quantify the extent to which mortgage insurance acts as a proxy for unobserved aspects of the mortgage underwriting process (effectively, the impact of mortgage insurance acting as an independent risk underwriter), which serves to lower default risk for observed characteristics (such as documentation levels and CLTVs).[21] Promontory determined that it was important to control for multiple risk factors in order to draw any meaningful conclusions from the data. To do so, they applied a statistical method of survival modeling to control for risk factors that could impact loan performance and to account for the impact of time on such factors.[22] The survival analysis focuses on the risk of default.

Promontory's analysis confirms that mortgage insurance reduces the frequency of default. Controlling for a range of factors, uninsured mortgage loans with piggyback seconds have historically experienced higher lifetime rates of severe delinquency than comparable insured loans.

<u>Mortgage insurance reduces severity of loss.</u>

Private MI reduces the amount ("severity") of losses suffered by a bank or investor when a mortgage default results in a loss. Most private MI is structured to cover losses up to a stated percentage (25 – 30%) of the outstanding loan amount plus certain foreclosure-related expenses of a defaulted loan. By design, private MI covers a material portion of – but not all – expected losses.[23] Counterparties receive significant default protection, but because they still are exposed to some level of losses, they are incented to ensure that loans are well underwritten and, once originated, well serviced. This is in contrast to FHA insurance, where lenders retain virtually no risk of loss and thus may have less incentive to oversee underwriting and servicing of a loan.

<u>Mortgage insurers pay claims pursuant to the terms of their master policies.</u>

Rates of rescissions (claims denials) have been at historical highs in tandem with historically high default rates on loans originated during the housing bubble (especially loans with exotic features and loans that were not fully, properly underwritten). In many cases the rate of rescissions has been overstated and the reasons for rescissions have been mischaracterized.

- Mortgage insurers have paid approximately $33 billion in claims on loans purchased or guaranteed by Fannie Mae and Freddie Mac since 2007.

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[21] In fact, the Promontory results may understate the positive impact of mortgage insurance, because it is impossible to account for the likelihood that lenders submit higher quality loans when those loans will require mortgage insurance in order to comply with mortgage insurance credit standards.
[22] The statistical methods of survival analysis (also called life-table analysis or failure-time analysis) have been developed to analyze the time-to-occurrence of an event as well as the fact of its occurrence. For example, survival analysis has been employed to study the time-to-failure of machine components, time-to-death of patients in a clinical trial, and the duration of unemployment spells of workers. As fully discussed in their study, Promontory used survival analysis to model the "lifetimes" of mortgages. Because there are two "events" that may end the lifetime of a mortgage (default or payoff), and because either of those events may impact the probability of observing the other, Promontory used a "competing risks" survival analysis.
[23] The following is a high level example of how private MI mitigates, but does not eliminate, investor losses. Assume a $200,000 home with a mortgage of $180,000 (a "90 LTV" loan) that goes into default, and a property value at the time of default of $120,000. The mortgage insurer would pay a claim of approximately $45,000 (25% coverage on the $180,000 loan). After receiving the claim payment, the investor would have a loss of $15,000.

- From 2007 through the second quarter of 2012, Genworth paid approximately $4.4 billion in claims on 93,000 defaulted mortgage loans.

It has always been Genworth's practice to pay claims in full when a loan was properly originated, underwritten, and serviced. We rescind coverage (and refund premiums paid) on loans that did not qualify for insurance; typically rescissions occur following review of a loan file when a loan becomes seriously delinquent.

As further described below, an analysis of Genworth insured loans that were rescinded between 2007 and the third quarter of 2012 shows that most of the rescissions during this time have been for loans with certain non-standard features and for loans for which the insurance underwriting decision was "delegated" to the lender. The reasons for rescissions during this time were (1) fraud or misrepresentation (38% of rescissions), (2) non-compliance with Genworth guidelines (37% of rescissions) and (3) missing documentation (25% of rescissions).

To analyze rescission activity, Genworth first segmented rescinded loans to compare rescission rates for loans that were fully amortizing, fully documented and that did not have scheduled balloon payments ("conventional" loans) to non-conventional loans. (In all cases, rescission rates were calculated by dividing the number of rescissions by the sum of total claims paid plus rescissions.) The rescission rate on all loans was 19%. *The rescission rate on non-conventional loans, however, was 27% – significantly higher than the rate for conventional loans (17%).*

Loan Type	Rescission Rate
Non-Conventional	27%
Conventional	17%
Total	**19%**

Since 2008, very few non-conventional loans have been offered in the market, and underwriting standards have improved. The Dodd Frank "ability to repay (QM)" rule, which will impose significant liability on non-QM lending, is expected to be finalized in 2013. Rescission rates will likely be significantly lower going forward than in recent years as the result of the return to traditional, well documented loan products. This change in mortgage originations can be seen in Genworth's insured book: in 2007, approximately 18% of loans we insured were non-conventional. In contrast, only 0.2% of loans insured in the first nine months of 2012 have been non-conventional. Further declines in rescission rates are also expected because, as a book of business insured in any calendar year ages, rescission rates fall because claims generally occur later in a book life than rescissions (which often correspond to early term loan defaults). Most rescissions occur in the first three years of a book's life, while claims payment peaks between years three to five. *The change in mortgage originations together with the aging of the books insured during the height of the market bubble will likely lead to significantly lower rescission rates going forward compared to rates in the past five years.*

To qualify for Genworth MI, loans must meet specified credit standards and the loan file must include specified supporting documentation.[24] The insurance underwrite can be performed

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[24] Genworth's underwriting guidelines are available at http://mortgageinsurance.genworth.com/pdfs/Guidelines/UWGuidelinesManual-20120629.pdf

by Genworth (at no additional cost to the lender or borrower) or delegated to the lender. For Genworth, one of the lessons learned from the housing crisis is that, to fulfill our role of imposing and maintaining market discipline for low down payment lending, we must set and enforce independent underwriting standards.[25] Beginning in early 2008, Genworth limited delegated underwriting programs, initiated significantly enhanced auditing and quality control programs when underwriting is delegated, eliminated all programs that permitted reliance on third-party automated underwriting systems in lieu of our own independent risk criteria, and revised our credit underwriting guidelines.

To further analyze rescission rates, we also segmented loans based on whether the insurance underwrite was performed by Genworth or delegated to the lender. *The rescission rate on loans with a delegated underwrite was 23%, almost four times the rate for Genworth underwritten loans (6%).*

Delegated vs. Genworth Underwrite	Rescission Rate
Delegated	23%
Genworth	6%
Total	**19%**

Loans were then segmented by both loan type and underwrite type. *The rescission rate on conventional loans with a Genworth underwrite was only 4%.*

Loan Type	Underwrite	Rescission Rate
Non-Conventional	Delegated	31%
	Genworth	11%
	Non-Conventional Total	**27%**
Conventional	Delegated	20%
	Genworth	4%
	Conventional Total	**17%**
Total		**19%**

Finally, we note that for conventional loans underwritten by Genworth, 90% of rescissions were related to fraud or material misrepresentation. Typically, a mortgage loan defaults because a borrower's financial circumstances have changed and he or she simply can no longer afford their mortgage, at which point Genworth pays a claim. The extraordinary circumstances that led to the collapse of the housing market, and the unprecedented levels of mortgage market fraud and misrepresentation in the years leading up to that collapse,

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[25] Because MI providers assume first-loss risk exposure, the industry has strong incentives to conduct a detailed and qualitative underwrite that assesses credit, capacity and collateral. The underwriting process goes far beyond merely confirming that all required documentation is in the file. The mortgage insurer is independent from the originator and has no motivation to approve loans that do not fall within its credit underwriting guidelines.

have increased the incidences of rescissions by Genworth and other private mortgage insurers.

<u>MI claims paying policy going forward.</u>

Genworth and other mortgage insurers have taken considerable measures to clarify policies and practices regarding loan investigations and rescissions, especially by providing clear written guidance to insured parties. In particular, Genworth is in the process of filing endorsements to its master policies that will make the following practices a clear, contractual commitment:

- In the event that the first 36 months' loan payments have been paid on time from the borrower's own funds, Genworth will not exclude the loan from insurance coverage nor will it cancel coverage due to fraud, misrepresentation or non-compliance with Genworth underwriting requirements;

- Once a loan is at least 60 months seasoned, Genworth will not investigate the file for fraud, misrepresentation or non-compliance with Genworth underwriting requirements; and

- Genworth will not exclude a loan from insurance coverage nor will it cancel coverage based on an appraisal as long as the appraisal complies with Genworth requirements and as long as any variance in the value of the property from the original appraised value is less than 15%.

<u>The NPR would shift more lending to Government Loans.</u>

Assigning a zero risk weight for FHA, VA and other Government Loan programs, while eliminating – or even decreasing – the recognition of MI, will likely force virtually all portfolio low down payment lending to those programs. Borrower costs will be increased and borrower choice will be limited, there will be less private capital supporting housing finance, and the role of the government – and the ultimate financial risk to taxpayers – will be permanently expanded.

The impact of this change on the cost of mortgage lending is material and easily quantified. Under the risk weights proposed in the NPR, the capital cost of holding a privately insured – or uninsured – low down payment loan would be approximately 83 basis points greater than under current capital rules. For a typical $300,000 mortgage loan, that translates into an additional $13,000 of additional capital cost over the life of that loan.

If lenders choose instead to do an FHA loan (because of the zero risk weight), many borrowers would still see higher mortgage costs. In many cases today, the cost to a borrower of an FHA loan is greater than the cost of a loan with private mortgage insurance. For example, a borrower with a $300,000 loan amount and a 10% down payment would pay $113 more per month (almost $9500 more over the life of the loan) for a loan with FHA insurance than for a comparable loan with private mortgage insurance.[26] If the NPR is adopted as proposed, there would no longer be a lower cost private mortgage insurance

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[26] Assumes property purchase price of $333,333, loan amount of $300,000, seven year life of loan, base note rate of 5% (5.50% if the loan is sold to a GSE and subject to their current loan-level pricing), and borrower FICO score of 720, resulting in a monthly payment of $2,633 for a loan with FHA insurance versus a monthly payment of $2,520 for a loan with private mortgage insurance sold to a GSE.

option for that borrower. Loans with MI would be saddled with unnecessary costs that would drive virtually all low down payment portfolio lending to the FHA or VA.

<center>* * * * * * * * * * * * * *</center>

For the reasons set forth above, and subject to the risk-related conditions also described above, the final rule implementing the Standardized Approach should expressly recognize the risk mitigation provided to residential mortgages by mortgage insurance. Genworth appreciates the opportunity to comment on the NPR. Questions or requests for further information may be directed to the undersigned or to
Carol Bouchner (carol.bouchner@genworth.com, 919-846-3120),
Stephen Cooke (stephen.cooke@genworth.com, 919-870-2363) or
Duane Duncan (duane.duncan@genworth.com, 202-662-2573).

Very truly yours,

Rohit Gupta
President & CEO
Mortgage Insurance – U.S.

Exhibit A
Glossary

Glossary

60% and Below Bucket   Loans with LTVs of 60% or below

60% - 80% Bucket   Loans with LTVs greater than 60% and less than or equal to 80%

80% - 90% Bucket   Loans with LTVs greater than 80% and less than or equal to 90%

Above 90% Bucket   Loans with LTVs greater than 90%

Agencies   Office of the Comptroller of the Currency, the Federal Reserve System and the Federal Deposit Insurance Corporation

Average Coverage   Total Risk in Force / Total Insurance in Force

CAT Model   Claims Adequacy Test Model, a risk based financial model that assesses a private MI provider's ability to pay claims under conditions of a prolonged (10-year) and severe housing market stress

CAT Ratio   Ratio of Total Resources Available to Total Resources Required; numerical measure of sustained claims paying ability for the duration of the 10-year stress period with a break-even of 100%

CLTV   Combined Loan-to-Value Ratio

Conventional Loans   Loans that are fully amortizing, fully documented and do not have scheduled balloon payments

CoreLogic Servicing Database   Database compiled by CoreLogic that includes loan level data on over 130 million residential mortgage loans and covers approximately 75% of the residential mortgage market

FSB   Financial Stability Board

Genworth   Genworth Mortgage Insurance

Genworth 2012 Book   Loans insured by Genworth at June 30, 2012

Government Loans   Loans insured by the Federal Housing Agency or guaranteed by the Veteran's Administration or Rural Housing Department

Housing Stress   Period of housing market crisis beginning in June 2007 through June 2012

IIF   Insurance in Force - An amount equal to the unpaid principal balance of loans insured

LTV   Loan-to-Value ratio

MI   Private mortgage insurance

MI Impact Analysis   Genworth analysis of low down payment loans to compare default rates of loans with MI to piggyback seconds

MI Insured Book   Books of business insured as of June 2007 by MICA member companies

NAIC   National Association of Insurance Commissioners

NAIC Model Act	National Association of Insurance Commissioners' Model Mortgage Guaranty Insurance Act
Non-Standard Loans	Includes loans with any non-standard feature and loans made to borrowers who have demonstrated a weak credit history regardless of loan features: No (or low) documentation verifying income and assets; Negative amortization; Interest only; Balloon payments; and Term in excess of 30 years (also referred to in the CAT Model as Segment Three loans)
NPR	Notice of Proposed Rulemaking, in this case, to revise and replace the Agencies' current capital rules (Standardized Approach for Risk-Weighted Assets; Market Discipline and Disclosure Requirements)
PC	Probability of Claim - the probability that a loan will default and result in an MI claim
Premium Loans	Includes only loans with the following standard features made to borrowers who have demonstrated a very strong credit history : Full documentation; Full amortization; No balloon payments; Term of 30 years or less (also referred to in the CAT Model as Segment One loans)
Premium Rates	Annual premium / Insurance in force
Private MI	Private mortgage insurance
Promontory	Promontory Financial Group, LLC
RIF	Risk in Force - An amount equal to the unpaid principal balance of loans insured multiplied by the MI coverage amount
Seasoning	Time elapsed since origination, also known as aging
Standard Loans	Includes loans with the same standard features as Premium Loans, made to borrowers who have a solid credit history
Standardized Approach NPR	Standardized Approach for Risk-Weighted Assets; Market Discipline and Disclosure Requirements - Notice of proposed rulemaking to revise and replace the Agencies' current capital rules
Total Resources Available	Statutory capital plus loss reserves plus unearned premium reserves plus investment income plus premiums collected
Total Resources Required	Resources Required for years 1-5 plus Resources Required for years 6-10
Transition Rate	Movement of loans from one performance (status) category to another

Exhibit B
Promontory Report -
The Role of Private Mortgage Insurance in the U.S. Housing Finance System
November, 2010

The Role of Private Mortgage Insurance in the U.S. Housing Finance System

November 4, 2010

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I.   Executive Summary

In the wake of the recent financial crisis, policymakers in the U.S. have begun to reassess the structure of the U.S. housing finance system and the federal government's role in supporting the flow of capital to the housing sector. Private mortgage insurers (PMIs) rank among the lesser known yet critical components of the current housing finance system. In order to facilitate continued discussion of housing finance reform, Genworth Financial has asked Promontory Financial Group to prepare this report on the role of PMIs in the current U.S. housing finance system. This document is intended to serve as a detailed reference guide with pertinent commentary for interested parties seeking current and historical perspective on the role of PMIs.

Characteristics of Private Mortgage Insurance

All other things being equal, the risk of loss from a mortgage loan is higher when the borrower makes a smaller down payment. Private mortgage insurance (PMI) enables lenders, loan purchasers, and investors to mitigate default risk on low-down-payment residential mortgages by transferring a portion of this risk to third-party PMIs, which specialize in managing this risk over the long term. PMI takes four basic forms: flow insurance, bulk insurance, pool insurance, and reinsurance.

Flow insurance provides coverage on an individual loan basis (under standard terms set forth in a master policy) and is purchased at the time a loan is originated. When a borrower applies for a mortgage loan to finance more than a certain percentage of the value of the home (*i.e.*, a high loan-to-value mortgage), the lender may require that the loan be covered by PMI.   While the lender generally selects the mortgage insurance carrier, it passes the cost of coverage on to the borrower. The lender (or any party that subsequently purchases the loan) receives the insurance benefit if the borrower defaults. In bulk transactions, the insurer agrees to provide coverage on each loan in a larger group of loans that generally have already been originated. These loans may have flow

insurance already (particularly if the loans are high loan-to-value), in which case the bulk insurance provides a second layer of protection for losses not covered by the existing insurance. Pool insurance involves the insurance of multiple mortgages that are aggregated for purposes of calculating coverage and claims. Under such an arrangement, the insurer will generally cover all losses in the pool up to an aggregate limit of losses. PMIs generally issue pool insurance in connection with mortgage securitizations. Finally, private mortgage reinsurance, in which the primary insurer passes a portion of the risk to a third-party insurer, has generally been written by "captive" reinsurers affiliated with lenders.

Utility of Private Mortgage Insurance in the Marketplace

A significant motivation for lenders to seek primary mortgage insurance arises from the loan purchasing standards of Fannie Mae and Freddie Mac (the GSEs). Under the federal laws governing the GSEs' activities, neither entity may purchase a mortgage above 80% loan-to-value (LTV) unless the lender provides one of several enumerated credit enhancements, of which PMI is the most common. For so-called "private-label" (*i.e.*, non-GSE) asset-backed securitizations, PMI may facilitate favorable credit ratings for issued securities. Finally, banks may desire insurance for loans held on balance sheet in order to manage their own credit risk exposure in accordance with supervisory guidance or reduce the amount of regulatory capital that they must hold against high-LTV mortgages. The Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 directs regulators to consider mortgage insurance as one of various risk mitigants that might qualify a loan for exemption from securitization risk retention requirements. This additional regulatory recognition may spur additional demand for PMI.

Regulation of Private Mortgage Insurers

Like most insurance companies, PMIs are subject to a state-by-state regulatory regime, and many states have enacted legislation specifically tailored to mortgage insurance. States limit the ability of PMIs to take on risk through restrictions such as contingency reserve requirements; capital requirements; investment restrictions; risk concentration restrictions; and restrictions on engaging in activities other than mortgage-related insurance. The GSEs provide an additional layer of de facto regulation. Finally, while federal law generally leaves the prudential regulation of PMIs to the states, PMIs are subject to certain consumer protection laws, including the Homeowners Protection Act and the Real Estate Settlement Procedures Act.

In comparing the regulatory framework for PMIs with that of other regulated financial institutions, PMIs' contingency reserves—a long-term, countercyclical regulatory capital requirement—stand out as distinctive. The basic rationale for contingency reserves can be stated simply: PMIs contend with cyclical volumes of claims that generally stay within certain parameters but occasionally spike, with potentially catastrophic consequences for the insurer. The contingency reserve framework addresses this risk by requiring PMIs to keep in reserve 50% of premiums for ten years, in anticipation of potentially massive defaults. To a large extent, this and other aspects of the state prudential framework for PMIs reflect lessons learned from the Depression-era collapse of many institutions that offered PMI. The regulatory framework has been fairly consistent since the modern PMI industry re-emerged in 1957.

Any assessment of the framework's effectiveness must identify the episodes of severe industry stress since 1957 and consider their causes and consequences. Such episodes occurred in the 1980s and early 1990s and again today. In the 1980s and early 1990s, a combination of rolling regional recessions, poor economic and housing market conditions, imprudent underwriting patterns, and—for one carrier—massive exposure to a single failed real estate investment scheme

contributed to significant industry-wide losses. However, of the 14 PMIs in existence in 1980, only one was unable to fully repay its policyholders. The industry as a whole absorbed its full share of mortgage losses as expected.

The current U.S. housing downturn represents the most adverse scenario for PMIs since the Great Depression. While the smallest insurer has been in run-off mode since July 2008, a recent credit rating agency report expresses a tentative view that the six rated insurers will be able to pay future claims in full.[1] These six PMIs have been operating at a loss since 2007 but continue to insure new loans. Current challenges for the industry include competition from the Federal Housing Administration (FHA) and, in some cases, concerns about exceeding capital constraints. The current housing downturn will provide a rare and valuable benchmark for assessing the adequacy of PMIs' reserves and other risk management practices against the needs of the future housing finance system.

Comparison to Other Forms of Mortgage Credit Risk Mitigation

By assuming much of the incremental credit risk associated with high-LTV mortgages, PMI promotes the flow of credit from lenders and investors that might not otherwise have the capacity or desire to assume this risk. In this way, PMI increases the total amount of private capital available for lending to borrowers unable to afford (or unwilling to provide) a 20% down payment. Likewise, pool-level PMI on securitizations containing lower-LTV mortgages encourages lending and investment in these instruments as well. PMI thus promotes homeownership by individuals who would not otherwise be able to afford it, an objective of U.S. housing finance policy since the New Deal.

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[1] See Moody's Investors Service, "US Mortgage Insurance: Developing Outlook," *Industry Outlook* (August 17, 2010).

PMI can be compared with various other forms of credit risk mitigation, including: self-insurance by lenders; risk assumption by GSEs, bond insurers, or derivatives counterparties; and government mortgage insurance. From a credit availability standpoint, each of these forms of credit risk mitigation can support the provision of credit by shouldering default risk. But from an economic stability perspective, these forms of credit risk mitigation are not equally capable of bearing the severe tail risk associated with high-LTV mortgages. The following characteristics of PMIs help them manage the risks involved in their business and can serve as a point of comparison with other players:

- *Contingency reserves.* PMIs build contingency reserves during normal times and draw them down only when losses exceed statutory thresholds or insurance regulators otherwise authorize reductions.

- *Geographic diversification.* Geographic diversification serves as a bulwark against regional housing slumps by enabling PMIs to use premiums collected in more stable regions to offset losses incurred in distressed regions.

- *Lender diversification.* Because PMIs insure loans originated by many different lenders, they are less vulnerable than individual lenders to lender-specific operational or other problems affecting loan quality.

- *Delayed loss realization.* Because the covered loss amount is not established and payable until foreclosure, PMIs can build up reserves as a loan first goes delinquent, while continuing to generate premiums from other policies to offset the expected loss.

- *Acquaintance with relevant risks.* By virtue of their close involvement in underwriting, loss mitigation, and claims management activities, PMIs are relatively well positioned to understand the risks associated with high-LTV mortgage loans.

- *Incentives to avoid foreclosure.* While not a form of institutional risk management per se, a financial institution's incentives to modify loans or take other measures to avoid foreclosure impact financial stability. Because PMIs do not generally incur claims obligations unless a borrower defaults, the interests of PMIs are closely aligned with those of borrowers in this area.

While certain other financial institutions share some of these characteristics, few or none currently share all of them.

Among the various alternatives to PMI, government mortgage insurance offers the closest comparison. FHA and Veterans Administration (VA) mortgage insurance programs in particular provide significant competition for PMIs. On the most basic level, public and private insurers differ in that government insurers must adhere to the particular means and ends assigned to them by legislators, while PMIs primarily serve their shareholders. This points toward a second, equally basic, difference: obligations of the government insurers are backed by the full faith and credit of the United States. This has important implications for the role of government insurance in the housing finance system. While an explicit federal government guarantee puts taxpayer funds at risk, the government insurers, particularly the FHA, have special capabilities to continue writing large volumes of new policies during severe housing recessions. Government mortgage insurance, or government reinsurance against catastrophic losses, may have a useful role to play in preserving the availability of affordable high-LTV mortgages during severe housing downturns. However, government mortgage insurance can also cause destabilizing imbalances in normal times to the extent government insurers fail to build sufficient reserves or charge sufficient risk premiums.

II.   Introduction

In the wake of the recent financial crisis, policymakers in the U.S. have begun to reassess the federal government's role in supporting the flow of capital to the housing sector. The Federal Housing Finance Agency's (FHFA) decision in September 2008 to place Fannie Mae and Freddie Mac into conservatorship is the most immediate, though certainly not the only, impetus for this discussion. For the past forty years, the two government sponsored enterprises (GSEs) have guaranteed timely repayment of principal and interest on bonds backed by residential mortgages, helping fuel the tremendous growth of the secondary mortgage market. While the GSEs operated as private companies during this time, they benefitted from an implicit federal government guarantee (in addition to other effective government subsidies). With their entry into conservatorship, the GSEs' federal backing became explicit, and they have since drawn approximately $148 billion from a Treasury line of credit.[2]

Because the GSEs are just one element in a complex mortgage finance system, the debate concerning their fate raises broader questions about U.S. housing policy. Both the Obama Administration and the U.S. Congress have begun to gather information and perspectives with a view toward legislative action in 2011. The Treasury Department formally solicited public comment on a range of housing-related questions in April 2010. Building on this outreach effort, the Treasury Department and the Department of Housing and Urban Development (HUD) jointly hosted an initial conference on the future of housing finance in mid-August. The Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 requires the Treasury Department to submit to Congress by January 31, 2011 its recommendations for ending the GSE conservatorships.[3]

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[2] See Nick Timiraos, "Housing Ills Cloud Debate on Fannie," *Wall Street Journal*, Aug. 16, 2010, http://online.wsj.com/article/NA_WSJ_PUB:SB10001424052748704296704575431531544841658.html.

[3] Pub. L. 111-203, § 1074.

Meanwhile, the House Financial Services Committee and Senate Banking Committee have held several hearings on housing finance reform this year and plan to hold more.

Private mortgage insurers (PMIs) rank among the lesser known yet critical components of the current housing finance system. Since 1957, modern PMIs have assumed credit risk on high loan-to-value (LTV) residential mortgages, thereby encouraging lenders and investors to provide credit to borrowers who do not make a full 20% down payment. PMIs now insure the vast majority of loans over 80% LTV purchased by the GSEs.

The recent housing finance crisis is causing policymakers to reevaluate the role of mortgage insurance in a reconstituted housing finance market. For example, the House Financial Services Committee held a hearing on the role of private mortgage insurance (PMI) on August 29, 2010. In order to facilitate continued discussion, Genworth Financial has asked Promontory Financial Group to prepare this report on the role of PMIs in the current U.S. housing finance system. This document is intended to serve as a detailed reference guide with pertinent observations for interested parties seeking current and historical perspective on the role of PMIs.

The remainder of this report is organized as follows: Section III describes the major types and features of PMI. Section IV discusses the economic and regulatory factors that encourage the use of PMI. Section V reviews the major regulatory restrictions to which PMIs are subject, discusses the rationales for these restrictions, and examines their effectiveness in ensuring long-term industry resilience. Section VI compares PMI to alternative forms of mortgage credit risk mitigation or avoidance, specifically: lender avoidance of high-LTV mortgages, lender self-insurance, GSE insurance, bond insurance, credit derivatives, and government insurance programs.

III.   Characteristics of Private Mortgage Insurance

Lenders and investors face a higher risk of loss from mortgages that, all other things being equal, have higher LTVs.   Borrower default on such mortgages is likely to lead to higher losses due to the narrow margin between the money lent and the value of the collateral. In addition, higher LTV mortgages are generally believed to carry a higher probability of default compared with lower-LTV mortgages.[4] PMI enables lenders, loan purchasers, and investors to mitigate default risk on high-LTV residential mortgages by transferring a portion of this risk to third-party PMIs.[5]

In the U.S., lenders commonly set the threshold for requiring PMI at 80% LTV. The 80% figure derives from the statutes governing loan purchases and guarantees by Fannie Mae and Freddie Mac, the two large GSEs that dominate the U.S. secondary mortgage market. As explained in section IV.a., the GSEs may only purchase a high-LTV mortgage if the originator provides one of three kinds of credit enhancements, of which PMI is by far the most feasible and popular. Accordingly, lenders that anticipate selling loans to the GSEs abide by the 80% threshold when determining whether to require PMI.

Lenders that plan to hold mortgages on their books or sell them to parties other than the GSEs may choose to require PMI for mortgages above or below 80% LTV, according to their risk

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[4] For a comprehensive survey of relevant literature on the relationship between LTV and mortgage default rates, as well as independent statistical analysis of both FHA and conventional mortgages, see GAO, *Mortgage Financing: Actions Needed to Help FHA Manage Risks from New Mortgage Loan Products*, GAO-05-194 (Washington, D.C., February 2005), http://www.gao.gov/new.items/d05194.pdf.

[5] Although insurers briefly experimented with PMI for commercial mortgages, they incurred heavy losses and exited this line of business. Unlike in the residential mortgage context, where PMI is frequently required for all loans above a certain LTV (see below), commercial mortgage lenders and borrowers purchased mortgage insurance only in particularly high-risk circumstances. This adverse selection of risk, coupled with the relatively small size of the commercial mortgage insurance market, prevented the insurers from generating a sufficient premium base over which to spread losses. Roger Blood, "Mortgage Default Insurance: Credit Enhancement for Homeownership," *Housing Finance International* (2001): 55, http://www.housingfinance.org/uploads/Publicationsmanager/0109_Mor.pdf.

appetites, capital needs, and the competitive environment. There are relevant regulatory standards here as well. For example, the U.S. banking agencies have stated that they expect first-lien mortgages or home equity loans on owner-occupied, 1-to-4-family residential properties to have appropriate credit support, such as mortgage insurance or readily marketable collateral, where LTVs reach or exceed 90%.[6] In addition, bank regulatory capital requirements incorporate supervisory expectations that high-LTV loans be prudently underwritten.

PMI takes four basic forms, as described below: flow insurance, bulk insurance, pool insurance, and reinsurance. We discuss captive reinsurance separately.

a.   Flow Insurance

Flow insurance is a form of primary insurance, meaning that it provides coverage on an individual loan basis at origination. When a borrower applies for a high-LTV mortgage loan, the lender may require flow PMI to offset the increased risk associated with the smaller down payment. The insurance premiums may be structured in either of two ways. First, the applicable mortgage contract may obligate the borrower to pay insurance premiums to the servicer as part of the borrower's monthly mortgage obligation. The servicer then remits these amounts to the insurer. Alternatively, some lenders build the cost of PMI into the borrower's interest rate (so-called "lender-paid mortgage insurance"). In either event, the lender (or any party that subsequently purchases the loan) receives the insurance benefit if the borrower defaults.[7] Between 1990 and 2008, 12.6% of all single family mortgage originations in the U.S. had flow insurance.[8]

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[6] OCC, FRB, FDIC, and OTS, Interagency Guidance on High-LTV Residential Real Estate Lending (Oct. 8, 1999), 3,
http://www.federalreserve.gov/boarddocs/srletters/1999/sr9926a2.pdf.

[7] PMI should not be confused with single premium credit insurance products, such as credit life, credit disability, credit unemployment, and credit property insurance. The events that may trigger a claim and the nature of the payout under these policies differ from PMI. Single premium credit life,

Underwriting

PMIs have been described as a "second set of eyes" in the loan underwriting process, meaning that they exercise an independent influence in this process, rather than relying solely on lender judgment. As such, PMIs can impose additional market discipline on lenders. Some degree of reliance on lenders is inevitable, particularly in collecting documents from the borrower-applicant. But in most other respects, PMIs have the ability not only to impose their own underwriting guidelines but also to review individual loan files.[9]

The extent to which PMIs actually do so varies by insurer, by lender, and over time. In some cases, the loan undergoes largely separate (and more or less simultaneous) underwriting by the lender and the insurer. However, in many cases the insurer delegates its underwriting function to "approved" lenders with satisfactory origination and servicing procedures and histories. PMIs monitor the performance of delegated lenders by, among other things, reviewing individual loans on a sample basis and rescinding coverage after-the-fact where the lender has failed to meet contractual underwriting expectations. Conversely, lenders sometimes outsource their own underwriting functions to affiliates of PMIs on a fee basis. In structuring underwriting arrangements, PMIs and lenders are motivated by the sometimes competing objectives of speed-to-close, procedural simplicity and transparency to the borrower, cost effectiveness, and quality control.

The underwriting criteria of PMIs resemble those used by lenders and the GSEs. They include measures of borrower creditworthiness, the size of the down payment, the appraised value

credit disability, and credit property insurance are now largely prohibited in the U.S. See Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, Pub. L. 111-203, § 1414(d).

[8] FHFA, "State of the Private Mortgage Insurance Industry: Implications for U.S. Mortgage Markets and the Enterprises," *Mortgage Market Note* 09-4 (August 20, 2009), 4, http://fhfa.gov/Default.aspx/webfiles/14779/MMNOTE_09-04%5B1%5D.pdf.

[9] PMIs can also impose underwriting discipline by tracking loan performance by lender. That is, PMIs can track default rates across lenders and alert underperforming lenders to potential areas of concern.

of the property, the purpose of the loan, and the structure and interest rate of the loan. PMIs take into account their internal risk thresholds,[10] as well as the competitive environment, when calibrating their underwriting criteria. However, because most mortgages on which flow insurance is written are ultimately sold to the GSEs, both lenders and PMIs have, to varying degrees, deferred to GSE underwriting standards, particularly after the introduction of GSE automated underwriting systems. While reliance on the GSE automated underwriting systems facilitated quick and inexpensive underwriting decisions by lenders and PMIs in recent years, it is now generally acknowledged that the lack of transparency in these systems also obscured relevant risks. Accordingly, PMIs are unlikely to rely to the same extent on third-party underwriting systems in the foreseeable future.

Once flow insurance has been issued, the insurer cannot revise the premium amount or other terms during the life of the policy.

Extent and Duration of Coverage

The insurer's master policy sets forth the terms of insurance. If the borrower becomes delinquent on the mortgage while the PMI policy is in force, the owner or servicer of the loan must file a preliminary notice with the insurer. Only upon foreclosure does the owner or servicer generally submit the final insurance claim. The claim typically includes a percentage of the outstanding principal and accrued interest on the loan. It also includes various expenses incurred by the lender during the foreclosure process, such as legal expenses, upkeep of the property, and

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[10] Over time, PMIs' sophistication in evaluating and pricing the risks associated with individual loans, as well as portfolio-level risk, has grown. For additional detail on the kinds of risk management tools employed by modern PMIs, see, for example: Kristin Chen, "The Role of Mortgage Insurance in Risk Management," *International Journal of Real Estate Finance* 1, no. 2 (2000), 10-13; Roger Blood, "Managing Insured Mortgage Risk," in *The Secondary Mortgage Market: Strategies for Surviving and Thriving in Today's Challenging Markets*, ed. Jess Lederman (Chicago, Probus, 1992), 635-660; and William H. Lacy, "Risk Management: Key to Success for the 1990s," in *The Secondary Mortgage Market: Strategies for Surviving and Thriving in Today's Challenging Markets*, ed. Jess Lederman (Chicago, Probus, 1992), 661-678.

property taxes and insurance. State laws generally provide that an individual private mortgage insurer may cover no more than about 25% to 30% of an otherwise claimable amount. While at one time this restriction may have served to ensure a certain apportionment of risk between lender and insurer,[11] state laws now permit PMIs to provide higher levels of coverage via reinsurance arrangements, including reinsurance by affiliates of the primary insurer. For example, a primary insurer may provide flow insurance covering 40% of the gross claim amount so long as 10% to 15% of the coverage (depending on the state) is reinsured by an affiliate or third party.[12]

Upon filing of the claim, the insurer generally chooses between two options:

(a) Pay the stated coverage percentage and allow the lender to retain title to the property; or

(b) Pay 100% of the gross claim and take title to the property.

While theoretically an insurer might choose option "b" if, for example, it believes the property is worth significantly more than the foreclosure sale price, this is rare in practice; real estate management is not a core competency of PMIs. Both options are set aside if a third party pays a high price for the property at the foreclosure auction, in which case the insurer pays the difference, if any, between the claim amount and the foreclosure sale price (*i.e.*, the lender's actual loss).[13]

Within and among these possible outcomes, potential losses to PMIs and insured lenders vary according to the contractual coverage level, the remaining loan balance, and the value of the

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[11] See Chester Rapkin et al., *The Private Insurance of Home Mortgages: a Study of the Mortgage Guaranty Insurance Corporation* (University of Pennsylvania: Institute for Environmental Studies, December 1967), 35.

[12] Most or all of the PMIs maintain multiple insurance subsidiaries for precisely this purpose. Today, secondary mortgage market investors willing to pay for upwards of 40% coverage can obtain it and thereby insulate themselves from losses in virtually all scenarios.

[13] PMIs require lenders to adhere to specific foreclosure bidding guidelines designed to encourage this result. See, *e.g.*, MGIC, MGIC Bidding Instructions (rev. June 2010), http://www.mgic.com/pdfs/71-42970_bidding.pdf; PMI, PMI Loss Mitigation & Claims Reference Manual (rev. March 2010), 9, http://www.pmi-us.com/media/pdf/resourcecenter/claims_forms/pmi_dcrefmanual.pdf.

collateral, among other variables. In some cases, the resulting insurance payout, combined with the liquidation value of the mortgage collateral, is sufficient to make the lender whole, or even yield a modest profit for the lender. But in other cases the lender may experience material loss, particularly where the collateral value has plummeted.

Under federal law, flow insurance policies automatically terminate when the borrower acquires, through periodic loan payments, an equity stake in the home greater or equal to 22% of its original sale price or original appraised value. The borrower may also elect to cancel insurance when this ratio reaches 20%.[14] For very high-LTV mortgages, this often occurs 10-15 years into the loan term.[15] For mortgages with an original LTV closer to 80%, this may occur after only a few years (depending on interest rate). In addition, GSE policies permit borrowers to cancel PMI based on *current* appraised value, with minimum LTV requirements varying between 70% and 80%, depending on loan seasoning and property type.[16] Rapid home price appreciation leading up to the recent credit crisis enabled many high-LTV borrowers to cancel PMI fairly quickly.

Loss Mitigation

PMIs take a keen interest in loss mitigation and foreclosure prevention. This interest arises both from the PMIs' first-loss exposure and from the fact that foreclosure is typically the only trigger for claims payments under PMI policies. Various corrective steps may be taken after a borrower becomes delinquent, short of foreclosure, to minimize losses to all parties. These steps include, for example, borrower counseling, loan modifications, partial forbearance, and short sales. Both the servicer and the insurer must receive permission from the other to renegotiate the terms of

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[14] 12 U.S.C. § 4902.

[15] However, due to home sales and refinancings (particularly in a declining interest rate environment) the average life of a loan is typically much shorter than its stated term.

[16] See, *e.g.*, "MI Cancellation: Questions and Answers," Fannie Mae, accessed September 1, 2010, https://www.efanniemae.com/sf/guides/ssg/relatedservicinginfo/pdf/micancellation.pdf, 4.

a mortgage. This may occur on a loan-by-loan basis or, more often, through conditional delegations of authority. For example, the insurer may delegate to the servicer its authority to approve loan modifications for borrowers that meet certain criteria. PMIs also contact borrowers directly and negotiate solutions where the servicer could not, including during periods of intense market stress when servicers cannot keep up with high call volumes.[17] PMIs continue to make substantial investments in operational infrastructure to support their foreclosure prevention efforts.

b.   Bulk Insurance

In addition to providing primary insurance at each loan's origination, PMIs may also provide it on a bulk basis after origination. In bulk transactions, the insurer agrees to provide coverage on each loan in a larger group of loans that have already been originated. These loans may have flow insurance already (particularly if the loans are high-LTV), in which case the bulk insurance provides a second layer of protection for losses not covered by the existing insurance. In a typical bulk transaction, loan level coverage could extend down to 50% LTV loans. Coverage is frequently subject to a deductible (borne by the lender) and a limit on losses borne by the insurer, both expressed as a percentage of the total portfolio. For example, on a $100 million portfolio of loans, the insurer might provide coverage on each loan in the portfolio with an LTV greater or equal to 50%, subject to a 1% ($1 million) deductible and an absolute limit of 5% ($5 million). PMIs typically underwrite bulk transactions by reviewing sample loans from the group. Insurance premiums relating to these transactions are paid by lenders, loan purchasers, or investors. Bulk insurance was most commonly utilized in connection with riskier loans, such as subprime, Alt-A, or low documentation loans. Accordingly, the prevalence of bulk insurance has declined as the origination of such loans has declined in recent years.

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[17] As discussed in section VI.b., PMIs sometimes have stronger incentives to avoid borrower default than lenders or servicers.

c.   Pool Insurance

Pool insurance involves the insurance of multiple mortgages that are aggregated for purposes of calculating coverage and claims. Under such an arrangement, the insurer will generally cover all losses in the pool up to an aggregate limit of losses—generally between 5% and 25% of the original principal balance in the pool.[18] As described above, sometimes the insurer will also limit coverage on each loan, giving the policy characteristics of both bulk insurance and pool insurance. (This arrangement is known as "modified pool insurance.") PMIs generally issue pool insurance in connection with mortgage securitizations. Mortgages in the pool may also have flow insurance.

d.   Traditional Reinsurance

Under a traditional reinsurance arrangement, the primary insurer transfers a portion of its risk to an independent reinsurer in order to accomplish certain risk management objectives, such as meeting regulatory capital requirements or decreasing loss exposure. Reinsurers traditionally do not share substantial common ownership with the primary insurer or the beneficiary of the primary insurance policy. In the world of PMI, reinsurance arrangements meeting these criteria are not readily available.

e.   Captive Reinsurance

Instead, most private mortgage reinsurance is written by "captive" reinsurers affiliated with the lender. The mechanics of captive reinsurance are straightforward. The primary insurer "cedes" a portion of the periodic insurance premium to the reinsurer in exchange for the reinsurer's commitment to share losses. In some cases the reinsurer also pays an upfront fee to the primary insurer. The reinsurer shares losses on either a "quota share" basis (*i.e.*, pro rata) or an "excess of

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[18] Quintin Johnstone, "Private Mortgage Insurance," 39 Wake Forest Law Review 783 (winter 2004), 802.

loss" basis, whereby the primary insurer absorbs initial losses and often also subsequent losses above a certain intermediate threshold.

In recent years, excess of loss arrangements were far more common than quota share arrangements. Under a typical arrangement known as a 5-5-25 excess of loss arrangement, the reinsurer receives 25% of the primary insurance premiums, and its obligation to pay is triggered if losses exceed 5% of the primary insurer's original risk exposure on policies issued in a given year. (The 5% threshold can also be defined with reference to the *number* of claims filed in a given year.) If this attachment point is met, the reinsurer is responsible for the next 5% of losses. Beyond this detachment point, the reinsurer has no obligation.[19] Beginning in 2008, the GSEs capped the amount of premiums that PMIs could cede under captive reinsurance arrangements to 25% of gross premiums (or gross risk).[20] This move aimed to preserve capital within the primary PMI industry.

Reinsurance does not absolve the primary insurer of its obligation to its insured—that is, the primary insurer remains liable for all coverage if the reinsurer fails to pay.[21] Accordingly, PMIs impose certain financial requirements on captive reinsurers, including:

- Initial capitalization requirements;

- Dividend restrictions;

- A prohibition on new business unless a 10-to-1 risk to capital ratio is maintained; and

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[19] In a number of circumstances, PMIs agreed to excess of loss arrangements in which more than 25% of premiums were paid to reinsurers. As market conditions have deteriorated, however, PMIs have increasingly balked at these "deep-cede" arrangements.

[20] See, *e.g.*, Freddie Mac news release "Freddie Mac Changes Mortgage Insurer Eligibility Rules to Cap Premium Cedes on Captive Reinsurance," February 14, 2008, http://www.freddiemac.com/news/archives/corporate/2008/20080214_capture.html.

[21] Section VI.c. considers whether the government could play a useful role in smoothing steep housing recessions by providing catastrophic reinsurance to PMIs.

- Requirements that funds be held in trust and that books be cross-collateralized.[22]

In the years immediately preceding the recent financial crisis, strong loan performance meant that PMIs received little actual loss coverage from captive reinsurance arrangements. But the reinsurance landscape has changed significantly since the mortgage crisis began. PMIs have recently realized material recoveries from captive reinsurance, drawing on (and sometimes exhausting) trusts containing years of premium reserves accumulated by the captives. In consequence, many captive reinsurers are now in run-off mode, and the use of captive reinsurance has fallen precipitously. It is unclear whether and under what conditions the captive reinsurance market will revive.

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[22] These contractual requirements are generally incorporated into GSE eligibility guidelines. See Freddie Mac Private Mortgage Insurer Eligibility Requirements, Section 707; Fannie Mae Qualified Mortgage Insurer Approval Requirements, Section 7(E).

IV.   Utility of Private Mortgage Insurance in the Marketplace

This section describes the principal reasons why mortgage lenders, purchasers, and investors seek mortgage insurance. The reasons differ depending on whether the lender intends to sell the loan and to whom, but regulatory requirements often play a major role. New risk-retention regulations to be written by federal financial regulators under the Dodd-Frank Act may provide additional inducement for market participants to seek PMI.

a.   GSE Requirements

The most significant motivation for lenders to seek primary mortgage insurance arises from GSE loan purchasing standards. Under the federal laws governing the GSEs' activities, neither entity may purchase a high-LTV mortgage not insured by the government unless one of three conditions is met:

(1) The seller retains at least a 10% participation in the loan;

(2) The seller agrees to repurchase or replace the loan in the event of default; or

(3) The portion of the unpaid principal balance above 80% is insured by a qualified mortgage insurer, as defined by the GSE.[23]

Of these three options, sellers generally choose the third (mortgage insurance) because the others involve seller retention of risk on sold loans (with attendant regulatory capital consequences for banks). The particular level of PMI coverage required by the GSEs depends on the LTV of the loan. With the exception of 15- and 20-year fixed-rate mortgages, Freddie Mac typically requires the following mortgage insurance coverage:

- 12% coverage for LTVs greater than 80% but less than or equal to 85%;

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[23] 12 U.S.C. §§ 1717(b)(5)(C) (Fannie Mae), 1454(a)(2) (Freddie Mac).

- 25% coverage for LTVs greater than 85% but less than or equal to 90%; and

- 30% coverage for LTVs greater than 90%.[24]

Fannie Mae's requirements are similar, except that it also requires 35% coverage for LTVs greater than 95%.[25] These levels of insurance effectively reduce the GSEs' loss-given-default to a level comparable to an 80% LTV loan.

The GSE purchasing standards are critical to the vitality of the PMI industry in two respects. First, they provide the PMIs' primary source of business. Absent the requirement for third-party mortgage insurance, the GSEs might choose to adopt this insurance role themselves or pursue other loss mitigation strategies,[26] in which case the PMIs would be relegated to insuring non-agency ("private label") securitizations and loans held in lender portfolios. Perhaps less obviously, the GSE purchasing standards help minimize an inherent challenge of the PMI industry: adverse selection. Without an external incentive or requirement to obtain mortgage insurance on all, or nearly all, high-LTV loans, lenders tend to insure only their worst credits and self-insure the rest.[27] This situation would put extreme pressure on the PMI business model by driving up loss probabilities in ways that can be difficult for parties other than the lender to monitor and price for. By imposing an across-

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[24] Freddie Mac, Mortgage Insurance Coverage Options Matrix (rev. Dec. 2008), http://www.freddiemac.com/learn/pdfs/uw/flexmi.pdf.

[25] Fannie Mae, Selling Guide: Fannie Mae Single Family (rev. Aug. 2010), 821, https://www.efanniemae.com/sf/guides/ssg/sg/pdf/sel081210.pdf.

[26] Section VI.b. considers the relative suitability of GSEs and PMIs to manage high-LTV mortgage default risk. Section VI as a whole compares PMI with other forms of mortgage credit risk mitigation.

[27] See James Graaskamp, "Development and Structure of Mortgage Loan Guarantee Insurance in the United States," *Journal of Risk and Insurance* 34, no. 1 (March 1967): 57. See also infra n.5 (noting that adverse selection poses a significant obstacle to the development of a commercial mortgage insurance market).

the-board mortgage insurance requirement on high-LTV loan purchases, the GSEs reduce lender opportunities to withhold the strongest credits (and related premium income) from insurers.[28]

        b.   Purchaser and Investor Preferences

The risk tolerances of non-GSE purchasers or investors can also lead lenders or securitizers to seek PMI, including both primary and pool-level insurance. By reducing the risk profile of mortgage-backed securities (MBS), PMI can increase the transferability of mortgage assets in the secondary market—including both high-LTV mortgages and lower-LTV mortgages. Historically, PMI accomplished this in significant part by facilitating favorable credit ratings for securitized loan portfolios. According to a recent securities analyst report, about 4% of all outstanding private label securitizations (by volume) have PMI coverage.[29]

However, because the recent financial crisis has led to ratings downgrades of the PMIs themselves, the ability of PMIs to deliver credit rating enhancements for securitizations has been compromised in the short term. In addition, large numbers of insurance rescissions are causing both rating agencies and investors to anticipate reduced cash flows from existing PMI coverage. PMIs may rescind coverage for fraud or misrepresentation, failure of the lender to follow prescribed underwriting guidelines, or missing documentation in the loan file.[30] Rescission rates of 20%-25% have been common in recent quarters, compared with long term historical rates of 5%-10%.[31] These elevated rates appear to reflect the significant levels of lender fraud and misrepresentation

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[28] In contrast, PMIs operating in Canada do not face significant adverse selection issues, since Canadian law requires that all mortgages with LTVs greater or equal to 80% be insured.

[29] Amherst Securities Group LP, "PMI in Non-Agency Securitizations," *Amherst Mortgage Insight* (July 16, 2010), 1. Within this universe, PMI coverage of option ARMs is especially high, at over 8% of outstanding balances. While a small part of the private label securitization market overall, PMI coverage has played a major role in many individual securitizations. Ibid., 2, 11.

[30] See Amherst Securities Group, "PMI in Non-Agency Securitizations," 3, 12.

[31] See Moody's Investors Service, "US Mortgage Insurers' [sic] Remain Weakly Capitalized," *Special Comment* (August 17, 2010), 6.

that occurred in the overheated market. At any rate, in order to address rating agency and investor concerns moving forward, PMIs may need to demonstrate that they have taken action to ensure that the loans they insure meet applicable standards at policy inception.

       c.   Bank Supervisory and Regulatory Capital Requirements

Lenders may also seek PMI for loans held on balance sheet. Aside from simply managing their own credit risk exposure, regulated lenders may obtain PMI to satisfy supervisors' risk management expectations and to reduce the amount of regulatory capital they must hold against high-LTV mortgages.

Supervisory guidance issued by bank regulators has encouraged the use of mortgage insurance as a credit risk mitigant. For example, the U.S. banking agencies have stated that they expect first-lien mortgages or home equity loans on owner-occupied, 1-to-4-family residential properties to have appropriate credit support, such as mortgage insurance or readily marketable collateral, where LTVs reach or exceed 90%.[32] The Interagency Guidelines for Real Estate Lending Policies echo this expectation, calling on banks to establish internal LTV limits in their lending policies and reflect guarantees such as mortgage insurance in their underwriting standards.[33] Along similar lines, the Joint Forum has recently recommended that national supervisors "take steps to require adequate mortgage insurance in instances of high LTV lending."[34]

Banking regulators also encourage the use of mortgage insurance through regulatory capital standards, with the potential capital benefits of PMI varying among both existing and proposed

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[32] OCC, FRB, FDIC, and OTS, Interagency Guidance on High-LTV Residential Real Estate Lending (Oct. 8, 1999), 3, http://www.federalreserve.gov/boarddocs/srletters/1999/sr9926a2.pdf.

[33] See 12 C.F.R. part 365 (FDIC); 12 C.F.R. part 208, subpart E (FRB); 12 C.F.R. part 34, subpart D (OCC); and 12 C.F.R. § 560.101 (OTS).

[34] The Joint Forum, "Review of the Differentiated Nature and Scope of Financial Regulation: Key Issues and Recommendations," January 2010, 51, http://www.bis.org/publ/joint24.pdf?noframes=1.

bank capital regimes. The Basel Committee on Banking Supervision (BCBS) published the first Basel Capital Accord, commonly called Basel I, in 1988.[35] Basel I assigns assets one of five risk weights, ranging from 0% to 100%. A higher risk weight means that more capital must be held against the asset. As a general matter, the benefits of insurance or guarantees against counterparty default are significantly limited under Basel I. While banks may in some cases substitute a guarantor's risk-weighting for that of the original counterparty (up to the amount of the guarantee), doing so will generally decrease the bank's capital requirements only where the guarantor is an OECD government entity or a bank incorporated in an OECD country.

However, Basel I provides significant capital relief for insurance on high-LTV loans through other means. Specifically, by helping certain high-LTV mortgage loans qualify as "prudently underwritten" under the supervisory guidance described above, PMI enables banks to apply a 50% risk weight to these loans, rather than the otherwise-applicable 100% (or higher) risk weight.[36] In this way, the U.S. banking agencies' regulatory capital guidelines implementing Basel I reinforce relevant real estate lending guidance.

The BCBS began reassessing its capital rules in 1999, culminating in the international adoption of the Basel II framework in June 2004.[37] Basel II aims to be more sensitive than Basel I to the credit risks presented by specific exposures, including both residential mortgages and the PMIs that insure them. However, general concerns over competition and safety and soundness

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[35] BCBS, "International convergence of capital measurement and capital standards," July 1988 (updated April 1998). BCBS publications can be viewed on the BCBS website: http://www.bis.org/list/bcbs/index.htm.

[36] See, *e.g.*, 12 C.F.R. part 3, Appendix A, § 3(a)(3)(iii) (OCC).

[37] BCBS, "International Convergence of Capital Measurement and Capital Standards: A Revised Framework," June 2004.

have delayed full implementation of Basel II in the U.S.[38]

The global financial crisis has spurred the BCBS to reexamine Basel I and II, an effort commonly referred to as Basel III.[39] Although work continues, the BCBS has issued a series of proposals for comment, including a proposed loosening of the requirements for guarantors to be eligible as credit risk mitigants. This would be accomplished by eliminating the requirement that they be externally rated A- or better, a move designed to avoid the "cliff effects" that can occur when a guarantor slips below an A- rating.[40]

The PMI industry would benefit from and is actively seeking additional changes to Basel III. These changes include requiring additional capital for high-LTV loans and treating such loans as a separate asset class with a higher correlation factor; using original LTVs (not current property

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[38] See Richard J. Herring, "The Rocky Road to Implementation of Basel II in the United States" (July 2007), http://fic.wharton.upenn.edu/fic/papers/07/0731.pdf. Although the U.S. banking agencies released final rules implementing Basel II's internal ratings-based (IRB) approach for the largest banks in 2007, the agencies required these banks to calculate capital based on both Basel II and Basel I during a multi-year parallel run phase, which has yet to conclude. Risk-Based Capital Standards: Advanced Capital Adequacy Framework—Basel II; Final Rule, 72 Fed. Reg. 69288 (Dec. 7, 2007). To pacify smaller domestic banks ineligible for utilizing the IRB approach, the banking agencies had initially embarked upon revisions to Basel I known as Basel IA. Risk-Based Capital Guidelines; Capital Adequacy Guidelines; Capital Maintenance: Domestic Capital Modifications; Proposed Rules and Notice, 71 Fed. Reg. 77446 (Dec. 26, 2006). But regulators later scrapped Basel IA, instead opting for the standardized approach to Basel II. Risk-Based Capital Guidelines; Capital Adequacy Guidelines: Standardized Framework; Proposed Rule, 73 Fed. Reg. 43982 (July 29, 2008). The standardized approach under Basel II has yet to be finalized in the U.S. The IRB approach to Basel II, as implemented in the U.S., permits a bank to take into account the credit risk mitigation benefits of guarantees like PMI and credit derivatives in its estimation of the probability of default (PD) and loss-given-default (LGD), subject only to the application of overall floors on certain PD and LGD assignments. 72 Fed. Reg. 69356. Under the proposed Basel II standardized approach, risk weights for residential loans depend upon LTV and range from 20% to 150%. 73 Fed. Reg. 44040.

[39] See BCBS, "Enhancements to the Basel II framework," July 2009; BCBS, "Strengthening the resilience of the banking sector," Dec. 2009; BCBS, "International framework for liquidity risk measurement, standards and monitoring," Dec. 2009; and BCBS, "Countercyclical capital buffer proposal," July 2010. See also BCBS press release, "Group of Governors and Heads of Supervision announces higher global minimum capital standards," Sept. 2010.

[40] BCBS, "Strengthening the resilience of the banking sector," 59.

values) and "through-the-cycle" rather than "point-in-time" probability of default models; improving the accuracy of loss-given-default models for high-LTV loans; reducing reliance on credit scores (which reflect historical performance during favorable economic periods); and requiring mortgage insurance on high-LTV loans.[41] International regulators are currently considering these changes, particularly the creation of a separate asset class for high-LTV loans with a corresponding higher correlation factor, but they have not yet been formalized in a BCBS proposal.

d.   Impact of the Dodd-Frank Act

Under section 941 of the Dodd-Frank Act, federal regulators must promulgate rules requiring "any securitizer to retain an economic interest in a portion of the credit risk for any residential mortgage asset that the securitizer, through the issuance of an asset-backed security, transfers, sells, or conveys to a third party."[42] This so-called "skin in the game" requirement is designed to ensure that companies that package and sell investment securities backed by residential mortgages have strong incentives to control the quality of these mortgages. While the Dodd-Frank Act generally requires regulators to impose a risk retention requirement of at least 5%, it provides for certain exceptions. For example, loans that meet specific "low credit risk" underwriting criteria to be promulgated by the federal banking agencies must be subject to a risk retention requirement below 5%. In addition, the agencies must exempt securitizations composed solely of "qualified residential mortgages" from the risk retention requirement altogether. The term "qualified

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[41] See Genworth Financial, Inc., Comment Letter in response to the BCBS Consultative Paper on Strengthening the Resilience of the Banking Sector, April 15, 2010; Mortgage Insurance Companies of America, Comment Letters in response to the BCBS Consultative Paper on Strengthening the Resilience of the Banking Sector, April 16, 2010. These comment letters can be viewed at http://www.bis.org/publ/bcbs165/cacomments.htm.

[42] Relevant agencies include the federal banking agencies, Securities and Exchange Commission (SEC), Department of Housing and Urban Development (HUD), and Federal Housing Finance Agency (FHFA). They must jointly issue the rules within 270 days of the Act's enactment, which occurred on July 15, 2010.

residential mortgage" must be defined by the agencies, "taking into consideration underwriting and product features that historical loan performance data indicate result in a lower risk of default." As an example of such a product feature, the legislation mentions "mortgage guarantee insurance or other types of insurance or credit enhancement obtained at the time of origination, to the extent such insurance or credit enhancement reduces risk of default."

While the full implications of section 941 for PMIs will not be known until the agencies promulgate implementing regulations, mortgage insurance may play an important role in the delineation of qualified residential mortgages. If so, securitizers and originators could have strong incentives to secure PMI as an alternative to mandatory risk retention. Such incentives could significantly bolster the PMI industry's strategic position in the marketplace not only by increasing new business, but also by reducing potential adverse selection; any regulatory incentive to insure broad categories of mortgage loans reduces the likelihood that securitizers and originators will direct only their worst credits toward the PMIs.

V.   Regulation of Private Mortgage Insurers

PMIs are subject to a regulatory regime specifically tailored for mortgage insurance. While federal law imposes certain consumer protection requirements, it leaves the prudential regulation of PMIs to the states. This section begins with a brief overview of the major categories of regulatory restrictions imposed on PMIs. It then considers the rationale for these restrictions, with particular emphasis on the historical justification for PMI contingency reserves. Last, this section considers the extent to which the regulatory framework has functioned effectively during the past two housing cycles.

        a.   Regulatory Framework

The regulation of PMIs for risk and solvency occurs on the state level. While some of the details vary by state, the types of restrictions are relatively uniform.[43] In addition, because various states apply their restrictions extraterritorially to the insurer's consolidated operations throughout the U.S., the stricter state laws often govern the nationwide operations of PMIs in practice. Standard restrictions include the following:

- *Reserve Requirements.* PMIs must maintain several types of reserves:

    (1) "Contingency reserves" provide for major losses that might be incurred in a housing recession. PMIs must retain 50% of net earned premiums, as defined by state insurance laws, in a contingency reserve. The funds cannot be released for 10 years unless the insurer experiences high losses during a given year (typically 35% of premiums or more), in which case the insurer temporarily draws down the reserve to pay claims. State regulators may also authorize special releases from contingency reserves. The contingency reserve requirement is designed to prevent insurers from

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[43] See generally Johnstone, "Private Mortgage Insurance," 808-818.

declaring excessive dividends or otherwise dissipating reserves that might be needed to pay claims in a highly adverse loss scenario.

(2) "Loss reserves" (sometimes referred to as "case basis loss reserves") cover against expected claims in the short term. Loss reserves must equal expected losses on delinquent loans of which the insurer is aware, as well as delinquent loans of which the insurer might not yet be aware.

(3) Finally, insurers must maintain "unearned premium reserves" in the amount of any premiums paid before the coverage period.

- *Capital Requirements.* PMIs must generally maintain risk-to-capital ratios not exceeding 25 to 1. Through much of the credit cycle, this requirement has little or no practical effect, because the contingency reserve requirement translates into a stricter risk-to-capital ratio. Certain requirements imposed by the GSEs and, indirectly, by the rating agencies may also translate into stricter standards.[44] However, the risk-to-capital ratio can assume heightened importance in adverse loss scenarios, including the 1980s and currently. Most state regulators are authorized to exercise discretion in administering the capital requirements, including through temporary waivers. Such forbearance enables capital-constrained insurers to generate additional revenue from new business. Otherwise, an insurer exceeding the maximum risk-to-capital ratio would be precluded from doing so.

- *Investment Restrictions.* State insurance regulators also restrict the ways in which PMIs may invest their reserves, including limitations on the amount of investments in any particular security. While PMIs are generally free to invest in a wide range of instruments, including

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[44] See Dwight Jaffee, "Monoline Restrictions, With Applications to Mortgage Insurance and Title Insurance," *Review of Industrial Organization* 28, no. 2 (2006): 91. In the years leading up to the recent financial crisis, PMI capital ratios in the high single-digits were commonplace.

stocks, bonds, notes, and other evidence of indebtedness,[45] real estate investments are often off limits.[46]

- *Concentration Restrictions.* PMIs must limit their exposure to a single census tract, typically to no more than 10% of aggregate policyholders surplus.

- *Monoline Restrictions.* PMIs generally may not engage in activities other than mortgage-related insurance. However, PMIs may be *affiliated* with a variety of other firms.

The GSEs provide an additional layer of de facto requirements. To qualify for approval by the GSEs, mortgage insurers must comply with the laws of the states in which they are domiciled and do business, as well as certain NAIC Model Act provisions, such as those providing for minimum contingency and loss reserves. Both GSEs divide PMIs into two classes based upon the availability and level of external credit ratings. "Type I" insurers are rated by at least two of the three established rating agencies (S&P, Moody's, and Fitch), with no rating less than AA-/Aa3.[47] Insurers that fail to meet the criteria for Type I, including unrated insurers, are classified as "Type II" insurers and are typically subject to geographic concentration limits, liquidity requirements, and heightened risk-to-capital requirements, among other things.[48] In 2008, the GSEs suspended the automatic imposition of these additional requirements as many PMIs suffered ratings downgrades.[49]

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[45] See Johnstone, "Private Mortgage Insurance," 815 n. 129.

[46] See, *e.g.*, 10 Cal. Code of Regs. § 2521 ("No mortgage guaranty insurer may invest in notes or other evidences of indebtedness secured by a mortgage or other lien upon real property.")

[47] In order to achieve high ratings, PMIs have historically been required to pass a "stress test" simulating Depression-level economic conditions. Blood, "Mortgage Default Insurance," 51.

[48] Fannie Mae Qualified Mortgage Insurer Approval Requirements (rev. Dec. 31, 2003), 6, https://www.efanniemae.com/is/mis/pdf/mi_approval_reqs.pdf; Freddie Mac Private Mortgage Insurer Eligibility Requirements (rev. Jan. 2008), G-7, http://www.freddiemac.com/singlefamily/pdf/mireqs.pdf.

[49] See, *e.g.*, "Freddie Mac keeps insurers at top level post review," Reuters, June 20, 2008.

While federal law generally leaves the prudential regulation of PMIs to the states, the Homeowners Protection Act and the Real Estate Settlement Procedures Act (RESPA) impose certain consumer protections. The RESPA provisions relating to PMI are intended to, among other things, foster price competition among PMIs by broadly prohibiting them from paying kickbacks to lenders.[50] The Homeowners Protection Act generally requires automatic termination of PMI on single-family, owner-occupied homes (except for certain "high risk" mortgages) when the borrower acquires 22% equity in the home and gives the borrower the right to demand cancellation at 20% equity. Lenders must provide borrowers with initial and annual disclosures to this effect. These provisions aim to ensure that borrowers do not continue to pay PMI premiums for longer than necessary.

b. Rationale for State Prudential Framework

Several of the above-mentioned prudential restrictions resemble similar restrictions imposed on other financial institutions. Banks, for example, face formal and informal concentration restrictions, capital requirements, and permissible activities restrictions. But in comparing the restrictions imposed on PMIs with those imposed on other regulated financial institutions, PMIs' contingency reserves stand out as distinctive. No other type of financial institution is subject to more stringent reserve requirements than PMIs, and contingency reserves might be viewed as the centerpiece of these requirements.

The basic rationale for contingency reserves can be stated simply. To a greater extent than other insurers, PMIs contend with cyclical volumes of claims that generally peak quite infrequently but with potentially catastrophic consequences for the insurer. From an actuarial perspective, PMI portfolios are difficult to diversify, since the events they insure against—housing defaults—tend to

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[50] See Johnstone, "Private Mortgage Insurance," 818-822.

occur in waves. The contingency reserve framework addresses this reality by requiring PMIs to accumulate large reserves in anticipation of massive defaults.

Early History of PMI

A working knowledge of the history of PMI in the U.S. is essential to fully appreciate the cyclical nature of PMI and the role of prudential regulation in managing the associated risks. As one scholar of PMI regulation has observed, "[i]t was not ever thus, and each restraint represents experience acquired at great cost."[51] In a nutshell, the original business of mortgage insurance arose as an essentially unregulated appendage to the title insurance industry in New York State in the late 19th century, grew to substantial scale by the 1920s, and totally collapsed during the Great Depression. The governor of New York commissioned a post-mortem report on the industry, which was submitted by George Alger in 1934.[52] The "Alger Report" remains the definitive early history of PMI. And while its thoughtful recommendations for regulating PMIs were disregarded at the time (New York State opted to outlaw PMI in 1938), they became the foundation for state regulation of PMIs when the industry finally re-emerged in 1957.

As the Alger Report describes, a handful of companies in New York State began issuing insurance against mortgage defaults as early as the late 1880s and early 1890s. Their authority to conduct this business apparently derived from a misinterpretation of an 1885 statute governing the permissible activities of title insurers. However, in 1904 New York law was amended to convey explicit authority under the title insurance statute for licensed companies to guarantee mortgages, as well as bonds. At first the authority to insure mortgages extended only to loans originated and

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[51] Graaskamp, "Development and Structure of Mortgage Loan Guarantee Insurance in the United States," 48.

[52] Report to his Excellency Herbert H. Lehman, Governor of the State of New York, by George W. Alger, Appointed under the Executive Law to Examine and Investigate the Management and Affairs of the Insurance Department with Respect to the Operation, Conduct, and Management of Title and Mortgage Guarantee Corporations under its Supervision (New York, 1934).

owned by third parties. But in 1911 New York began to permit these companies to originate, purchase, and sell mortgages (and to insure the same against default and/or title defects).

By 1930, 50 companies were licensed by the New York Insurance Department to operate as PMIs.[53] Most also offered title insurance. These companies sold both individual loans and loan pools to investors, with guarantees of interest and principal. They generally retained servicing responsibilities on these loans and deducted their servicing and insurance premiums from the mortgage payments before passing the remainder on to the investors. (Mortgage securitization, as it is called now, had already been around for some time.) The New York PMIs were primarily in the business of selling mortgages to investors and, as far as Alger could determine, lacked any actuarial basis for calculating premiums. (For example, their fee invoices to investors generally did not distinguish between insurance premiums and servicing fees.) Alger thus believed that they were "in no true sense" insurance companies but, rather, investment companies.

The New York PMIs remained lightly regulated despite their significant role in the housing finance system. New York law required title and mortgage insurers to maintain a reserve fund set at two-thirds of paid-in capital. This fraction bore no necessary relation to the size of a company's insurance portfolio; a company could grow through retained earnings to many times its original size without supplementing its reserve fund. In addition, the entirety of this fund could be (and for many firms was) invested in mortgages, meaning that the insurer would suffer its most severe investment losses precisely when its claims obligations were highest. To the extent an insurer needed to draw on its reserve fund, it could not issue new policies until the fund was replenished. However, New York abolished this latter restriction in 1929, a move that might have made a difference to PMIs that adhered to the statutory reserve requirement in the first place; Alger

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[53] During this same period the New York Banking Department also licensed mortgage insurers. Such companies fell outside the scope of Alger's investigation.

reported that most did not. New York did impose one impressive-sounding prudential requirement: PMIs could not insure mortgages over 66.67% LTV.[54] However, lax appraisal standards and declining property values limited the effectiveness of this restriction. PMIs were also prohibited from insuring a single mortgage greater than 10% of their capital and surplus.[55]

New York PMIs prospered during the postwar period until the Great Depression. But with such small reserves, they could not survive the wave of defaults that ensued. In August 1933, the New York Insurance Department took over 18 insurers, representing most of the industry, for rehabilitation or liquidation. These companies never re-opened, and in 1938 New York made PMI illegal.

The disastrous early experience of the PMI industry revealed in dramatic fashion the extent to which PMIs are exposed to long tail events in the housing market. In normal times, PMIs experience losses that are minimal both in frequency and magnitude. But during those rare periods when homeowner defaults spike and collateral values plummet, PMIs must pay out massively. This early episode also showed the danger of permitting lightly regulated entities to engage in the business of PMI without liquid reserves commensurate with the risk they assumed. In this spirit, Alger concludes his report with his own recommendations for industry reform. He places special emphasis on one recommendation in particular: that New York adopt a maximum risk-to-capital ratio "adequate to insure against another major depression."[56]

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[54] As originally written in 1913, this restriction applied to mortgages sold by the insurer. In 1929 it was extended to insurance on mortgages sold by third parties.

[55] Although New York was the epicenter of the PMI industry, other states also licensed PMIs. The Alger Report describes the regulatory environment in these other states as similarly lax, with the notable exceptions of California and Oregon. Both states imposed a 20-to-1 risk-to-capital standard.

[56] Alger further expressed his preference for a ratio not exceeding 10 to 1. California's then-existing 20-to-1 ratio, he observed, had proved inadequate. Another notable recommendation contained in the report was to restrict PMIs' affiliations with other companies. The report describes numerous examples of: PMIs influencing captive or otherwise affiliated banks to accept imprudent risks; banks and nonbanks influencing captive or otherwise affiliated PMIs to accept imprudent risks; affiliated

Re-emergence of PMI

The Federal Housing Administration (FHA) was created in 1934 in order to stimulate construction financing during the Great Depression. It was the only mortgage insurer in the U.S. until the Veterans Administration (VA) began insuring mortgages for returning World War II veterans in 1944. Together, the government insurers pioneered the 30-year, fully amortizing, high-LTV mortgage. (In the 1920s, mortgages generally lasted between 3 and 11 years, commonly amortized only partially or not at all, and typically had LTVs between 50% and 67%.[57]) But "conventional" mortgages (*i.e.*, those not insured by the government) continued to comprise a large majority of the housing market through the 1940s and 1950s. This was due partly to the restrictive interest rate ceilings and maximum loan amounts, cumbersome procedures, and other coverage limitations of the FHA programs.[58] Accordingly, an entrepreneur named Max Karl saw an opportunity for a private company to provide an alternative to FHA insurance.[59] In 1957, he persuaded the state of Wisconsin to license the first private mortgage insurer in twenty-five years, the Mortgage Guaranty Insurance Corporation (MGIC). MGIC's innovative product was a 10 year guarantee against default, covering 20% of the loan balance, accrued interest, and expenses. Its

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PMIs and banks misleading investors as to which entity or entities stood behind a given financial commitment; and PMIs using subsidiaries to dump problem assets in ways that hid losses from investors. In Alger's view, strict limitations on ownership of PMIs would reduce the potential for controlling interests to corrupt the business integrity of PMIs, and similar limitations on ownership of banks and other subsidiaries by PMIs would reduce the opportunity for PMIs carry out improper schemes or exercise a negative influence on regulated banking subsidiaries.

[57] Rapkin et al., *The Private Insurance of Home Mortgages: a Study of the Mortgage Guaranty Insurance Corporation*, 14-15. For a detailed history of the evolution of fixed-rate mortgages in the U.S., see Richard Green and Susan Wachter, "The American Mortgage in Historical and International Context," *Journal of Economic Perspectives* 19, no. 4 (2005), 93-114, http://repository.upenn.edu/cgi/viewcontent.cgi?article=1000&context=penniur_papers.

[58] See Rapkin et al., *The Private Insurance of Home Mortgages: a Study of the Mortgage Guaranty Insurance Corporation*, 2, 16.

[59] See Bobby Baker, "Magic Max: How Mr. Karl Created a Booming Industry from a Little Company," *Wall Street Journal*, March 14, 1973.

success gave rise to an additional 11 (smaller) PMI competitors by 1964.

Unlike their predecessors several decades earlier, which were essentially mortgage sellers offering ancillary guarantees, the new PMIs were licensed as monoline insurers.[60] The spirit, if not the letter, of Alger's recommendations informed the new PMI statutes created by several states to regulate these new entities.[61] The earliest comprehensive statutes required contingency reserves in the amount of 50% of annual earned premiums, to be withdrawn only after 15 years, unless loss rates necessitated otherwise. Risk-to-capital ratios were set at 25 to 1. Loss reserves and unearned premium reserves were also required. Two early statutes (California and Illinois) restricted permissible coverage to 20% of outstanding loan balance (capped in California at 80% of actual loss, which factored in recovery on the collateral). According to one thorough study of the era, this "serve[d] to divide the risk between insurer and lender, creating an incentive for each to act prudently in evaluating loan applications."[62] These two states also imposed a concentration limit of 10% of policyholders surplus. In short, while the calibration of certain standards has evolved on the margins, the basic legal framework created around 1960 to protect against the insolvency of PMIs remains in force today.

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[60] On the economic justification for imposing monoline requirements on title and mortgage insurers, see Jaffee, "Monoline Restrictions, With Applications to Mortgage Insurance and Title Insurance."

[61] Interestingly, some of the more comprehensive state statutes closely resembled model language proposed by the industry itself. See Rapkin et al., *The Private Insurance of Home Mortgages: a Study of the Mortgage Guaranty Insurance Corporation*, 34.

[62] Ibid., 35. It is not clear where the 20% figure came from, if not the actual practices of MGIC at the time. As mentioned in section III.a., modern reinsurance arrangements have rendered such restrictions (now set somewhat higher at 25%-30%) largely irrelevant. But in practice, lenders generally retain material risk under modern PMI policies due to contractual coverage limits and captive reinsurance arrangements.

The state prudential framework was designed to ensure that PMIs could fulfill their claims obligations over the long term. Accordingly, any assessment of the framework's effectiveness must identify the episodes of severe industry stress since 1957 and consider their causes and consequences. Such episodes occurred in the 1980s and early 1990s and are taking place again today. This subsection briefly considers the industry experience during these periods.

The 1980s and early 1990s

A combination of rolling regional recessions, poor housing market conditions, imprudent underwriting patterns, and, in one case, massive exposure to a single failed real estate investment scheme contributed to significant industry-wide losses in the 1980s:

- *Housing market.* The U.S. housing market in the 1980s and early 1990s experienced a rolling series of predominantly regional recessions—beginning with the farm and Rust Belt states in the early 1980s, followed by the energy-producing states in the mid-1980s, and finally New England and California in the early 1990s.[63] Some of the most severe conditions of this period occurred in the "oil patch" states of Arkansas, Louisiana, Mississippi, and Oklahoma, where 30-year, fixed-rate, first-lien mortgages on owner-occupied single family properties originated in 1983 and 1984 had a 10-year cumulative default rate of 14.9%. (The housing recession in these states was so severe that it become the benchmark loss experience against

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[63] See generally David C. Wheelock, "What Happens to Banks When Housing Prices Fall? U.S. Regional Housing Busts of the 1980s and 1990s," *Federal Reserve Bank of St. Louis Review* 88, no. 5 (September/October 2006), 413-429, http://research.stlouisfed.com/publications/review/06/09/Wheelock.pdf; FDIC, "FYI Revisited; U.S. Home Prices: Does Bust Always Follow Boom," *FYI: An Update on Emerging Banking Issues* (May 2, 2005), http://www.fdic.gov/bank/analytical/fyi/2005/050205fyi.html.

which the Office of Federal Housing Enterprise Oversight, a predecessor of the FHFA, stress-tested the GSEs' financial strength after 2001.[64])

- *Underwriting standards.* The early 1980s marked a rapid shift in PMIs' insurance portfolios from almost exclusively fixed-rate mortgages with mostly sub-90% LTVs to substantial numbers of "innovative" adjustable-rate 90%+ LTV mortgages. Many borrowers defaulted shortly after their first interest rate resets, as has been the case recently.[65]

- *Failed investment scheme.* Several PMIs had significant exposure to mortgages and MBS originated by an enormous real estate syndication company, Equity Programs Investment Corp. (EPIC), that collapsed in 1985. Ticor Mortgage Insurance Company alone had a $166 million exposure to EPIC.[66] Unlike the general housing market conditions and underwriting patterns that affected the PMI industry as a whole, Ticor's massive exposure to EPIC is generally regarded as an idiosyncratic risk management lapse principally on the part of one insurer.[67]

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[64] See Department of Housing and Urban Development, Office of Federal Housing Enterprise Oversight, Final Rule: Risk Based Capital, 66 Fed. Reg. 47730, at 47732 (September 13, 2001).

[65] See Andrea R. Priest, "Overaggresiveness of Mortgage Insurers Haunts Industry," *American Banker*, July 25, 1986; Greenhouse, Steven, "Mortgage Insurers' Shaky House," *San Fransicsco Chronicle*, September 23, 1985.

[66] See Bruce Keppel, "Ticor Briefs State on Potential Loss: Ailing Real Estate Syndication Firm Causes Concern," *Los Angeles Times*, August 24, 1985. For additional background on the EPIC fiasco, see Thomas N. Herzog, "History of Mortgage Finance With an Emphasis on Mortgage Insurance," Society of Actuaries monograph (2009), 34-36, http://www.soa.org/library/monographs/finance/housing-wealth/2009/september/mono-2009-mfi09-herzog-history.pdf. A highly detailed account of EPIC's collapse also appears in *In re: Epic Mortgage Insurance Litigation*, 701 F. Supp. 1192 (E.D. Va. 1988).

[67] The industry responded by creating and funding a company, Policyholders Benefit Corporation, to provide replacement mortgage insurance for loans which had been insured by Ticor. Policyholders Benefit Corporation was liquidated in 2001 following run-off of Ticor legacy policies and settlement of legacy claims up to a certain stop-loss limit.

These factors yielded about eight consecutive years of industry losses from the early 1980s until 1990,[68] as well as considerable industry restructuring. Of the 14 PMIs in existence in 1980, only one (Ticor) was unable to fully repay its policyholders. Another, Pamico Mortgage Insurance Company, was ordered by its regulator to cease new policy issuances in the mid-1980s but ultimately paid its claims in full. Two other PMIs, Verex Assurance Inc. and Investors Mortgage Insurance Company, entered voluntary run-off when their parent companies declined to contribute additional capital. Meanwhile, a series of acquisitions by GE Capital Mortgage Insurance (now Genworth Financial) and Commonwealth Mortgage Assurance Company (now Radian Guaranty Inc.) contributed to further consolidation. Finally, two new players, Triad Guaranty Insurance Corporation and Amerin Guarantee Corporation, entered the industry in 1988 and 1993, respectively. By 1994 the industry was comprised of 9 companies.[69]

The industry's experience in the 1980s and early 1990s is enlightening in several respects. First, it illustrates the importance of strong underwriting and risk management to the long term health of PMIs. Like other players in the housing finance system, PMIs face competitive pressures that, at times, can lead them to under-price (or assume excessive) risk. Virtually no amount of reserving will fully immunize PMIs from imprudent risk taking. Yet, in spite of an industry-wide deterioration of underwriting quality in the early 1980s, the industry as a whole successfully met its claims obligations, paying out over $6 billion during this decade and another $8 billion in the 1990s. While economic conditions in the 1980s and early 1990s may not represent a sufficiently rigorous test of industry resilience—certainly these conditions fall short of the national Depression-level scenario that George Alger would have expected modern PMIs to survive—this era nevertheless

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[68] See Blood, "Managing Insured Mortgage Risk," 636.

[69] See Herzog, "History of Mortgage Finance With an Emphasis on Mortgage Insurance," 33-38. Our discussion of industry developments in this paragraph also draws from discussions with industry participants.

provides a useful benchmark. At a minimum, it seems to show that the industry can withstand a period of prolonged regional housing depreciation and elevated foreclosure levels at a time when industry underwriting standards are somewhat lax. With one relatively minor exception (Ticor), the PMI industry performed as expected by absorbing its full share of mortgage losses in the 1980s and early 1990s. And despite the above-mentioned entry, exit, and consolidation of various industry players during these years, existing policyholders experienced little disruption.

This era also illustrates the difference between an insurer's solvency and its willingness or capacity to write new business. As the risk-to-capital ratios of certain PMIs approached regulatory limits in the mid-1980s, two insurers were forced by regulators into run-off mode, and two others elected to cease issuance of new policies. With the exception of Ticor, these insurers paid their claims in full (and, as noted above, the remaining insurers cooperated in covering some of Ticor's obligations as well). This raises the question whether solvency is the best metric for evaluating the effectiveness of the state prudential framework, or whether capacity to continue writing steady volumes of new insurance through a housing downturn (with or without regulatory capital forbearance by supervisors) should be expected.

The answer may depend on the severity and duration of the downturn. While policy-writing capacity under stress is a desirable countercyclical mechanism, it comes at a cost. Contingency reserves are designed to ensure solvency in highly adverse scenarios. When these scenarios materialize, PMIs become capital constrained and must reduce the pace of new policy issuance. Otherwise, the insurer exposes itself to a serious risk of insolvency in the event the economy worsens even further—a possibility that other market participants do not permit PMIs to ignore. As capital increases, new business can increase accordingly. For PMIs to maintain constant policy-issuing capacity through the cycle without becoming capital constrained, they would need to amass sufficient reserves to withstand a more severe downturn. Only then could they continue to write

new business without depleting reserves to unsafe levels. But maintenance of larger capital buffers requires higher premiums, a cost borne by the borrower. Thus, in calibrating solvency requirements for PMIs, the states must strike a balance between safety and cost.[70]

The Recent Financial Crisis

The current U.S. housing downturn represents the most adverse scenario for PMIs since the Great Depression. Unlike the regional housing recessions of the 1980s and early 1990s, today's slump is national in scope, with states like Florida, Nevada, Arizona, and California particularly hard hit. National 90-day delinquency rates on residential mortgage loans, which had generally hovered around 1% during the two decades preceding 2007, rose precipitously to around 5% during the first quarter of 2010. Delinquencies have been especially high in the subprime segments of the market, reaching the mid teens early this year (and, for ARMs in particular, the high teens).[71]

The current size and state of the PMI industry, discussed further below, owes partly to the unfavorable market conditions that have taken hold since 2007. But competitive factors that developed before the recent downturn also played an important role. Specifically, in the half-dozen years immediately preceding the recent housing collapse, PMIs lost significant market share to piggyback lending.[72] Piggyback lending is the practice of simultaneously originating an 80% LTV first-lien mortgage and a second-lien mortgage financing some or all of the rest of the purchase

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[70] As discussed further below, government mortgage insurance can help resolve this dilemma by filling the void when adverse market conditions force PMI contraction. Alternatively, government reinsurance might place a floor under the potential losses of PMIs and thereby increase the capacity of PMIs to issue new policies through the cycle.

[71] Extensive current and historical data on U.S. housing market conditions is available through HUD's website at http://www.huduser.org/portal/periodicals/ushmc.html. Additional statistics, including state-specific data, are published by the Federal Reserve Bank of New York on a quarterly basis: http://data.newyorkfed.org/creditconditions/.

[72] See, *e.g.*, William B. Gwinner and Anthony Sanders, "The Sub Prime Crisis: Implications for Emerging Markets," World Bank policy research working paper (September 2008), 8-9, http://ihfp.wharton.upenn.edu/SubprimeReadings/Gwinner%20TheSubprimeCrisis.pdf.

price.[73] A common form of piggyback (or simultaneous second) mortgages was the 80-10-10 mortgage, composed of an 80% LTV first mortgage, a 10% junior mortgage (typically adjustable rate and shorter term than the first mortgage, but with interest-only payments), and a 10% down payment. Variations with much lower down payments were also common.

By splitting what would otherwise be a 90% LTV mortgage loan into an 80% LTV first mortgage and a 10% LTV second mortgage, lenders accomplished at least two objectives. First, lenders ensured that they could sell the main portion of the loan (*i.e.*, the first mortgage) to the GSEs without securing mortgage insurance. While the GSEs cannot purchase a 90% LTV mortgage without insurance (or other credit enhancements), they routinely purchased uninsured 80% LTV first mortgages without regard to the existence of a piggyback mortgage.[74] Second, lenders were able to offer piggyback loans to borrowers at lower prices than insured loans, thereby achieving a competitive advantage in the marketplace. Piggyback lenders could do so because monthly payments for piggyback loans did not include mortgage insurance premiums.[75] However, this "advantage" came at the cost of significant credit risk exposure on the second mortgage, which lenders often retained on balance sheet without any credit enhancement. In retrospect, many piggyback lenders radically underpriced these second mortgages in relation to the risks they posed. While profits from piggybacks padded lender balance sheets in the short term, the impending wave of defaults had the opposite effect.

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[73] See Robert B. Avery, Kenneth Brevoort, and Glenn Canner, "The 2006 HMDA Data," *Federal Reserve Bulletin* (December 2007), A84,
http://www.federalreserve.gov/pubs/bulletin/2007/pdf/hmda06final.pdf; FHFA, "State of the Private Mortgage Insurance Industry: Implications for U.S. Mortgage Markets and the Enterprises," 6.

[74] In fact, the GSEs charged the same guarantee fee for 80% LTV first mortgages with piggybacks as they did for those without piggybacks. In other words, the GSEs did not incorporate the cumulative LTV (CLTV) of all mortgages on the same property into their fee schedules.

[75] In addition, while borrowers have long been permitted to deduct interest payments on second mortgages for federal income tax purposes, PMI premiums were not tax deductible until 2006.

While PMIs avoided many of the worst-performing loans during the credit bubble, they nevertheless gained considerable exposure to mortgage risk in recent years, including, in some cases, material subprime exposure. And like virtually all players in the housing finance system, PMIs have suffered serious losses. The hardest-hit insurer, Triad Guaranty Insurance Corp., has been in run-off mode since July 2008.[76] Triad was among the smaller players in the industry, and its underwriting practices were generally viewed as lax. In addition, Triad relied heavily on deep-cede captive reinsurance arrangements and modified pool insurance, particularly in the Alt-A market, placing it in a particularly precarious position in relation to other PMIs.[77] The other six PMIs have been operating at a loss since 2007[78] but continue to satisfy all of their claims paying obligations.

Piggyback loans no longer threaten PMIs' market share, but a confluence of factors has restrained the pace of new policy issuance. First, the GSEs have increased the fees that they charge lenders for purchasing high-LTV loans. Many PMIs have increased their own rates as well. Second, both the PMIs and the GSEs have tightened their underwriting standards. In contrast, the FHA's fees and underwriting standards remained generally at pre-crisis levels until quite recently.[79] These differences, coupled with statutory increases in FHA loan limits, have contributed to a dramatic

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[76] Due to its uncertain claims-paying ability, the Illinois Insurance Department has ordered Triad to pay 40% of all current claims in "deferred payment obligations"—essentially IOUs. A summary of the Illinois Director of Insurance's Corrective Order, effective June 1, 2009 is available at http://www.tgic.com/dpo.php.

[77] See Bear Stearns, "Triad Guaranty Inc.: Premiums versus Claims – the Jury's Still out" (March 21, 2007), 9. See also Moody's Investors Service, "US Mortgage Insurers' [sic] Remain Weakly Capitalized" (August 17, 2010).

[78] See FHFA, "State of the Private Mortgage Insurance Industry: Implications for U.S. Mortgage Markets and the Enterprises."

[79] The FHA did decide to stop making loans to borrowers with FICO scores below 580. "The 2009 HMDA Data: The Mortgage Market in a Time of Low Interest Rates and Economic Distress," Federal Reserve Board (Sept. 20, 2010), 21. Recent increases in FHA premiums and new statutory authority for the FHA to change its premium structure may reduce FHA's competitive advantage. See generally Testimony of David H. Stevens, Assistant Secretary of Housing and FHA Commissioner, before the House Committee on Financial Services (September 22, 2010), http://financialservices.house.gov/Media/file/hearings/111/HUD_Testimony092210.pdf.

increase in FHA market share relative to PMIs during the current downturn.[80] Finally, in some cases, capital constraints or concerns about approaching such constraints have also caused PMIs to reduce new policy issuance.[81] However, capital forbearance from state insurance regulators, waiver of minimum ratings requirements by the GSEs, and increasing industry confidence regarding anticipated losses have lessened the potential impact of regulatory capital constraints.

It is perhaps too early to predict with confidence how the industry will fare in the current downturn. State foreclosure moratoria and federally subsidized mortgage modification programs may be forestalling many insurance claims for the moment, and the U.S. economy remains weak. A recent credit rating agency report expresses a tentative view that the six rated insurers (Triad is no longer rated) will be able to pay future claims in full.[82] Among these firms, differences in past underwriting standards are evident across several metrics, including risk-to-capital ratios, which ranged from 15.4 to 24.3 at year-end 2009. Recent positive developments include new capital raises by several PMIs, as well as the existence of a new entrant to the industry, Essent Guarantee Inc. Backed by $600 million in startup capital, Essent's emergence indicates that the markets continue to have some level of confidence in the long term viability of the PMI business model.

In short, while one relatively small insurer might or might not be actuarially insolvent, the conditions of the remaining firms are viewed by some experts as reasonably stable, if still uncertain, with significant variance by company. The current housing downturn will provide a rare and

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[80] See "The 2009 HMDA Data: The Mortgage Market in a Time of Low Interest Rates and Economic Distress," Federal Reserve Board (Sept. 20, 2010), 19-20.

[81] See, for example, Standard & Poor's, "Significant Operating Losses Continue to Pressure U.S. Mortgage Insurers' Capital Adequacy Ratios," Ratings Direct (August 21, 2009), http://www2.standardandpoors.com/spf/pdf/media/Significant_Operating_Losses_10_03_09.pdf.

[82] See Moody's Investors Service, "US Mortgage Insurance: Developing Outlook," *Industry Outlook* (August 17, 2010).

valuable benchmark for assessing the adequacy of PMIs' reserves and other risk management practices in the future.

VI.   Comparison to Other Forms of Mortgage Credit Risk Mitigation

By assuming much of the credit risk associated with high-LTV mortgages, PMI promotes the flow of credit from lenders and investors that might not otherwise have the capacity or desire to assume this risk. In this way, PMI increases the total amount of private capital available for lending to borrowers unable to afford, or unwilling to provide, a 20% down payment. Likewise, pool-level PMI on securitizations containing lower-LTV mortgages encourages lending and investment in these instruments as well. Much of the modern secondary mortgage market has been made possible by various forms of credit risk mitigation, including GSE guarantees, PMI, government mortgage insurance, and structural credit enhancements on private label securitizations.

This section compares PMI to other forms of credit risk mitigation and avoidance, with particular attention to the comparative advantages of each alternative in supporting credit availability and economic stability. The principal alternatives include:

- Avoidance of high-LTV lending;

- Self-insurance by lenders;

- Risk assumption by GSEs, bond insurers, or derivatives counterparties; and

- Government mortgage insurance.

In comparing these other forms of credit risk mitigation and avoidance with PMI, this section attempts to distinguish between "inherent" differences and "contingent" differences. The purpose of this distinction is to separate the necessary or fundamental features of various alternatives from the features that they merely happen to display at the moment, often due to regulatory requirements or similar institutional considerations. Doing so makes it easier to see the range of plausible options for reducing or distributing high-LTV mortgage default risk in the housing finance system.

a.   Avoidance of High-LTV Lending

The recent spike in mortgage defaults across the country has increased public awareness that loose underwriting practices (*e.g.*, "no-doc" loans) and unconventional payment terms (*e.g.*, option ARMs) pose serious risks to both lenders/investors and borrowers. In a more general sense, all agree that excessive credit availability contributed to the recent financial crisis and that lenders must refocus on "responsible" lending. Many view some level of borrower down payment as a component of responsible lending. On a functional level, down payments protect credit providers by decreasing borrower incentives to "walk away" from a depreciating home and by mitigating losses in the event of default. As noted in section III, high-LTV loans generally carry a higher likelihood of default and higher losses-given-default compared with other loans.

However, there is a difference between responsible credit and risk-free credit. Mortgage lenders have originated large volumes of high-LTV loans for many decades, and the vast majority of these loans have performed well. Critics might legitimately question whether the risks associated with an extremely high-LTV loan—say, 100% LTV—are reasonable. Indeed, PMIs generally will not underwrite insurance on such "extreme" high-LTV loans. But while reasonable people will differ in defining the absolute lowest level of down payment that lenders should require from certain borrowers, few would suggest that the risks associated with high-LTV lending outweigh the rewards in general.

In part this reflects the significance of the rewards. A broad policy consensus dating back to the New Deal has favored promotion of affordable homeownership in the U.S. This consensus is premised on the benefits of homeownership to individual homeowners and the local community. For the individual homeowner, monthly mortgage payments represent a forced savings vehicle, with the potential to build significant wealth over the long term due to the leveraged nature of the investment. For the larger society, homeownership is understood to increase civic engagement,

since homeowners have a vested interest in the quality of local schools, infrastructure, and other aspects of the community that renters may lack. While the risks to the taxpayers of a housing finance system backed by implicit or explicit government guarantees have come under serious scrutiny in recent times, broad support for homeownership as a social good persists.

It is beyond question that the availability of high-LTV mortgage credit has expanded opportunities for homeownership. For some potential borrowers, the unavailability of high-LTV mortgages would only delay homeownership for a brief period, but for others it would delay homeownership for many years or perhaps indefinitely. In relation to median home prices in many U.S. cities today, a full 20% down payment, plus closing costs and applicable reserve and escrow requirements, equates to an impressive sum for would-be purchasers of all ages.

The policy argument in favor of responsible high-LTV lending also rests on the premise that the associated risks, both to individual lenders and the larger financial system, can be managed. This is where a properly functioning PMI industry can play a critical role. As monoline financial institutions whose primary focus is understanding, pricing, and holding capital against high-LTV mortgage default risk, PMIs provide a mechanism to increase the risk-absorbing capacity of the housing finance system. Absent such a mechanism, the willingness and capacity of modern lenders to originate high-LTV mortgages would almost certainly decline.

b.   Risk Retention or Assumption by Other Financial Institutions

Various other players in the private sector currently retain or assume high-LTV mortgage default risk to some degree. These players include mortgage lenders, GSEs, monoline bond insurers, and institutional derivatives counterparties. From a credit availability standpoint, any party that shoulders default risk plays an important role in supporting the provision of credit. But from an economic stability perspective, all parties are not equally capable of bearing the severe tail risk associated with high-LTV mortgages. The recent financial crisis has illustrated that willingness to

assume risk does not always correlate with capacity to assume risk, and large disparities of this sort can pose systemic risks for the housing finance system and larger economy.

The following characteristics of PMIs, some discussed already, help them manage the risks involved in their business and can serve as a point of comparison with other players:

- *Contingency reserves.* As discussed in section V, PMIs maintain contingency reserves designed to absorb heavy losses in a severe housing downturn. PMIs build these reserves during normal times and draw them down only when losses exceed statutory thresholds or otherwise prompt insurance regulators to authorize reductions.

- *Geographic diversification.* All existing PMIs operate nationally (and some internationally). Geographic diversification serves as a bulwark against regional housing slumps by enabling PMIs to use excess premiums collected in stable regions to offset losses incurred in distressed regions. While PMIs are not required to operate nationwide (and in this sense their geographic diversification may be contingent), this appears to be an enduring feature of the industry.

- *Lender diversification.* Because PMIs insure loans originated by many different lenders, unforeseen weaknesses in the quality of loans originated by a small number of lenders— whether due to undetected operational or other problems at these lenders—pose smaller risks to PMIs than they do to individual lenders that self-insure.

- *Delayed loss realization.* PMIs enjoy a structural advantage in managing the timing of losses. Because PMIs' claims obligations do not arise until after foreclosure—a process drawn out over many months and, in some cases, years—they have extra time to provision against delinquent loans and other expected losses (*e.g.*, by increasing required loss reserves) and to generate earnings from new business in the meantime.

- *Acquaintance with relevant risks.* As discussed in section III, PMIs often delegate their day-to-day review underwriting functions to lenders. However, the insurer controls its own underwriting criteria and monitors lenders' adherence to these criteria. The insurer also engages at the loan level in loss mitigation efforts and claims management. All of these activities assist PMIs in understanding the risks associated with high-LTV mortgage loans.

- *Incentives to avoid foreclosure.* While not a form of institutional risk management per se, a financial institution's incentives to modify loans or take other measures to avoid foreclosure impact financial stability. The Obama Administration's active sponsorship of sustainable loan modification programs illustrates the important role of foreclosure avoidance measures in stabilizing a stressed housing market: foreclosures contribute to excess housing supply, which further depresses property values. Foreclosure avoidance also impacts the interests of troubled borrowers, for whom the consequences of foreclosure can be devastating. In this area, the interests of PMIs are closely aligned with those of borrowers. Like all insurance companies, PMIs seek to avoid paying claims if the policy entitles them to avoid it, and this often means finding a way to avoid foreclosure.

The discussion that follows considers the extent to which other players share these characteristics.

Lenders

Mortgage originators currently bear risk on both insured and uninsured high-LTV mortgages that they retain on balance sheet. They also retain risk on first- and second-lien mortgages that they sell and/or securitize, often through structural credit enhancements such as retained securitization

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interests and overcollateralization.[83]   To some extent risk retention, or self-insurance, is an appropriate role for originators, since they are best positioned to evaluate the borrower's creditworthiness and the various local factors that contribute to loan quality. But in other respects, the lender may have limited capacity to manage default risk. Some lenders operate nationwide, but others operate only in one region or community. Geographically concentrated lenders may have difficulty mitigating exposure to local economic conditions. In addition, an individual lender's concentration in its own loans renders it more susceptible to idiosyncratic operational or other risk-management failures affecting loan quality than PMIs or other players that aggregate lender risks. Furthermore, lenders of all sizes cannot match PMIs' flexibility in managing the timing of losses. Lenders rely on borrower payment streams to maintain liquidity and account for losses when "incurred." Thus, unanticipated levels of delinquencies impact their businesses immediately.

From a prudential perspective, non-bank lenders are not subject to capital requirements and could, therefore, pose significant risks to the financial system if they became major repositories for high-LTV mortgage credit risk. In contrast, federally regulated lenders are subject to regulatory capital requirements, but these requirements do not operate in the same way as PMIs' contingency reserves. Bank capital requirements are formulated as ratios of capital to risk-weighted assets— essentially a much more sophisticated version of PMIs' risk-to-capital ratios. Unlike contingency reserves, these requirements do not result in massive reserve accumulations in good times. While the BCBS has recently proposed a framework of countercyclical capital buffers that will increase the banking system's resilience during economic downturns, these buffers simply adjust the required capital ratios through the economic cycle and do not represent a fundamental rethinking of risk-based capital regulation. On the other hand, the current design of bank capital regimes is a

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[83] Overcollateralization describes the practice of issuing MBS with an aggregate face value lower than the face value of the associated mortgage collateral. Depending on the performance of the collateral, some or all of the overcollateralization amount may be released back to the issuer.

contingent feature of banks; these regimes could be revised if for whatever reason policymakers and/or regulators desired to shift more high-LTV mortgage credit risk to bank balance sheets. But without major changes to the current prudential framework, PMIs' system of contingency reserves appears to leave them significantly better equipped to manage the long term catastrophic risk associated with high-LTV mortgage lending.

From a foreclosure prevention perspective, lender incentives vary. With respect to first-lien mortgages held on balance sheet, lenders have strong incentives to maximize the net present value (NPV)[84] of their loans through modifications and other mitigation measures.[85] This incentive is actually weakened by the presence of PMI, since insurance reduces the lender's potential loss-given-foreclosure. (This is one reason why PMIs play such an active role in loss mitigation.) Alternatively, where the lender sells its loans into the secondary market and assumes the role of servicer, its incentives become more complicated. Specifically, while investors can contractually permit the lender to modify loans in ways that maximize the NPV of a loan portfolio, the servicer may perceive a greater risk of investor lawsuits if it is aggressive in modifying loans than if it errs on the side of inaction. Institutions that service first-lien mortgages while retaining related second-lien mortgages on balance sheet may have even stronger incentives to abstain from modifications.[86] Thus, while PMIs' overall contribution to foreclosure prevention incentives in the portfolio lending context seems mixed, they may have a more straightforwardly positive role to play in preventing foreclosures on securitized mortgages.

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[84] A modification increases a loan's NPV where the expected value of future principal and interest (adjusted to reflect the likelihood of re-default) exceeds the lender's net proceeds from immediate foreclosure. In some cases, immediate foreclosure maximizes NPV.

[85] In the context of piggyback loans, however, lenders often have strong incentives to resist modifications, since second-lien holders generally have less invested in the loan and, therefore, less room to make concessions to the borrower before impairing their own NPV.

[86] See infra n.85.

GSEs

While GSEs are prohibited by law from fully bearing the additional default risk associated with high-LTV mortgages, they share certain inherent characteristics with PMIs. Their duopoly status gives them a geographically diverse risk portfolio, albeit one limited to the U.S., and they are also diversified by lender. They have significant underwriting experience and generally conservative underwriting practices. While lenders originate loans purchased by the GSEs, the latter set the underwriting criteria and have mechanisms for monitoring compliance with those criteria. Their role in the current housing finance system and their influence over lenders and servicers enables them to monitor loan performance and influence mitigation efforts. As guarantors of MBS, the GSEs have strong incentives to favor loss mitigation outcomes that maximize NPV if left to their own devices. One might expect them to manifest a bias in favor of foreclosure prevention while under government conservatorship. Both enterprises have implemented the federal Home Affordable Modification Program (HAMP), which provides financial incentives for lenders/investors and servicers to avoid foreclosure. All servicers of mortgages owned or guaranteed by the GSEs must participate in the HAMP.

Nevertheless, there are impediments to GSE-assumption of this default risk. Unlike PMIs, the GSEs lack flexibility in managing the timing of losses, since they must make timely payments to investors whether or not the loans are performing, and because, like lenders, they account for losses when "incurred." They also lack a countercyclical reserve such as the PMI contingency reserve, although, as with federally regulated lenders, this is a contingent difference that could be remedied. But perhaps most significantly, the GSE duopoly already serves as the repository of most credit default risk in the U.S. housing market. Adding more default risk on high-LTV mortgages would further concentrate risk in entities whose highly publicized failures necessitated a substantial

taxpayer bailout during the current financial crisis. Broader dispersion of this risk seems more appropriate.

Monoline Bond Insurers

While the primary conventional mortgage bond insurers are the GSEs,[87] private sector bond insurers, such as Ambac and MBIA, also provide insurance akin to pool insurance on asset-backed securities, including MBS. At first blush, the monoline bond insurers seem to share a number of desirable features with PMIs. They are, for example, required to maintain contingency reserves.[88] They are also quite diversified geographically, both in the U.S. and abroad, and diversified by lender. As insurers, they have strong incentives to support foreclosure prevention measures that maximize the NPVs of individual loans.[89]

But while bond insurers do not face inherent structural impediments to diligent and knowledgeable oversight of mortgage lenders and servicers, their underwriting oversight was especially weak in the years preceding the recent financial crisis, even by the declining standards of the boom-era mortgage industry.[90] This may reflect the bond insurers' relative inexperience. These firms initially guaranteed only municipal and state government-issued securities, which both

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[87] FHA and VA mortgages are generally purchased and securitized by other private issuers, and most of the resulting securities are guaranteed by Ginnie Mae. A wholly-owned government corporation, Ginnie guarantees the timely payment of interest and principal on MBS backed by federally insured loans (primarily those issued by the FHA and VA). Ginnie itself does not purchase mortgages. For a description of circumstances in which Ginnie incurs losses, see http://www.ginniemae.gov/about/ann_rep/annual_financials05.pdf, 34.

[88] See, *e.g.*, NY CLS Ins. § 6903. Most monoline bond insurers are subject to New York state law.

[89] However, the incentives of PMIs to avoid foreclosure may be somewhat stronger. In the primary insurance context, a PMI's obligation to pay is triggered by borrower default. In contrast, a bond insurer's obligation to pay is triggered by issuer default. Foreclosures do not necessarily increase the probability of issuer default and may actually reduce this probability where foreclosure maximizes individual loan NPVs.

[90] See NY State Insurance Dept. Circular Letter No. 19 (2008), "Best Practices for financial guaranty insurers," 9-10.

investors and credit rating agencies assumed to approach a "zero underwriting loss" business model. During the recent credit bubble, however, the bond insurers ventured from their monoline roots and began to guarantee other classes of securities backed by riskier underlying assets, such as subprime mortgages.[91]

Yet the bond insurers did not appear to adjust their pricing and level of due diligence on the underlying assets to fully reflect the shift in risk. Bond insurers' credit ratings began to slip with the first sign of the housing market collapse, as credit rating agencies realized that bond insurers did not, in fact, have a near "zero underwriting loss" business model and ratcheted up capital levels necessary to maintain triple-A ratings. Since that time, credit ratings have continued to deteriorate. Many bond insurers are now in run-off mode, due both to capital constraints and their inability to attract business without strong credit ratings.[92] Others have opted to split their less risky municipal bond insurance businesses from their remaining financial guarantee businesses.[93] The New York State Insurance Department has also taken steps to increase capital requirements for bond insurers and to improve underwriting and risk management standards.[94] The suitability of bond insurers to shoulder high-LTV mortgage default risk in future secondary market transactions will depend partly on the results of these reform efforts.

Finally, similar to the GSEs, the bond insurers do not enjoy the benefits of delayed loss realization.

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[91] In addition to direct guarantees, bond insurers created minimally-capitalized special purpose vehicles that entered into credit default swaps with counterparties that were themselves backed by the bond insurers. See ibid. Issues associated with credit default swaps are discussed more fully below.

[92] See, *e.g.*, Ambac Financial Group, Inc. 2009 Form 10-K, 59-60.

[93] See, *e.g.*, MBIA Inc. 2009 Form 10-K, 49.

[94] See NY State Insurance Dept. Circular Letter No. 19 (2008), "Best Practices for financial guaranty insurers."

Derivatives Counterparties

Credit derivatives, such as credit default swaps (CDS), represent another vehicle for transferring mortgage credit risk. In a CDS, the "purchaser" buys credit protection from the "seller" relating to an underlying reference asset or pool of assets. In exchange for premiums paid by the purchaser, the seller agrees to compensate the purchaser for certain losses if an agreed upon "credit event" occurs.

While not historically regulated as one, a CDS is functionally an insurance product, and its terms can be structured to resemble pool mortgage insurance. Therefore, the main distinction between PMI and CDS is the nature of the counterparty. Historically, *any* party could provide credit protection in an uncleared CDS, so long as it found a willing purchaser and met certain investor-protection-oriented "eligibility" standards. This was, of course, the main deficiency of CDS compared to pool mortgage insurance; unlike PMIs, many CDS sellers have been essentially unregulated. Even where the effective protection seller was a regulated bond insurer, the special purpose entity (SPE) serving as the legal counterparty could prove unreliable. Differences in counterparty regulation, such as capital and reserve requirements, as well as the existence of completely unregulated counterparties, have made credit derivatives a less reliable alternative to PMI, especially during severe tail risk events associated with the housing market.

Under the Dodd-Frank Act, many CDS will be subject to a central clearing requirement, in which case the central counterparty will impose credit standards and collateral requirements on the seller. At present, the derivatives market has not constructed a framework of minimum counterparty standards comparable to the state regulatory framework for PMIs. Given the identities and histories of the institutions responsible for creating the new CDS clearing framework, it seems unlikely that the regulatory framework for central CDS counterparties will resemble the framework applicable to PMIs. Thus, although we cannot yet compare the two sets of solvency and liquidity

standards, we feel reasonably confident in predicting that they will be different from each other, notwithstanding the strong similarity between the two regulated product sets.

        c.   Government Insurance

Among the various alternatives to PMI, government mortgage insurance offers the closest comparison. FHA and VA mortgage insurance programs in particular provide significant competition for PMIs.[95] But important differences between the government and private insurance programs exist along multiple dimensions, including:

- Eligible borrowers;

- Eligible lenders;

- Extent of coverage;

- Minimum down payment;

- Premium cost and timing of required payments;

- Size and structure of eligible loans;

- Underwriting standards;

- Processing time;

- Eligible properties;

- Statutory capital requirements;

- Loss mitigation activities; and

- Authority to rescind coverage.

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[95] The Rural Housing Service and several states also sponsor mortgage insurance programs, although these are much smaller in scale. See Johnstone, "Private Mortgage Insurance," 784 n. 4.

A few key features of the government programs deserve mention here. The major FHA programs[96] provide essentially a full guarantee, including 100% of the principal balance and most costs associated with borrower default. The FHA will currently insure mortgages with down payments as low as 3.5%, and borrowers may finance the FHA's insurance premiums into the loan. But while the principal FHA programs do not have borrower income limitations, they do cap the size of eligible loans, with caps pegged to median home prices in specific regions (the current upper limit is $729,750, although caps in most regions are substantially lower). The VA program, in contrast, applies only to veterans and (sometimes) their spouses. For all but the smallest loans, the VA insures only 25% of the loan amount, subject to a cap. The VA does not generally require a down payment.[97] Appendix A describes additional features of these programs.

To a significant extent, the specific features of these government programs reflect contingent political judgments about their proper roles, and many features could be changed with the stroke of a legislative pen. For example, the FHA could shift to a partial guarantee structure akin to a typical PMI policy (which could improve incentives for FHA lenders to exercise underwriting discipline) without necessarily changing its basic identity as a government insurer. But product differences among the public and private insurers also reflect underlying inherent differences. On the most basic level, public and private insurers differ in that government insurers must adhere to the particular means and ends assigned to them by legislators, while PMIs primarily serve their shareholders. The particular missions served by the government insurers are subject to frequent change—and some perceive a disconnect between the FHA's current loan limits and its putative mission of serving low-income borrowers—but the simple fact that Congress can assign a

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[96] The largest of these programs is backed by the single-family Mutual Mortgage Insurance Fund.

[97] For additional program details, see http://portal.hud.gov/portal/page/portal/HUD/program_offices/housing, http://www.benefits.va.gov/homeloans/. For a high level summary of program differences as of 2004, see Johnstone, "Private Mortgage Insurance," 822-826.

mission to government insurers renders them powerful tools for advancing specific social objectives that PMIs cannot profitably address.[98]

This points toward a second, equally basic, difference: obligations of the government insurers are backed by the full faith and credit of the United States. This has important implications for the role of government insurance in the housing finance system. In light of recent experiences with the GSEs' "implicit" guarantee, it almost goes without saying that an explicit federal government guarantee puts taxpayer funds at risk. This factor alone may provide a reason to avoid unnecessary reliance on government insurance in segments of the market where PMI thrives. But it also points to an important comparative strength of government mortgage insurance. As discussed in section V.c., many PMIs were forced to scale back new business drastically in the 1980s and to some extent again recently due to high loss exposures and looming capital constraints (among other factors). Though large contingency reserves enable PMIs to continue paying claims in highly adverse economic scenarios, they do not always permit PMIs to continue incurring additional risk. In these circumstances, the government insurers, particularly the FHA, can step in to absorb the additional risk and smooth out the bottom of the cycle.

This occurred in the 1980s and again today. In 1984, PMIs had three times the market share, measured by number of insured mortgages, as the FHA. But by 1987, the FHA had well over twice the market share as the PMIs, which had become capital constrained. By 1992, the PMIs' market share again surpassed that of the FHA. A similar pattern has begun to emerge over the past several years. In 2008, the PMIs again had three times the market share as the FHA.[99] But today the

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[98] For a detailed discussion of the ways in which differences in insurance coverage between private and government insurers reflect the different purposes and financial realities faced by these players, see Rapkin et al., *The Private Insurance of Home Mortgages: a Study of the Mortgage Guaranty Insurance Corporation*, 46.

[99] See Dwight Jaffee and John Quigley, "Housing Policy, Subprime Mortgage Policy, and the Federal Housing Administration" (University of California, Berkeley, August 2007), 16,

situation has reversed itself, with FHA loans now comprising 75% of the insured mortgage market.[100]

However, the FHA has been able to write new policies at this heightened level only by dropping far below its statutory 2% capital requirement. By the end of 2009, the capital ratio of the FHA's Mutual Mortgage Insurance Fund had dropped to about 0.5%, and the agency has not committed to a fixed timetable for remedying the deficiency.[101] In addition, the FHA's increased market presence over the past two years might be attributed not only to PMIs' decreased policy writing capacity but also to the FHA's below-market pricing on certain loans. This may be having the effect of crowding out some of the healthier PMIs that are otherwise positioned to write larger volumes of policies. (Recent increases in FHA premiums and new statutory authority for the FHA to change its premium structure should help to address these problems.) Thus, while historical experience suggests that government mortgage insurance may have a useful role to play in preserving the availability of affordable high-LTV mortgages during severe housing downturns, care must be taken to ensure that the government builds up sufficient long-term reserves and charges sufficient risk premiums to reasonably protect the taxpayers. This is a somewhat challenging task within the politically-charged field of housing finance.

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http://elsa.berkeley.edu/users/quigley/pdf/JQ_Housing_Policy_to_Lucas_080807.pdf. However, the FHA's expanded market presence has increased its risk profile and engendered doubts about its future solvency. See Nick Timiraos, "Red-Ink Fears Prompt Mortgage Backer to Raise Fees," *Wall Street Journal*, August 24, 2010, http://online.wsj.com/article/SB10001424052748704340504575447673683601094.html.

[100] See Testimony of Marti Rodamaker, on behalf of the Independent Community Bankers of America, before the House Subcommittee on Capital Markets, Insurance and Government Sponsored Enterprises (July 29, 2010), http://www.icba.org/files/ICBASites/PDFs/RodamakerTestimony72910.pdf.

[101] See Testimony of Mathew J. Sciré, Director, Financial Markets and Community Investment, GAO, before the Senate Committee on Banking, Housing, and Urban Affairs (September 23, 2010), http://www.gao.gov/new.items/d101066t.pdf.

To the extent a countercyclical role for the government in the mortgage insurance market is considered desirable, direct provision of mortgage insurance by the government is only one of several options. In Canada, for example, PMIs may secure government reinsurance, for a premium, against 90% of their risk-in-force. Under this arrangement, the Canadian government pays out only if the primary insurer becomes insolvent. From the perspective of insured mortgage lenders and investors in Canadian mortgage instruments, the additional security against insurer credit risk provided by the government reinsurance facilitates more favorable regulatory capital treatment for insured assets (*i.e.*, a 0% sovereign risk weighting, rather than a higher private counterparty risk weighting, applies to the reinsured portion of the asset), which itself reflects the added safety of the insurance. From the primary insurer's perspective, the government backstop potentially expands its customer base without fundamentally altering its risk tolerance; because the government backstop is triggered only after the primary insurer fails, moral hazard is minimized.

Alternatively, the government could provide catastrophic coverage structured as traditional excess-of-loss reinsurance to PMIs. This alternative might further reduce cyclicality in the mortgage insurance industry by absorbing losses and preserving additional underwriting capacity for primary insurers on a going-concern basis. On the other hand, a greater degree of government supervision of primary insurers may be necessary to compensate for the moral hazard inherent in excess-of-loss reinsurance. While a full comparison of different options for public/private risk sharing is beyond the scope of this paper, these examples illustrate that a system of separate and competing public and private insurers is far from the only option.

VII.   Conclusion

In describing the role of PMIs in the U.S. housing finance system, this report has considered the nature and varieties of PMI, their market justifications, the relevant regulatory framework, and the relationship between PMI and other forms of mortgage credit risk mitigation or avoidance. While the report does not focus on policy options for the future, it provides relevant information and concepts for those considering the role that PMIs should play. Two key points should be kept in mind. First, high-LTV mortgage lending is relatively risky, and by assuming these risks, mortgage insurance enables more lenders and investors to supply capital for these mortgages. Second, PMIs are subject to distinctive regulatory requirements designed to ensure that they withstand Depression-level housing market scenarios. Other financial institutions might not be similarly equipped to manage long-tail mortgage default risk.

Because PMIs are so heavily reliant on GSE purchasing standards, they have a strong interest in the outcome of GSE reform. But the PMIs' business model pre-dated their role in insuring agency-related mortgages, and PMIs continue to offer credit protection on lender-retained loans and private label securitizations. That said, government requirements and incentives for the purchase of PMI help PMIs avoid adverse selection problems. To the extent policymakers desire to encourage or mandate use of PMI in the future, many options exist. For example, primary mortgage insurance coverage commonly extends to 25%-30% of a given claim, but other levels of coverage are possible. In addition, while traditional reinsurance is not generally available for PMIs, a government reinsurance backstop could be one means of providing stability in a severe housing crisis.

Appendix A: Comparison of Private and Government Mortgage Insurance and Guarantee Programs

Factor	Private Mortgage Insurance	Government Programs
Minimum down payment	Required by a few states	The Housing Emergency Recovery Act of 2008 (HERA) raised the down payment on FHA-insured mortgages from 3 to 3.5 percent. In some cases VA does not require a down payment.
Loan coverage level	Varies	FHA insures the entire loan balance; VA guarantees a percentage of the loan.
Limit on size of the mortgage insured or guaranteed	None via regulation. But PMI guidelines all impose some cap on size of loans they will insure.	Pursuant to HERA, beginning in 2009, the loan limit for FHA-insured mortgages for one-unit properties is 115 percent of the local area median home price, as determined by HUD, with a floor of 65 percent of $417,000 (or $271,050) and a ceiling equal to 150 percent of the Enterprises' limit. Limits vary by geographic region and for 2 - 4 unit properties. Beginning in 2009, the VA's guarantee of loans above $144,000 is 25 percent of the new Enterprise loan limit base or the limits for the high cost areas.
Up-front mortgage insurance premium	Required; varies with loan characteristics and premium plan.	Required by FHA; VA requires an up-front funding fee.
Monthly premium	Premiums vary based on the size of the down payment, type of mortgage, and amount of insurance coverage.	FHA borrowers pay an annual insurance premium that starts at .5 percent of the loan balance and declines over time. There is no insurance premium for VA mortgages.
Cancellation of insurance	Can usually be canceled when the homeowner acquires 20 percent equity in the home. Under Federal law, MI must be cancelled automatically when the borrower has paid the loan down to 78 percent of the original home value.	For FHA mortgages with terms greater than 15 years, the annual mortgage insurance cancels when the LTV ratio reaches 78 percent, provided the borrower has paid the annual mortgage insurance premiums for at least 5 years.
Deductibility of borrower-paid mortgage insurance	Yes, up to a certain income level, through the 2010 tax year.	Yes, up to a certain income level, through the 2010 tax year.
Income limits	None	None.
Interest rate	Market driven	Market driven
Regulation	State regulated. Regulation extends to reserves for losses, capital, etc.	FHA and VA mortgage programs are administered by agencies of the U.S. government.
Premium Rates	Subject to regulatory approval	Set by statute

Source: FHFA, "State of the Private Mortgage Insurance Industry: Implications for U.S. Mortgage Markets and the Enterprises," August 2009.

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Exhibit C
Technical Description of the Claims Adequacy Test ("CAT") Model

Technical Description of the Claims Adequacy Test ("CAT") Model

The CAT Model was developed to provide a new simple, transparent, objective and verifiable measure of an MI provider's financial soundness by assessing the ongoing ability to pay claims over a rolling 10-year period subject to severe stress assumptions based on the recent housing crisis. This section provides an overview of the CAT Model. Genworth welcomes the opportunity to discuss the CAT Model in more detail at the Agencies' convenience.

<u>Overview of the CAT Model.</u>

To create the CAT Model, loans in the MI Insured Book[1] were first broken out into LTV and risk segments:

- Segment One ("Premium Loans") includes only loans with the following standard features made to borrowers who have demonstrated a very strong credit history (using 700 and greater FICO scores as a proxy for strong credit history):
    - full documentation;
    - full amortization;
    - no balloon payments; and
    - term of 30 years or less.
- Segment Two ("Standard Loans") includes loans with the same standard features as Premium Loans, made to borrowers who have a solid credit history (620 – 699 FICO scores).
- Segment Three ("Non-Standard Loans") includes loans with any of the non-standard features listed below, and loans made to borrowers who have demonstrated a weak credit history (below 620 FICO score), regardless of loan features:
    - no (or low) documentation verifying income and assets;
    - negative amortization;
    - interest only;
    - balloon payments; or
    - term in excess of 30 years.

Aging, or "seasoning" (time elapsed since origination), is a material factor in the probability that a loan will default and result in an MI claim ("PC").[2] Not surprisingly, more seasoned loans have lower PCs than less seasoned loans, a function of demonstrated willingness and ability to pay and, historically, equity growth through principal reduction and home price appreciation. To account for the impact of seasoning on PC in the CAT Model, the loans in the three risk segments described above were further segmented into four age buckets: (1) less than three years; (2) three - five years; (3) five - 10 years; and (4) more than 10 years. We observed the following relationship between age and PC:

- Loans aged less than three years: highest relative probability of going to claim.

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[1] The MI Insured Book consists of the residential mortgage loans insured by MICA member companies as of June 2007. The model employs the actual performance data for those loans from June 2007 through June 2012.
[2] Defaulted loans go to claim upon foreclosure, short sale or deed-in-lieu of foreclosure.

- Loans aged three to less than five years: current loans were 50% as likely to go to claim as the least seasoned loans; delinquent loans were 75% as likely to go to claim.
- Loans aged five to less than 10 years: current loans were 35% as likely to go to claim as the least seasoned loans; delinquent loans were 50% as likely to go to claim.
- Loans aged 10 years or more: current loans were 10% as likely to go to claim as the least seasoned loans; delinquent loans were 25% as likely to go to claim.

To add additional conservatism for delinquent loans, the CAT Model applies the following higher seasoning factors to observed PCs for loans that are 60 days or more delinquent or in foreclosure: 100% for loans aged less than five years, 75% for loans aged five – 10 years, and 50% for loans aged 10 or more years. Increasing the seasoning factors for these loans effectively increases claims.

The CAT Model assumes that the duration of the Housing Stress is a full ten years. Because the crisis began in 2007, there are only five years of actual stress experience. Therefore, in order to model a 10-year stress, the CAT Model calculates Net Resources Required for years 1-5, and applies that result to the next five years to create a final 10-year calculation of Net Resources Required. The Model will be updated to reflect actual experience as the data become available.

<u>Operation of the CAT Model.</u>

To illustrate the way that the CAT Model operates, consider the following series of tables that lay out the sequence of steps used to arrive at the CAT Ratio for loans insured by Genworth as of June 30, 2012 (the "Genworth 2012 Book").[3] The sequence is as follows:

1. Calculate Paid Losses for years 1 - 5 (Table A).
2. Calculate Premiums Collected for years 1 – 5 (Table B).
3. Add Expenses[4] to Paid Losses to calculate Resources Required, and subtract Premiums Collected from Resources Required to calculate Net Resources Required for years 1 - 5 (Table C).
4. Apply the Net Resources Required for years 1 – 5 to the amount of Risk In Force (RIF)[5] at the end of year five to calculate Resources Required for years 6 - 10 (Table D).
5. Add Resources Required for years 1 – 5 to Resources Required for years 6 – 10; the result is Total Resources Required.
6. Calculate Total Resources Available, the sum of statutory capital, loss reserves, unearned premium reserves, investment income and Premiums Collected for years 1 – 10.
7. Divide Resources Available by Resources Required to calculate the CAT Ratio.

Note: For ease of reference, Genworth 2012 actual data is shaded in gray and applied factors are shaded in blue in Tables A and B.

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[3] The CAT Model is designed so show theoretical outcomes in the event of extremely adverse, long duration, hypothetical market stress conditions. CAT Model results included herein are for illustrative purposes only, and are not, and are not intended to be, indicative of actual results.
[4] The CAT Model assumes ongoing expenses in runoff of 10% and investment income of 3.0%. We note that RMIC, an MI provider currently in runoff, reported an expense ratio of 8.5%.
[5] Risk In Force (RIF) is an amount equal to the unpaid principal balance of loans insured multiplied by the amount of MI coverage.

Table A:

Model inputs are actual Insurance In Force (IIF)[6] (segmented by risk classification, LTV, and age), and actual Risk In Force (RIF) (segmented by risk classification and LTV). Seasoning, PC, and loss severity factors[7] derived from the MI Insured Book are applied to the Genworth actual data.

Dollars in MM

RISK CLASSIFICATION		Orig LTV	Insurance in Force (IIF) — AGE				TOTAL IIF	Risk In Force (RIF)	Avg Cov % (a)	Probability of Claim Years 1-5 (b)				Loss Severity (c)	Paid Losses Years 1-5 (d)
			< 3 Yrs	3 to < 5 Yrs	5 to < 10 Yrs	10+ Yrs				< 3 Yrs	3 to < 5 Yrs	5 to < 10 Yrs	10+ Yrs		
DELINQUENT	Foreclosure	All	$ 28.5	$ 3,395	$ 4,344	$ 229	$ 7,996	$ 2,063	25.8%	81.5%	81.5%	61.2%	40.8%	104%	$ 1,489
	Delinquent	All	$ 37	$ 2,001	$ 2,448	$ 176	$ 4,662	$ 1,211	26.0%	51.3%	51.3%	38.4%	25.6%	103%	$ 545
NON DELINQUENT	Prev Delq	All	$ 68	$ 5,889	$ 7,006	$ 837	$ 13,800	$ 3,592	26.0%	25.6%	12.8%	9.0%	2.6%	100%	$ 371
	Non-Std (Segment 3)	85	$ 14	$ 231	$ 270	$ 86	$ 600	$ 84	14.0%	14.6%	7.3%	5.1%	1.5%	104%	$ 5
		90	$ 59	$ 1,096	$ 1,740	$ 93	$ 2,989	$ 735	24.6%	18.3%	9.2%	6.4%	1.8%	101%	$ 56
		95	$ 57	$ 922	$ 1,423	$ 173	$ 2,574	$ 746	29.0%	17.3%	8.6%	6.0%	1.7%	100%	$ 52
		97	$ 11	$ 84	$ 141	$ 36	$ 273	$ 78	28.5%	17.6%	8.8%	6.2%	1.8%	97%	$ 5
		100+	$ 1	$ 501	$ 971	$ 12	$ 1,484	$ 393	26.5%	22.8%	11.4%	8.0%	2.3%	102%	$ 37
	Standard (Segment 2)	85	$ 224	$ 433	$ 254	$ 49	$ 960	$ 134	14.0%	8.4%	4.2%	2.9%	0.8%	101%	$ 6
		90	$ 733	$ 1,979	$ 1,719	$ 117	$ 4,549	$ 1,068	23.5%	9.9%	5.0%	3.5%	1.0%	98%	$ 53
		95	$ 687	$ 1,984	$ 2,264	$ 294	$ 5,230	$ 1,479	28.3%	10.5%	5.2%	3.7%	1.0%	96%	$ 71
		97	$ 37	$ 280	$ 460	$ 53	$ 829	$ 234	28.3%	10.6%	5.3%	3.7%	1.1%	96%	$ 10
		100+	$ 4	$ 2,163	$ 2,622	$ 27	$ 4,815	$ 1,372	28.5%	16.4%	8.2%	5.7%	1.6%	98%	$ 92
	Premium (Segment 1)	85	$ 3,941	$ 1,529	$ 517	$ 43	$ 6,030	$ 732	12.1%	4.4%	2.2%	1.5%	0.4%	99%	$ 26
		90	$ 9,789	$ 6,764	$ 2,659	$ 88	$ 19,300	$ 4,433	23.0%	6.2%	3.1%	2.2%	0.6%	96%	$ 192
		95	$ 8,084	$ 5,650	$ 3,183	$ 227	$ 17,144	$ 4,857	28.3%	5.9%	2.9%	2.1%	0.6%	94%	$ 189
		97	$ 512	$ 810	$ 662	$ 52	$ 2,036	$ 573	28.2%	5.3%	2.6%	1.9%	0.5%	94%	$ 16
		100+	$ 44	$ 4,752	$ 3,069	$ 46	$ 7,911	$ 2,175	27.5%	8.8%	4.4%	3.1%	0.9%	96%	$ 81
Total			$ 24,329	$ 40,463	$ 35,751	$ 2,638	$ 103,181	$ 25,958	25.2%						$ 3,295

Paid Losses for years 1 – 5 is $3,295 million.

(a) Average Coverage = RIF / IIF (Genworth 2012 actual data).

(b) Probabilities of Claim years 1 – 5 are constant factors derived from the MI Insured Book (as adjusted by seasoning factors) and applied to the Genworth 2012 Book.

(c) Loss Severity is a constant factor derived from the MI Insured Book and applied to the Genworth 2012 Book; stated as a percentage of average coverage.

(d) Paid Losses for years 1 – 5 estimate losses that will be paid on the Genworth 2012 Book from June 30, 2012 to June 30, 2017; calculated as IIF * Average Coverage (a) * PC (b) * Loss Severity (c).

Table B:

Actual average annual premium rates from the Genworth 2012 Book are entered into the CAT

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[6] Insurance in Force (IIF) is an amount equal to the unpaid principal balance of loans insured.
[7] "Severity" is the amount of the claim paid as a percentage of the MI coverage. MI claim payments include reimbursement for delinquent interest and foreclosure-related costs. Including these amounts can result in situations where the MI claim payment exceeds the MI coverage amount (severity greater than 100%).

Model (for loans with monthly and annual premiums that will continue to be collected over the life of the loan). Based on the persistency of the MI Insured Book, a Premium Multiple factor (an average duration measure) was derived to reflect the continuity of premium collections. The premium rate and the Premium Multiple factor are applied to the IIF amount to calculate the premium collected for years 1 - 5.

Dollars in MM				Premium Rate (basis points) (e)				Premium Multiple (f)				
					AGE				AGE			Premium Collected Years 1-5 (g)
RISK CLASSIFICATION		Orig LTV	TOTAL IIF	< 3 Yrs	3 to < 5 Yrs	5 to < 10 Yrs	10+ Yrs	< 3 Yrs	3 to < 5 Yrs	5 to < 10 Yrs	10+ Yrs	
DELINQUENT	Foreclosure	All	$ 7,996	51.5	48.3	71.3	23.8	0.8	1.3	1.9	2.4	$ 82
	Delinquent	All	$ 4,662	49.2	60.5	83.5	28.1	2.0	2.6	3.0	2.7	$ 93
NON DELINQUENT	Prev Delq	All	$ 13,800	65.5	58.4	79.3	24.1	2.9	3.0	3.1	2.3	$ 281
	Non-Std (Segment 3)	85	$ 600	39.1	35.3	43.8	9.6	2.9	2.4	3.2	3.4	$ 6
		90	$ 2,989	64.7	49.2	66.0	20.6	3.1	2.6	3.0	2.9	$ 50
		95	$ 2,574	88.8	60.7	78.2	21.8	3.2	3.3	3.2	2.4	$ 56
		97	$ 273	72.0	71.5	88.3	22.7	3.4	3.5	3.2	3.4	$ 7
		100+	$ 1,484	28.5	75.5	80.5	42.0	3.2	3.5	3.6	4.7	$ 42
	Standard (Segment 2)	85	$ 960	37.7	29.3	37.3	15.8	2.6	2.0	2.2	2.8	$ 7
		90	$ 4,549	55.3	42.5	56.0	17.7	3.3	2.3	2.1	2.4	$ 54
		95	$ 5,230	99.4	51.4	71.2	18.2	3.4	3.3	3.2	2.4	$ 109
		97	$ 829	87.8	62.7	78.9	21.5	3.6	3.5	3.4	2.0	$ 20
		100+	$ 4,815	75.0	62.4	78.3	20.0	3.4	3.4	3.4	3.8	$ 117
	Premium (Segment 1)	85	$ 6,030	35.0	26.7	33.4	17.7	2.5	2.1	2.1	2.1	$ 47
		90	$ 19,300	46.8	38.6	56.3	20.9	3.2	2.2	1.9	1.9	$ 235
		95	$ 17,144	61.5	37.4	67.1	20.1	3.3	3.0	2.9	2.9	$ 293
		97	$ 2,036	53.2	53.4	72.9	20.5	3.6	3.3	3.1	3.1	$ 39
		100+	$ 7,911	79.8	45.4	64.5	21.9	3.5	3.3	3.2	3.2	$ 137
Total			$ 103,181	51.9	47.3	70.9	21.8	3.1	2.7	2.8	2.5	$ 1,676

Premium collected for years 1 – 5 is $1,676 million.[8]

(e) Premium rates (Genworth weighted average) = annual premium / IIF. Represents the effective premium rate charged for Genworth 2012 Book insured loans.

(f) Premium Multiple is a constant factor derived from the persistency of the MI Insured Book. The Premium Multiple factor is used to calculate an average duration measure for years that insurance is in effect and premiums are collected during years 1 – 5. Most MI products have monthly or annual premiums.

(g) Premium (Genworth premium collected, in dollars) = IIF * Premium Rate (e) * Premium Multiple factor (f).

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[8] Mortgage servicers are contractually obligated to pay MI premiums on insured loans. Failure to pay is extremely rare.

Table C:

The Model then determines the net resources that would be required, if any, to pay losses after considering operating expenses and premiums collected. First, operating expenses are added to Losses Paid Years 1 - 5 to show resources required. Premiums collected for years 1 – 5 are subtracted from resources required to calculate Net Resources Required.

Dollars in MM			Years 1-5 Results				
RISK CLASSIFICATION		Orig LTV	Paid Losses Years 1-5 (d)	Operating Expense (h)	Resources Required (i)	Premium Collected Years 1-5 (g)	Net Resources Required Years 1-5 (j)
DELINQUENT	Foreclosure	All	$ 1,489	$ 8	$ 1,497	$ 82	$ 1,415
	Delinquent	All	$ 545	$ 9	$ 554	$ 93	$ 461
NON	Prev Delq	All	$ 371	$ 28	$ 399	$ 281	$ 118
DELINQUENT	Non-Std	85	$ 5	$ 1	$ 6	$ 6	$ (1)
	(Segment 3)	90	$ 56	$ 5	$ 61	$ 50	$ 11
		95	$ 52	$ 6	$ 57	$ 56	$ 1
		97	$ 5	$ 1	$ 6	$ 7	$ (1)
		100+	$ 37	$ 4	$ 41	$ 42	$ (1)
	Standard	85	$ 6	$ 1	$ 7	$ 7	$ (0)
	(Segment 2)	90	$ 53	$ 5	$ 59	$ 54	$ 5
		95	$ 71	$ 11	$ 82	$ 109	$ (27)
		97	$ 10	$ 2	$ 12	$ 20	$ (8)
		100+	$ 92	$ 12	$ 103	$ 117	$ (14)
	Premium	85	$ 26	$ 5	$ 30	$ 47	$ (16)
	(Segment 1)	90	$ 192	$ 23	$ 215	$ 235	$ (19)
		95	$ 189	$ 29	$ 219	$ 293	$ (74)
		97	$ 16	$ 4	$ 20	$ 39	$ (19)
		100+	$ 81	$ 14	$ 95	$ 137	$ (42)
Total			$ 3,295	$ 168	$ 3,463	$ 1,676	$ 1,787

Net Resources Required Years 1 – 5 is $1,787 million.

(h) Operating expenses are assumed to be equal to 10% of premiums collected. We note that RMIC, an MI provider currently in runoff, has reported an expense ratio of 8.5%.

(i) Resources Required for years 1 - 5 = Paid Losses Years 1 – 5 (d) <u>plus</u> Expenses (h).

(j) Net Resources Required Years 1 - 5 = Resources Required (i) <u>minus</u> Premium Collected Years 1 - 5 (g).

The timing of losses has become less certain during this ongoing housing disruption due to issues such as loss mitigation efforts, foreclosure moratoria and servicer backlogs. Therefore, it is taking longer for loans to go to foreclosure and thus for claims to occur. To address this uncertainty, Genworth elected to impose a 2% floor on Net Resources Required to further recognize claim events which have occurred but not yet been paid (see Table D). This assumption will be re-evaluated as actual data better describing the lag (tail) becomes available.

Table D:

Finally, the Model calculates Resources Required Years 6 – 10. That amount, when added to Resources Required Years 1 – 5, determines Total Resources Required, which is then used to calculate the CAT Ratio.

								Floor	2%				
Dollars in MM				1st 5 Year Stress Period						2nd 5 Year Stress		
RISK CLASSIFICATION	Orig LTV	Paid Losses Years 1-5 (d)	Operating Expense (h)	Resources Required Years 1-5 (i)	Premium Collected Years 1-5 (g)	Net Resources Required Years 1-5 (j)	RIF	Net Resources Required Years 1-5 % of RIF (k)	RIF At End of Years 1-5 (l)	Net Resources Required Years 6-10 (m)	Premium Collected Years 6-10 (n)	Resources Required: Paid Losses Years 6-10 plus Expenses (o)
DELINQUENT Foreclosure	All	$ 1,489	$ 8	$ 1,497	$ 82	$ 1,415	$ 2,063	68.6%	$ 1,014	$ 695	$ 40	$ 736
Delinquent	All	$ 545	$ 9	$ 554	$ 93	$ 461	$ 1,211	38.1%	$ 678	$ 258	$ 52	$ 310
NON DELINQUENT Prev Delq	All	$ 371	$ 28	$ 399	$ 281	$ 118	$ 3,592	3.3%	$ 2,481	$ 81	$ 194	$ 276
Non-Std (Segment 3)	85	$ 5	$ 1	$ 6	$ 6	$ (1)	$ 84	2.0%	$ 23	$ 0	$ 2	$ 2
	90	$ 56	$ 5	$ 61	$ 50	$ 11	$ 735	2.0%	$ 161	$ 3	$ 11	$ 14
	95	$ 52	$ 6	$ 57	$ 56	$ 1	$ 746	2.0%	$ 213	$ 4	$ 16	$ 20
	97	$ 5	$ 1	$ 6	$ 7	$ (1)	$ 78	2.0%	$ 25	$ 0	$ 2	$ 3
	100+	$ 37	$ 4	$ 41	$ 42	$ (1)	$ 393	2.0%	$ 147	$ 3	$ 16	$ 19
Standard (Segment 2)	85	$ 6	$ 1	$ 7	$ 7	$ (0)	$ 134	2.0%	$ 15	$ 0	$ 1	$ 1
	90	$ 53	$ 5	$ 59	$ 54	$ 5	$ 1,068	2.0%	$ 141	$ 3	$ 7	$ 10
	95	$ 71	$ 11	$ 82	$ 109	$ (27)	$ 1,479	2.0%	$ 437	$ 9	$ 32	$ 41
	97	$ 10	$ 2	$ 12	$ 20	$ (8)	$ 234	2.0%	$ 77	$ 2	$ 7	$ 8
	100+	$ 92	$ 12	$ 103	$ 117	$ (14)	$ 1,372	2.0%	$ 498	$ 10	$ 43	$ 53
Premium (Segment 1)	85	$ 26	$ 5	$ 30	$ 47	$ (16)	$ 732	2.0%	$ 108	$ 2	$ 7	$ 9
	90	$ 192	$ 23	$ 215	$ 235	$ (19)	$ 4,433	2.0%	$ 1,022	$ 20	$ 54	$ 75
	95	$ 189	$ 29	$ 219	$ 293	$ (74)	$ 4,857	2.0%	$ 1,619	$ 32	$ 98	$ 130
	97	$ 16	$ 4	$ 20	$ 39	$ (19)	$ 573	2.0%	$ 215	$ 4	$ 15	$ 19
	100+	$ 81	$ 14	$ 95	$ 137	$ (42)	$ 2,175	2.0%	$ 798	$ 16	$ 50	$ 66
Grand Total		$ 3,295	$ 168	$ 3,463	$ 1,676	$ 1,787	$ 25,958	6.9%	$ 9,671	$ 1,145	$ 646	$ 1,791

Resources Required Years 1 - 5 $3,463 million + Resources Required Years 6 - 10 $1,791 million = Total Resources Required $5,254 million.

To calculate Net Resources Required for years 6 – 10, Net Resources Required for years 1 – 5 is divided by RIF. As discussed previously, to offset the fact that Net Resources for years 1 – 5 may be negative due to delays in paid claims, the Model sets a 2% floor for that quotient.

To model 10 years of stress based on only five years of actual MI Insured Book experience, it is necessary to estimate the status of loans at the end of year five (*i.e.*, whether loans are current – never delinquent, current – previously delinquent, delinquent, foreclosure, claim paid or terminated due to prepayment or amortization).   The Model does this by replicating the rates at which loans in the MI Insured Book change status in years 1 – 5 (the "transition rates").   An example of how the transition rate is applied in the Model is included below.

Transition rates are applied to calculate RIF at the end of year five.

(k) = (j) / RIF. Calculates the relationship between Net Resources Required in years 1 – 5 to RIF; used to calculate Net Resources Required for years 6 – 10.

(l) RIF at end of first five years estimated by applying transition rates.

(m) = (k) * (l). Uses the information above to calculate Net Resources Required in years 6 - 10.

(n) Genworth premium collected, in dollars for years 6 – 10.

 (o) Resources Required = Paid Losses plus Expenses for years 6 – 10.

Illustration of Transition Rate

As discussed above, to calculate Total Resources Required, the CAT Model applies a loan status transition rate. To illustrate the way the transition rate operates in the Model, the following example applies the transition rate to a single bucket of Genworth loans in the Model: Standard Segment, 95 LTV loans. (The same methodology applies to all risk segments and all LTVs).

At June 30, 2012, Genworth had $5,230 million of IIF in this bucket, divided by age as follows:

Risk Classification		Insurance In Force					
		LTV	< 3 Yrs	3 to < 5 Yrs	5 to < 10 Yrs	10+ Yrs	TOTAL IIF
NON DELINQUENT	Standard (Segment 2)	95	$ 687	$ 1,984	$ 2,264	$ 294	$ 5,230

As seen in the table below, each age segment of IIF is redistributed by applying the transition rates that correspond to each possible loan status (current – never delinquent, current – previously delinquent, delinquent, foreclosure, claim paid or terminated due to prepayment or amortization).

Dollars in MM

Standard Segment 95% LTV Loan by Age		Total	Current - Never Delq	Current - Prev Delq	Delinquent	Foreclosure	Claim Paid	Termination: Prepayment / Amortization
		Original IIF			Transitioned IIF			
< 3 Years Seasoning	MI Insured Transition Rates	100.00%	34.20%	10.12%	3.89%	5.86%	10.46%	35.48%
	Genworth IIF	$687	$235	$70	$27	$40	$72	$244
3 to < 5 Years Seasoning	MI Insured Transition Rates	100.00%	31.13%	7.14%	2.34%	3.10%	4.98%	51.32%
	Genworth IIF	$1,984	$618	$142	$46	$61	$99	$1,018
6 to < 10 Years Seasoning	MI Insured Transition Rates	100.00%	28.38%	7.43%	2.00%	2.89%	4.37%	54.92%
	Genworth IIF	$2,264	$643	$168	$45	$66	$99	$1,243
10+ Years Seasoning	MI Insured Transition Rates	100.00%	17.42%	1.00%	0.44%	0.62%	0.59%	79.93%
	Genworth IIF	$294	$51	$3	$1	$2	$2	$235
Total Original IIF		$5,230	$1,547	$382	$120	$169	$271	$2,741

The average Coverage Amount is then applied to the transitioned IIF to calculate RIF at the end of year five. In this example, the transitioned IIF of $1,547 million (Current – Never Delinquent) is multiplied by an average Coverage Amount of 28.3% to yield an RIF at the end of years 1 - 5 of $437 million.

Applying the CAT Model to Calculate the CAT Ratio.

Finally, the results of the CAT Model are used to calculate the CAT Ratio (Resources Available / Resources Required). Please refer to Genworth's comment letter for a discussion of the use of the CAT Ratio as an effective new tool to objectively measure an MI provider's financial strength.

Exhibit D
NAIC Model Mortgage Guaranty Insurance Act

MORTGAGE GUARANTY INSURANCE MODEL ACT

Table of Contents

Section 1. Title

This chapter may be cited as the Mortgage Guaranty Insurance Act.

Section 2. Definitions

The definitions set forth in this article shall govern the construction of the terms used in this chapter but shall not affect any other provisions of this code.

A. "Mortgage guaranty insurance" is:

(1) Insurance against financial loss by reason of nonpayment of principal, interest or other sums agreed to be paid under the terms of any note or bond or other evidence of indebtedness secured by a mortgage, deed of trust, or other instrument constituting a lien or charge on real estate, provided the improvement on such real estate is a residential building or a condominium unit or buildings designed for occupancy by not more than four families.

(2) Insurance against financial loss by reason of nonpayment of principal, interest or other sums agreed to be paid under the terms of any note or bond or other evidence of indebtedness secured by a mortgage, deed of trust, or other instrument constituting a lien or charge on real estate, providing the improvement on such real estate is a building or buildings designed for occupancy by five (5) or more families or designed to be occupied for industrial or commercial purposes.

(3) Insurance against financial loss by reason of nonpayment of rent or other sums agreed to be paid under the terms of a written lease for the possession, use or occupancy of real estate, provided the improvement on such real estate is a building or buildings designed to be occupied for industrial or commercial purposes.

B. "Authorized real estate security" for the purpose of this chapter means an amortized note, bond or other evidence of indebtedness, not exceeding ninety-five percent (95%) of the fair market value of the real estate, secured by a mortgage, deed of trust, or other instrument which constitutes, or is equivalent to, a first lien or charge on real estate; provided:

(1) The real estate loan secured in such manner is one of a type which a bank, savings and loan association, or an insurance company, which is supervised and regulated by a department of this state or any agency of the federal government, is authorized to make, or would be authorized to make, disregarding any requirement applicable to such an institution that the amount of the loan not exceed a certain percentage of the value of the real estate.

(2) The improvement on such real estate is a building or buildings designed for occupancy as specified by Subsections A(1) and A(2) of this section.

(3) The lien on such real estate may be subject to and subordinate to the following:

(a) The lien of any public bond, assessment or tax, when no installment, call or payment of or under such bond, assessment or tax is delinquent.

(b) Outstanding mineral, oil, water or timber rights, rights-of-way, easements or rights-of-way of support, sewer rights, building restrictions or other restrictions or covenants, conditions or regulations of use, or outstanding leases upon such real property under which rents or profits are reserved to the owner thereof.

C. "Contingency reserve" means an additional premium reserve established to protect policyholders against the effect of adverse economic cycles.

Section 3. Capital and Surplus

A mortgage guaranty insurance company shall not transact the business of mortgage guaranty insurance unless: if a stock insurance company, it has paid-in capital of at least one million dollars ($1,000,000) and paid-in surplus of at least one million dollars ($1,000,000), or if a mutual insurance company, a minimum initial surplus of two million dollars ($2,000,000). A stock company or a mutual company shall at all times thereafter maintain a minimum policyholders' surplus of at least one million five hundred thousand dollars ($1,500,000).

Section 4. Insurer's Authority to Transact Business

No mortgage guaranty insurance company may issue policies until it has obtained from the commissioner of insurance a certificate setting forth that fact and authorizing it to issue policies.

Section 5. Geographic Concentration

A mortgage guaranty insurance company shall not insure loans secured by a single risk in excess of ten percent (10%) of the company's aggregate capital, surplus and contingency reserve.

No mortgage guaranty insurance company shall have more than twenty percent (20%) of its total insurance in force in any one Standard Metropolitan Statistical Area (SMSA), as defined by the United States Department of Commerce.

The provisions of this section shall not apply to a mortgage guaranty insurance company until it has possessed a certificate of authority in this state for three (3) years.

Section 6. Advertising

No mortgage guaranty insurance company or any agent or representative of a mortgage guaranty insurance company shall prepare or distribute or assist in preparing or distributing any brochure, pamphlet, report or any form of advertising to the effect that the real estate investments of any financial institution are "insured investments," unless the brochure, pamphlet, report or advertising clearly states that the loans are insured by mortgage guaranty insurance companies possessing a certificate of authority to transact mortgage guaranty insurance in this state or are insured by an agency of the federal government, as the case may be.

Section 7. Investment Limitation

A mortgage guaranty insurance company shall not invest in notes or other evidences of indebtedness secured by mortgage or other lien upon real property. This section shall not apply to obligations secured by real property, or contracts for the sale of real property, which obligations or contracts of sale are acquired in the course of the good faith settlement of claims under policies of insurance issued by the mortgage guaranty insurance company, or in the good faith disposition of real property so acquired.

Section 8. Coverage Limitation

A mortgage guaranty insurance company shall limit its coverage net of reinsurance ceded to a reinsurer in which the company has no interest to a maximum of twenty-five percent (25%) of the entire indebtedness to the insured or in lieu thereof, a mortgage guaranty insurance company may elect to pay the entire indebtedness to the insured and acquire title to the authorized real estate security.

Section 9. Mortgage Guaranty Insurance as Monoline

A. A mortgage guaranty insurance company which anywhere transacts any class of insurance other than mortgage guaranty insurance is not eligible for the issuance of a certificate of authority to transact mortgage guaranty insurance in this state nor for the renewal thereof.

B. A mortgage guaranty insurance company which anywhere transacts the classes of insurance defined in Section 2A(2) or 2A(3) is not eligible for a certificate of authority to transact in this state the class of mortgage guaranty insurance defined in Section 2A(1); provided, however, a mortgage guarantee insurance company which transacts a class of insurance defined in Section 2A may write up to five percent (5%) of its insurance in force on residential property designed for occupancy by five (5) or more families.

Section 10. Underwriting Discrimination

A. Nothing in this chapter shall be construed as limiting the right of any mortgage guaranty insurance company to impose reasonable requirements upon the lender with regard to the terms of any note or bond or other evidence of indebtedness secured by a mortgage or deed of trust, such as requiring a stipulated down payment by the borrower.

B. No mortgage guaranty insurance company may discriminate in the issuance or extension of mortgage guaranty insurance on the basis of the applicant's sex, marital status, race, color, creed or national origin.

C. No policy of mortgage guaranty insurance excluding policies of reinsurance, shall be written unless and until the insurer shall have conducted a reasonable and thorough examination of (1) the evidence supporting credit worthiness of the borrower, and (2) the appraisal report reflecting market evaluation of the property and shall have determined that prudent underwriting standards have been met.

Section 11. Policy Forms and Premium Rates Filed

A. All policy forms and endorsements shall be filed with and be subject to the approval of the commissioner. With respect to owner-occupied, single-family dwellings, the mortgage guaranty insurance policy shall provide that the borrower shall not be liable to the insurance company for any deficiency arising from a foreclosure sale.

B. In addition, each mortgage guaranty insurance company shall file with the department the rate to be charged and the premium including all modifications of rates and premiums to be paid by the policyholder.

C. Every mortgage guaranty insurance company shall adopt, print and make available a schedule of premium charges for mortgage guaranty insurance policies. Premium charges made in conformity with the provisions of this chapter shall not be deemed to be interest or other charges under any other provision of law limiting interest or other charges in connection with mortgage loans. The schedule shall show the entire amount of premium charge for each type of mortgage guaranty insurance policy issued by the insurance company.

NOTE: Open rating states may delete a portion or all of this provision and insert their own rating law.

Section 12. Outstanding Total Liability

A mortgage guaranty insurance company shall not at any time have outstanding a total liability, net of reinsurance, under its aggregate mortgage guaranty insurance policies exceeding twenty-five (25) times its capital, surplus and contingency reserve. In the event that any mortgage guaranty insurance company has outstanding total liability exceeding twenty-five (25) times its capital, surplus and contingency reserve, it shall cease transacting new mortgage guaranty business until such time as its total liability no longer exceeds twenty-five (25) times its capital, surplus and contingency reserve. Total outstanding liability shall be calculated on a consolidated basis for all mortgage guarantee insurance companies which are part of a holding company system.

Section 13. Rebates, Commissions and Charges

A. A mortgage guaranty insurance company shall not pay or cause to be paid either directly or indirectly, to any owner, purchaser, lessor, lessee, mortgagee or prospective mortgagee of the real property which secures the authorized real estate security or which is the fee of an insured lease, or any interest therein, or any person who is acting as an agent, representative, attorney or employee of such owner, purchaser or mortgagee, any commission, or any part of its premium charges or any other consideration as an inducement for or as compensation on any mortgage guaranty insurance business.

B. In connection with the placement of any mortgage guaranty insurance, a mortgage guaranty insurance company shall not cause or permit any commission, fee, remuneration, or other compensation to be paid to, or received by any insured lender or lessor; any subsidiary or affiliate of any insured; any officer, director, or employee of any insured or any member of their immediate family; any corporation, partnership, trust, trade association in which any insured is a member, or other entity in which any insured or any such officer, director, or employee or any member of their immediate family has a financial interest; or any designee, trustee, nominee, or other agent or representative of any of the foregoing.

C. No mortgage guaranty insurance company shall make any rebate of any portion of the premium charge shown by the schedule required by Section 11C. No mortgage guaranty insurance company shall quote any rate or premium charge to any person which is different than that currently available to others for the same type of coverage. The amount by which any premium charge is less than that called for by the current schedule of premium charges is an unlawful rebate.

D. The commissioner may, after notice and hearing, suspend or revoke the certificate of authority of any mortgage guaranty insurance company, or in his discretion, issue a cease and desist order to any mortgage guaranty insurance company which pays any commission or makes any unlawful rebate in willful violation of the provisions of this chapter. In the event of the issuance of a cease and desist order, the commissioner may, after notice and hearing, suspend or revoke the certificate of authority of any mortgage guaranty insurance company which does not comply with the terms thereof.

Section 14. Compensating Balances Prohibited

Except for commercial checking accounts and normal deposits in support of an active bank line of credit, a mortgage guaranty insurance company, holding company or any affiliate thereof is prohibited from maintaining funds on deposit with the lender for which the mortgage guaranty insurance company has insured loans. Any deposit account bearing interest at rates less than what is currently being paid other depositors on similar deposits or any deposit in excess of amounts insured by an agency of the federal government shall be presumed to be an account in violation of this section. Furthermore, a mortgage guaranty insurance company shall not use compensating balances, special deposit accounts or engage in any practice which unduly delays its receipt of monies due or which involves the use of its financial resources for the benefit of any owner, mortgagee of the real property or any interest therein or any person who is acting as agent, representative, attorney or employee of such owner, purchaser or mortgagee as a means of circumventing any part of this section.

Section 15. Conflict of Interest

A. If a member of a holding company system, a mortgage guaranty insurance company licensed to transact business in this state shall not, as a condition of its certificate of authority, knowingly underwrite mortgage guaranty insurance on mortgages originated by the holding company system or an affiliate or on mortgages originated by any mortgage lender to which credit is extended, directly or indirectly, by the holding company system or any affiliate.

B. A mortgage guaranty insurance company, the holding company system of which it is a part, or any affiliate shall not as a condition of the mortgage guaranty insurance company's certificate of authority, pay any commissions, remuneration, rebates or engage in activities proscribed in Sections 13 and 14.

Section 16. Reserves

A. Unearned Premium Reserves

A mortgage guaranty insurance company shall compute and maintain an unearned premium reserve as set forth by regulation adopted by the commissioner of insurance.

B. Loss Reserve

A mortgage guaranty insurance company shall compute and maintain adequate case basis and other loss reserves which accurately reflect loss frequency and loss severity and shall include components for claims reported and for claims incurred but not reported, including estimated losses on:

(1) Insured loans which have resulted in the conveyance of property which remains unsold;

(2) Insured loans in the process of foreclosure;

(3) Insured loans in default for four (4) months or for any lesser period which is defined as default for such purposes in the policy provisions; and

(4) Insured leases in default for four (4) months or for any lesser period which is defined as default for such purposes in policy provisions.

C. Contingency Reserve

Each mortgage guaranty insurance company shall establish a contingency reserve out of net premium remaining (gross premiums less premiums returned to policyholders net of

reinsurance) after establishment of the unearned premium reserve. The mortgage guaranty insurance company shall contribute to the contingency reserve an amount equal to fifty percent (50%) of such remaining unearned premiums. Contributions to the contingency reserve made during each calendar year shall be maintained for a period of one hundred and twenty months (120), except that withdrawals may be made by the company in any year in which the actual incurred losses exceed thirty-five percent (35%) of the corresponding earned premiums, and no such releases shall be made without prior approval by the commissioner of insurance of the insurance company's state of domicile.

If the coverage provided in this act exceeds the limitations set forth herein, the commissioner of insurance shall establish a rate formula factor that will produce a contingency reserve adequate for the added risk assumed. The face amount of an insured mortgage shall be computed before any reduction by the mortgage guaranty insurance company's election to limit its coverage to a portion of the entire indebtedness.

D. Reinsurance

Whenever a mortgage guaranty insurance company obtains reinsurance from an insurance company which is properly licensed to provide such reinsurance or from an appropriate governmental agency, the mortgage guaranty insurer and the reinsurer shall establish and maintain the reserves required in this chapter in appropriate proportions in relation to the risk retained by the original insurer and ceded to the assuming reinsurer so that the total reserves established shall not be less than the reserves required by this chapter.

E. Miscellaneous

(1) Whenever the laws of any other jurisdiction, in which a mortgage guaranty insurance company subject to the requirement of this act, is also licensed to transact mortgage guaranty insurance, require a larger unearned premium reserve or contingency reserve in the aggregate than that set forth herein, the establishment of such larger unearned premium reserve or contingency reserve in the aggregate shall be deemed to be in compliance with this chapter.

(2) Unearned premium reserves and contingency reserves shall be computed and maintained on risks insured after the effective date of this chapter as required by Sections 16A and 16C. Unearned premium reserves and contingency reserves on risks insured before the effective date of this chapter may be computed and maintained as required previously.

Section 17. Regulations

The commissioner shall have the authority to promulgate rules and regulations deemed necessary to effectively implement the requirements of this chapter.

Exhibit E
Explanation of Genworth's Reserving Methodology

U.S. Mortgage Insurance
Loss Reserve Overview
May 2009

U.S. Mortgage Insurance
Loss Reserve Methodology: Overview

> Loss Reserves Consist of Three Components …

■ **Case Reserves**
- – Reserves for loans that are currently delinquent and reported as such to us by the lender or loan servicer
- – Calculated by loan based on a **Frequency and Severity Factor Model**

+

■ **Incurred But Not Reported ("IBNR")**
- – Reserves for delinquent loans that have not yet been reported

+

■ **Loss Adjustment Expense ("LAE")**
- – Reserves for loss mitigation expenses and expenses incurred to settle claim loss

Genworth Financial

U.S. Mortgage Insurance
Loss Reserve Methodology: Process

> **FAS 60 Requirement: Liability shall be accrued when insured events occur (*i.e.*, "Triggering Event")**

- **"Triggering Event" is defined as a Delinquent Loan**

- **Liability estimate based on past experience and future trends**

- **Reserve amount based on delinquency age**

- **Separate calculations for Primary, Bulk and Pool Products**

- **Case, IBNR and LAE Reserves established monthly and reviewed / updated quarterly, as appropriate**

Reserving calculation is best estimate of quantity and cost of delinquencies ultimately becoming paid claims

> **Genworth's Loss Reserve Methodology is consistent with both GAAP and MI Industry Practice**

Genworth Financial

U.S. Mortgage Insurance
Loss Reserve Methodology: Calculation

Delinquent Loan Balance X   Loan Coverage   X   Frequency   X   Severity   =   Total Loss Reserves

| | | | | How Often Does A Delinquency Go To Claim? | | What Is Final Settlement Cost Versus Coverage? | | |

Example:

| $2.5B | X | 25% | X | 33% | X | 95% | = | $190MM |

Delinquencies Are Classified By Category

- Cat 10 Delq < 4 Months
- Cat 20 Delq > 4 Months
- Cat 30 In Foreclosure
- Cat 40 Title Taken
- Cat 45 Claim Received
- Cat 50 Claim Being Audited

- **Reserves increase at each stage of delinquency as the probability of going to claim becomes higher**

- **IBNR = percentage of Cat 10 through Cat 40 Case Loss Reserves**

P&L Impact = Monthly change in Loss Reserves

Genworth Financial

Exhibit F
Description of the Statutory Limitations on
Mortgage Insurance Investment and Dividends

OVERVIEW OF STATE INVESTMENT LAWS FOR MORTGAGE INSURERS

State insurance laws provide for various restrictions on the assets held and investments made by insurers, including mortgage guaranty insurers ("mortgage insurer"), to ensure that they are able to pay claims in periods of cyclical stress. This overview provides a high level summary of these protective safeguards relating to assets and investments. Please note that most asset and investment laws are laws of general applicability and are not specific or unique to mortgage insurers. Additionally, state insurance laws place restrictions on an insurer's ability to dividend money upstream, and this point is addressed in item IV below.

I. Reserves and Capital

In a broad sense, assets held by a mortgage insurer primarily fall into four categories: 1) the statutory contingency reserve ("SCR"); 2) actuarial loss reserves; 3) unearned premium reserves; and 4) surplus as regards policyholders. Typically, a mortgage insurer's state of domicile determines in what form assets may be held and investments made. That having been said, below I will discuss a notable exception where non-domiciliary states (California and Illinois) impose certain investment restrictions on any mortgage insurer doing business in those states.

II. Admissible Assets

Permitted Assets Overview

Under North Carolina General Statute Section (N.C.G.S.) 58-7-162 (copy attached), assets for which an insurer may take statutory financial statement credit include:

1) cash;

2) high grade securities, loans, and property, but with severe restrictions (see discussion of particulars below);

3) uncollected premiums not more than 90 days past due;

4) reinsurance recoverables;

5) electronic and mechanical machines and operating systems; and

6) other assets approved by the Commissioner of Insurance.

Assets Not Permitted

Although not an exclusive listing, N.C.G.S. 58-7-163 (copy attached) specifically prohibits an insurer from including the following items in the calculation of assets for statutory financial statement purposes:

1) advances to employees;

2) stock of the insurer, equity therein, or loans secured thereby;

3) the amount by which book value of any asset exceeds the value of the asset as determined by NC law;

4) bonds, notes, or other evidences of indebtedness that are secured by mortgages that are in default, to the extent of the cost or carrying value that is in excess of the value as determined by NC law;

5) surplus notes to the extent that these result in a double counting of such investments on the insurer's balance sheet; and

6) any encumbered asset.

III. Investments

General Requirements for Investments

Pursuant to N.C.G.S. 58-7-167 (copy attached), no security or investment, other than real estate, may be acquired unless it bears interest, receives dividends, or generates income and is not in default in any respect.

N.C.G.S. 58-7-168 (copy attached) requires an insurer's board of directors to approve all investments.

Permissible Investments

Pursuant to N.C.G.S. 58-7-172 and 58-7-173 (copies attached), an insurer may invest in:

1) cash on hand or in a bank account;

2) bonds and other indebtedness that are direct obligations of the U.S. Government for which the full faith and credit of the U.S. Government is pledged for payment of principal and interest;

3) loans insured as to principal and interest by the U.S. Government or by an agency thereof to the extent of the guaranty;

4) bonds or indebtedness by any U.S. state or territory, or by Canada or any Canadian province, that are direct obligations of such governmental units for which the full faith and credit of such governmental unit has been pledged; (note: there is a 40% of admitted assets limit on aggregate Canadian investments per N.C.G.S. 58-7-170(b)(2)).

5) bonds issued by U.S. and Canadian counties and municipalities that are direct obligations of such governmental units for which they have the power to levy taxes;

6) construction bonds issued by U.S. or Canadian governmental units;

7) bonds or indebtedness of or guaranteed by any U.S. or Canadian governmental unit with respect to public utilities and works (water/gas/sewage/electricity/toll roads/bridges);

8) bonds and securities of (a) Fannie Mae when acquired in connection with the sale of mortgage loans to the Association; (b) any federal land bank when the securities are issued under the Farm Loan Act; (c) any federal home loan bank when the securities are issued under the Home Loan Bank Act; (d) the Home Owners Loan Corporation; (e) any federal intermediate credit bank created by the Agricultural Credits Act; (f) the Central bank for Cooperatives; (g) any similar agency of the U.S government of similar financial quality;

9) housing authority bonds if secured by a pledge from the U.S. Government or any agency thereof;

10) obligations issued or assumed by various banks, such as the International Bank for Reconstruction and Development, but no insurer may hold such obligations in any one issuer in an amount greater than 3% of the insurer's admitted assets;

11) bonds or notes of U.S. and Canadian corporations, as valued by the NAIC's Security Valuation Office, but bonds from any one issuer shall not exceed 3% of the insurer's admitted assets (per N.C.G.S. 58-7-170(b)(2), there is a 20% of admitted assets limit for Canadian corporate credit instruments).

12) secured obligations of duly constituted churches, which in the aggregate do not exceed 3% of the insurer's admitted assets;

13) equipment trust obligations, which in the aggregate do not exceed 20% of the insurer's admitted assets:

14) share or savings accounts of savings and loan or building and loan associations;

15) loans with a maturity of less than 12 years secured by the pledge of securities eligible for investment under NC law;

*** For items 2 through 15 above, there are limits imposed by N.C.G.S. 58-7-170(d) (copy attached) for "medium to lower quality obligations", which means those investments designated as 3, 4, 5, or 6 by the NAIC's Securities Valuation Office. These limits range from 20% of

admitted assets generally, to 10% in investments designated as 4, 5, or 6, to 3% for investments designated as 5 or 6, to 1% for investments designated as 6.

16) stocks, common or preferred, of U.S. or Canadian corporations, (or stocks and bonds of foreign corporations under limited circumstances – See N.C.G.S. 58-7-178, copy attached). Per N.C.G.S. 58-7-170(b)(1), total stock investment is limited to 25% of the insurers admitted assets, common stock is limited to 20% of the insurers admitted assets, and the insurer may hold not more than 3% of its admitted assets in one stock issuer, except for depository institutions where the limit is 5% of admitted assets. (Note exception below if the stock is of a subsidiary that is itself a licensed insurer).

17) mortgage backed securities that are designated a 1 or 2 in accordance with the NAIC's Securities Valuation Office (NOTE: California Code Regis. Tit. 10 Section 2521 and Illinois Admin. Code Section 206(d) both prohibit any mortgage guaranty insurer that does business in those states from investing in mortgage backed securities, which precludes Genworth from doing so).

Mortgage Loans

While N.C.G.S. 58-7-179 (copy attached) allows insurers to invest in first mortgage loans, subject to the limits of 58-7-170(c). However, California Code Regis. Tit. 10 Section 2521 and Illinois Admin. Code Section 206(d) prohibit any mortgage insurer doing business in those two states from investing in mortgages other than those obtained in settlement of a claim.

Real Estate

N.C.G.S. 58-7-187 (copy attached) prohibits an insurer from investing in real estate except under the following circumstances:

1) used for principal office and branch offices;

2) acquired in satisfaction of loans, liens, judgments, etc;

3) acquired through trade or offset for sale of other real property if transaction results in net reduction in the insurer's investment in real estate;

4) acquired through gift, merger, or consolidation;

5) when made for investment purposes, the insurer's aggregate investment in real estate shall not exceed the lesser of 5% of the insurer's admitted assets or 15% of the insurer's capital and surplus; Further, the insurer's investment in any one property shall not exceed 1% of the insurer's admitted assets.

Investments in Subsidiaries

N.C.G.S. 58-19-10 (copy attached) permits an insurer to make an unlimited investment in a subsidiary that is also a licensed insurer. Otherwise, the statute limits an insurer's investment in a subsidiary to the lesser of 10% of the insurer's admitted assets or 50% of the insurer's surplus. Note that the subsidiary must be engaged in activity ancillary to the insurance business.

IV. Dividends

N.C.G.S. 58-19-30 (copy attached) prohibits an insurer from paying an extraordinary dividend without 30 days prior notice to the Commissioner of Insurance and the Commissioner has not disapproved the same. The extraordinary dividend threshold is any dividend, taken together with any dividends made in the preceding 12 months, that in the aggregate exceed the greater of 10% of the insurer's surplus or the insurer's prior year's net income. Regarding either ordinary or extraordinary dividends, N.C.G.S. 58-7-130 provides that the Commissioner can halt any dividend if he feels that the dividend would be prejudicial to the insurer or its policyholders. That same statute requires that dividends be paid only from unrestricted surplus.

Exhibit G
Overview of Genworth's Loss Mitigation Programs

Overview of Loss Mitigation Programs

October, 2012

Genworth Homeowner Assistance

A Team of Professionals Dedicated to Helping Homeowners in Distress

Borrower Outreach Specialists

- Reach out to borrowers that may need assistance

Loan Workout Representatives

- Help borrowers identify alternatives to foreclosure

Servicer Relations Team

- Work with servicers to ensure effective coordination

Industry & Government Relations

- Work with GSEs, government agencies and industry groups to coordinate homeowner assistance initiatives

Program Management Team

- Ongoing development, implementation and analysis of programs to help homeowners

Genworth Homeowner Assistance

Borrower Outreach Campaigns Reach Distressed Borrowers and Help Them Avoid Foreclosure

"No Contact"

- Genworth attempts to locate and call borrowers that the servicer has been unable to contact

"No Resolution"

- Genworth calls borrowers with whom the servicer has been unable to complete a workout solution

Warm Transfer

- Genworth coordinates with servicers to transfer borrowers it has contacted to dedicated servicer workout reps

Full Workout Package Collections

- Genworth contacts borrowers in an attempt to collect a full workout package on behalf of the servicer

Document Follow-Up

- Genworth contacts borrowers to collect required documents the servicer has not received

Door Knocking Services

- Genworth suggests the use of third party vendors to servicers to make face-to-face contact with borrowers

Genworth Financial

Genworth Homeowner Assistance

HOA Programs and Offerings

Hardest Hit – Borrower Outreach and Education

- Genworth outreach program to borrowers who may be able to benefit from state Hardest Hit funds

Third Party Component Servicing Fulfillment

- Genworth provides funding for third parties to perform workouts on behalf of servicers if appropriate

Pre-Claim Advances

- If appropriate, Genworth may advance funds to assist in a retention workout option

Modification Re-default Initiative

- Assistance for borrowers who become delinquent after they have received a modification

Potential Imminent Default

- Outreach and support for borrowers who are still current on their mortgage but may be in need of assistance

Workout Training for Servicers

- Face to face and on-line training on workout tools and options

Participation in major government, GSE and investor workout programs

Genworth Homeowner Assistance

Results:

In the Period from 2008 through the First Half of 2012, Genworth's Homeowner Assistance Team Has:

- **Reached Out to Over 250,000 Unique Homeowners in Distress to Offer Support and Assistance**

- **Coordinated Efforts with Servicers & Investors to Help Approximately 110,000 Homeowners Avoid Foreclosure**
  - Over 90,000 Retention Workouts – Borrower is able to keep their home
  - Almost 20,000 Short Sales & Deeds-in-Lieu

Genworth Financial

Exhibit H

Promontory Study – *Assessing the Delinquency and Default Risk of Insured and Non-Insured High LTV Mortgages, July 15, 2011*

Assessing the Delinquency and Default Risk of Insured and Non-Insured High LTV Mortgages

July 15, 2011

Table of Contents

Executive Summary

During the recent housing bubble, many borrowers who lacked a 20% down payment used second mortgages (so-called piggyback loans) as a way of avoiding private mortgage insurance on a first lien with a higher than 80% loan-to-value ratio. In a typical "piggyback" transaction, a borrower would take out a first mortgage for 80% of the home's value, a second for 10%, and make a 10% down payment.

First mortgages with a piggyback second were the most prevalent alternative to the use of mortgage insurance over the past decade. At the request of Genworth Financial, Promontory Financial Group conducted an independent study to assess the relative default performance of piggyback and insured loans. For this study, Promontory analyzed the loan-level details on a sample of 5.6 million mortgages originated from 2003 to 2007. The dataset, provided by First American CoreLogic, included several borrower and loan-level characteristics. Serious delinquency was evaluated using a definition corresponding to a loan having ever been 90 or more days past due (or worse) at any given time.

Using this measure, 29.09% of the non-insured, piggyback loans were ever delinquent, compared to 19.44% of insured loans. For the 2007 origination year, the rates were 34.80% and 27.75%, respectively. For each of the provided loan-level variables, insured loans were found to have lower ever delinquent rates. For example, insured loans with a combined LTV of 95 to 100% had a delinquency rate of 21.97%, compared to 33.47% for non-insured, piggyback loans. Similarly, insured loans with FICO scores below 620 had a delinquency rate of 34.56%, well below the 50.05% rate for non-insured loans. Low-doc insured loans had a delinquency rate of 24.70%, compared to 33.67% for non-insured loans.

Because the rich dataset included loan-level, monthly performance indicators, it was possible to study not only the presence of delinquency, but the timing as well. Using a widely known statistical technique known as survival analysis, Promontory assessed the relative performance of insured and non-insured, piggyback loans over time, while simultaneously controlling for loan characteristics that are indicators of the risk of delinquency, including documentation level, loan purpose, owner-occupied status, combined LTV, and FICO score. In its analysis, Promontory also included several time-varying factors including local unemployment rates, market interest rates, and home price indices, all of which helped to significantly explain borrower propensities to default. After controlling for this wide variety of factors, Promontory still found that MI was associated with lower default rates for both fixed rate and adjustable rate first mortgages. Overall, across both fixed and adjustable rate loans, the proportion of non-insured loans surviving to 72 months was .798, compared to .833 for insured loans. Significantly, this difference implies that the baseline cumulative default rate of non-insured loans is 20.98% percent higher than that of insured loans.

Promontory's approach can quantify the extent to which MI serves as a proxy for unobserved aspects of the mortgage underwriting process, which when implemented serve to lower default risk for observed combinations of borrower and loan characteristics. However, the survival analysis regression methodology does not measure the impact that MI-related underwriting may have on adjusting the factors which are controlled for in the study, such as LTV. Any impact that MI may have on mitigating the risk associated with such factors is likely to be embedded in the model covariates, and would not be reflected in the estimated baseline performance differences between insured and non-insured loans.

Questions or comments relating to this study should be directed to C. Erik Larson, PhD, Director, Promontory Financial Group, email: elarson@promontory.com, phone: 202-384-1200.

1. Introduction

This study presents the results obtained by Promontory Financial Group in its review and assessment of the performance of mortgage loans originated with a second "piggyback" lien compared to first-lien MI-insured mortgage loans originated in the years 2003 to 2007.

Section 1 begins by illustrating the performance differences though descriptive tabular analysis of severe (ever 90 days-past-due) delinquency rates and through graphical comparison of vintage cumulative delinquency curves. A conclusion from the tabular and vintage curve analysis is that it will be important to control simultaneously for a potentially large number of risk factors, and to do so in a way that is sensitive to the time-varying impact that such factors may have over the life of the mortgage. An appropriate framework by which to control for such effects in a time-sensitive manner will require a relatively sophisticated modeling approach, that of statistical survival analysis.

Section 2 discusses the need to employ survival analysis in order to control for the presence of "censored" observations in the mortgage data. In the present context, censored observations correspond to the measured time-to-default of those accounts which have not defaulted and remain open at the end of a study period. For a censored observation, it is only known that the actual time to default or payoff will exceed the observed value. Since longer-lived accounts are more likely to be censored, analysis based solely on non-censored observations is likely to result in biased statistical estimates. Note that there are two "events" which may end a mortgage account lifetime: the first is default; the second is payoff. Since either of these two events may impact the probability of observing the other, we consider a "competing risks" survival analysis, though we continue to focus on the risk of extreme delinquency (i.e., default).

Section 3 presents the results from estimation from both simple and extended versions of MI-stratified Cox proportional hazards models, estimated by mortgage interest rate type (fixed rate and adjustable rate). Risk factor parameter estimates are generally in line with expectations as to sign. We also compare the implied baseline survival curves from the estimated models to smoothed Kaplan-Meier estimates of the empirical survival function. Our modeling approach allows us to produce separate baseline survival estimates for insured and non-insured (with piggyback) mortgages. These baseline curves have been controlled for the impact of risk factors on performance in a way that cannot accomplished by simple tabular or graphical analysis of empirical data. Overall, our analysis is supporting of the assertion that the historical performance of first lien MI-insured loans has been associated with lower rates of extreme delinquency or default, when compared to non-insured first lien loans accompanied by a piggyback second lien, and when controlling for various risk factors.

Section 4 concludes.

2. Mortgage Performance Data

The data obtained by Promontory for this study contain performance information for 5,676,428 individual residential mortgages. The data were provided by Genworth Financial in 2011, who obtained them from First American CoreLogic's servicing database.

There are a number of reasons why the loans in the Genworth-provided dataset might not mirror those in the population as a whole.

- First, and most importantly, both the current and original Genworth study focus exclusively on loans with <20% down payment (>80% Loan-to-Value), which is only a portion of the first-lien origination market. Loans with LTV in excess of 80% represent approximately 20% of the overall market.
- Second, the CoreLogic database does not cover 100% of the loan market, as not all servicers are CoreLogic customers. Their coverage over the study period is over 60% of loans originated. This fact reduces both the number of piggyback and insured loans in the Genworth dataset, relative to the population. However, the missing servicers during the study period were mainly large diversified national-level players, and there is no reason to think that their omission should have a systematic selectivity bias on the representativeness of mortgage types in our dataset.
- Third, CLTV is not reported on 100% of loans in the CoreLogic dataset. Genworth's definition of a "loan with a piggyback" is a first lien loan with LTV=80 and with reported CLTV >80. This definition serves to reduce the number of piggybacks potentially included in the study, while not reducing insured loans.
- Finally, certain exclusions had already been applied to the dataset before Promontory received it. These included excluding records with missing FICO at origination.

To limit and ensure the comparability of our analysis, Promontory further excluded loans with:

- Missing region;
- Combined loan-to-value (CLTV) greater than 105%;
- Categorization of 'Non Insured, Sold'; and
- A mismatch between the origination date in the dataset and the origination date as calculated from the performance history.

Of the records provided by Genworth, 5,492,097 were used in the benchmarking and vintage curve analysis described below.

a. Descriptive Statistics

This section presents summary tabular analyses illustrating how insured vs. non-insured (with piggyback) mortgage performance differs with various risk factors that are typically thought to be indicative of borrower or product risk.

Promontory used the performance definition of "ever 90 days past due or worse" (including foreclosure and "real estate owned"), a loan-level variable calculated by Genworth and provided on the analysis dataset. This variable is a measure of severe delinquency and is closely related to the definition of default used by most servicers.

Table 1 presents the lifetime cumulative delinquency rates corresponding to our performance definition (ever 90 days past due or worse). In all years except for 2003, the calculated piggyback delinquency rates are higher than the insured delinquency rates. The overall bad rate on the analysis dataset was 19.44% for insured loans and 29.09% for piggyback loans.

Table 1: Delinquency Rates by Origination Year

Origination Year	2003	2004	2005	2006	2007	2003-2007
Insured	12.10%	16.15%	20.49%	24.34%	27.75%	19.44%
Non-Insured with Piggback	9.40%	16.18%	27.47%	36.73%	34.80%	29.09%

Table 2 illustrates how delinquency rates increase with Combined Loan-to-Value (CLTV). For the insured mortgages, the CLTV value is the same as the LTV of the first lien; for non-insured mortgages, the CLTV represents the combined LTV of both the first and second (piggyback) liens.

Table 2: Delinquency Rates by CLTV

Combined LTV at Origination	80-85	85-90	90-95	95-100
Insured	16.14%	17.29%	17.57%	21.97%
Non-Insured with Piggback	30.90%	29.77%	21.80%	33.47%

As expected, increasing FICO scores are associated with lower delinquency rates, with piggyback loans having higher delinquency rates in all FICO score bands, as documented in Table 3.

Table 3: Delinquency Rates by FICO Score

Origination FICO	350-619	620-659	660-699	700-719	720-739	740-759	760+
Insured	34.56%	24.29%	18.53%	15.25%	12.47%	9.90%	7.04%
Non-Insured with Piggback	50.05%	46.35%	37.34%	32.83%	28.11%	22.74%	15.77%

Table 4 shows little difference in severe delinquency rates between purchase and refinance purposes for insured loans, while non-insured (with piggyback) loans supporting refinance are significantly riskier than loans supporting a new purchase. These patterns run against the traditional thinking that a loan supporting a new purchase is riskier than one supporting a refinance; however one may need to control for other factors to see the expected relationship in these data.

Table 4: Delinquency by Loan Purpose

Loan Purpose	Purchase	Refinance
Insured	19.76%	18.66%
Non-Insured with Piggyback	26.42%	38.00%

Table 5 illustrates that low documentation loans are more risky than full-documentation loans for both insured and non-insured loans.

Table 5: Delinquency by Documentation Level

Documentation Level	Full	Low
Insured	17.56%	24.70%
Non-Insured with Piggyback	21.07%	33.67%

And finally, Table 6 illustrates the dramatically lower delinquency rates for adjustable rate mortgages that are insured, compared to those that are non-insured. The difference is much smaller for fixed rate loans.

Table 6: Delinquency by Rate Type

Rate Type	Fixed Rate	Adjustable Rate
Insured	19.33%	22.45%
Non-Insured with Piggyback	20.15%	41.96%

b. Vintage Curves

Vintage curves provide powerful summaries of the performance of insured and piggyback loans. To construct our vintage curves, we plot the cumulative monthly severe delinquency rate over time for loans originated in a given year. For each vintage, we present curves for sub-segments of insured and piggyback loans. We segment using origination FICO (<=620 is SubPrime, >620 Prime) and CLTV (less than or equal to 90% and greater than 90%). The early vintages (2003 through 2005) have 72 months of performance. Vintages 2006 and 2007 have 60 and 48 months of performance, respectively. As shown in Figures 1 and 2, below, for the 2007 vintage, piggyback loans have significantly accelerated and higher lifetime cumulative delinquency. Appendix A presents additional curves.

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Figure 1
Cumulative Bad Rates for 2007 Vintage and CLTV LE90

Legend:
- Insured-Prime (mean: 0.2632 se: 0.0008)
- Insured-Subprime (mean: 0.3781 se: 0.003)
- Piggyback-Prime (mean: 0.3324 se: 0.0015)
- Piggyback-Subprime (mean: 0.5138 se: 0.0276)
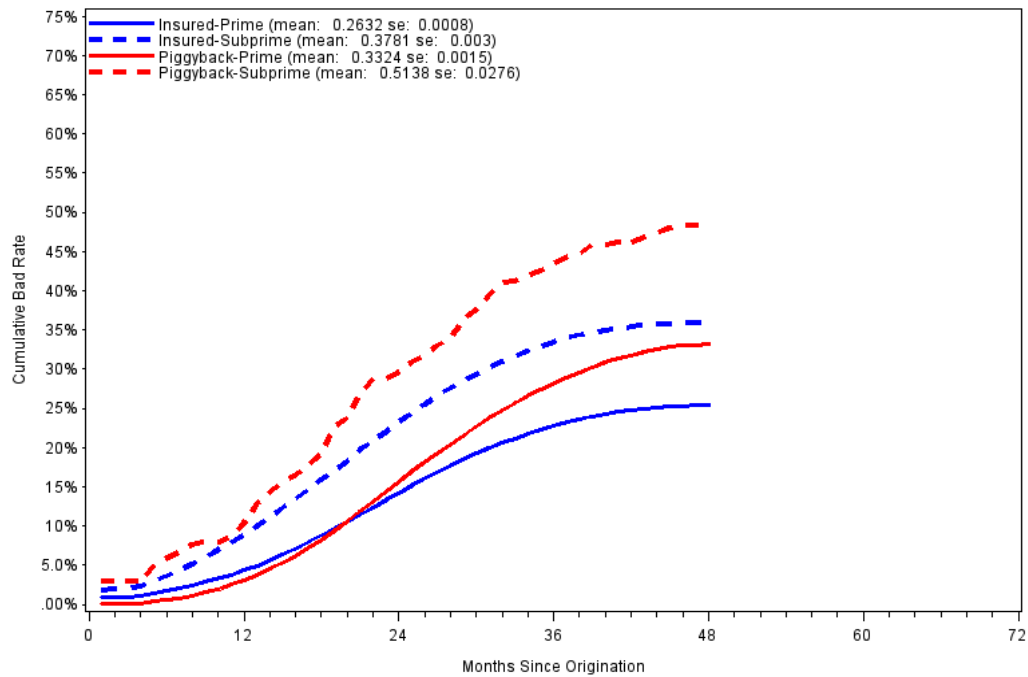
Figure 2
Cumulative Bad Rates for 2007 Vintage and CLTV GT90

Legend:
- Insured-Prime (mean: 0.2589 se: 0.0006)
- Insured-Subprime (mean: 0.4295 se: 0.0014)
- Piggyback-Prime (mean: 0.3567 se: 0.0013)
- Piggyback-Subprime (mean: 0.566 se: 0.0116)

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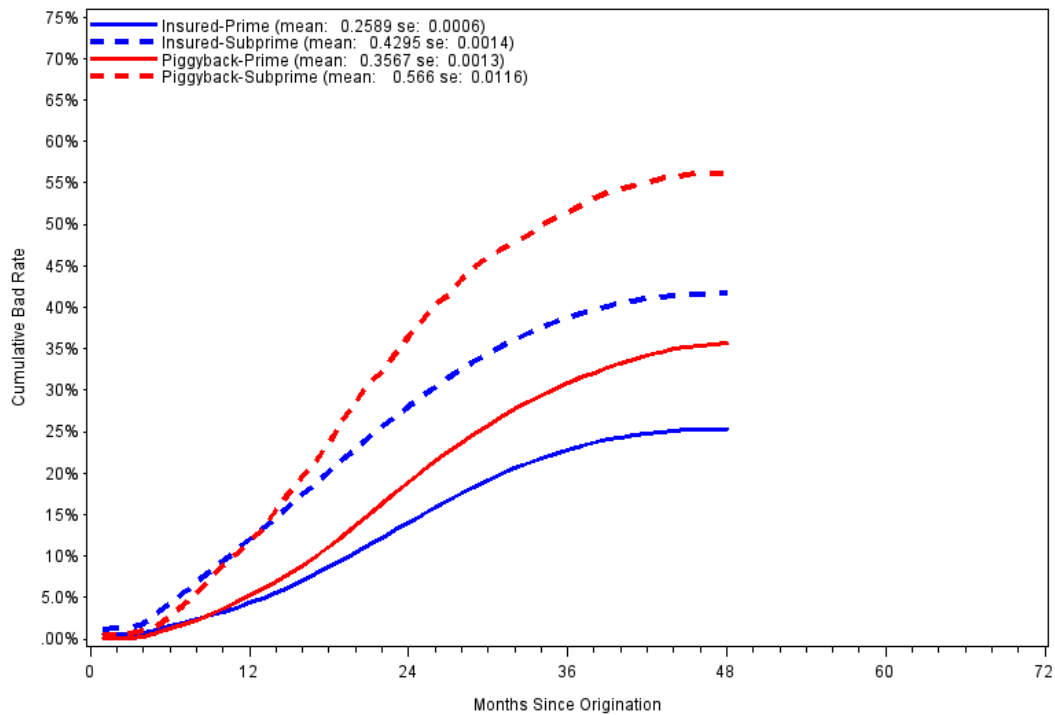
The tabular analysis and the vintage curve analysis are both strongly suggestive of differing performance characteristics for insured and non-insured (with piggyback) mortgages. However, it is undoubtedly the case that other risk factors, whose level and impact may differ for insured and non-insured (with piggyback) groups, should be controlled for before any conclusions are drawn or stylized facts established.

For instance, while the vintage curves generally illustrate that non-insured loans with piggyback seconds may have cumulative long-term delinquency rates that are higher than their insured counterparts, the vintage curves do at times cross, with insured loan cumulative severe delinquency rates often being greater during the first 12, and in some instances, first 48 months. This occurs even with vintage curves that attempt to control – albeit weakly -- for factors such as origination FICO and CLTV. One potential explanation for this reversal in risk is that differences in payments between the two mortgage types may significantly impact the observed delinquency. In our dataset, and in the population, insured mortgages overwhelmingly have fixed-rate payment structures, while non-insured (with piggyback) mortgages are almost evenly split between fixed- rate and adjustable-rate payment structures. Since initial rate levels of adjustable-rates loans are usually significantly below those carrying a fixed-rate, and because they remain so for months or years before any ARM reset, the initial payments for the fixed rate loans are likely to be significantly higher than the adjustable rate loans. Consequently, it would not be surprising if the higher initial payments of fixed rate mortgages (controlling for CLTV) were associated with an initial higher risk of delinquency for insured, predominantly fixed rate, mortgages.

An obvious takeaway is that it will be important to control simultaneously for a potentially large number of risk factors, and to do so in a way that is sensitive to the time varying impact that such factors may have over the life of the mortgage. Our dataset will allow us to control for such effects, but an appropriate framework in though which to control for such effects in a time-sensitive manner will require a relatively sophisticated modeling approach.

3. Survival Models and Analysis

The statistical methods of survival analysis (also called life-table analysis or failure-time analysis) have been developed to analyze the time-to-occurrence of an event as well as the fact of its occurrence. For example, survival analysis has been employed to study the time-to-failure of machine components, time-to-death of patients in a clinical trial, and the duration of unemployment spells of workers.

Introductions to the statistical literature on survival analysis may be found in texts by Kalbfleisch and Prentice (1980), Lawless (1982) and Cox and Oakes (1984). Here, we use survival analysis to model the "lifetimes" of mortgages. Note that there are two "events" which may end a mortgage account lifetime: the first is default, which we have been studying above; the second is payoff. Since either of these two events may impact the probability of observing the other, we consider a "competing risks" survival analysis.

A common feature of survival data is the presence of censored observations. In the present context, censored observations correspond to the measured time-to-default of those accounts which have not defaulted and remain open at the end of a study period. For a censored observation, it is only known that the actual time to default or payoff will exceed the observed value. The study of survival data

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typically employs information from both censored and non-censored observations. Since longer-lived accounts are more likely to be censored, survival analysis based solely on non-censored observations is likely to result in biased statistical estimates. Indeed, simple regression analysis of account bad-rates which fails to take account for the impact of censoring is likely to produce biased estimates of the explanatory variables if the censoring is not random or if the mixture of effects is not distributed randomly across censored and uncensored accounts.

a. Survival and Related Functions

Suppose the population under study consists of mortgage lifetimes for N relatively homogeneous accounts. Each lifetime in the population can be represented by a random variable, T_i, where i=1,...,N. If n account lifetimes are to be randomly sampled from the target population, each account will have a potential censoring time (or censoring age) a_i (i=1,...,n). The potential censoring time is determined using the opening date for the account and the closing date for the period during which observations are collected. The sample data consists of n pairs (c_i, s_i), where $s_i = min(T_i, a_i)$ is the observed lifetime of account i, and c_i is an indicator variable taking the values $c_i=1$ if $T_i \leq a_i$ (s_i is an uncensored observation) and $c_i=0$ if $T_i > a_i$ (s_i is a censored observation).

For the moment, ignore the possibility of censoring. Distributional characteristics of a population of random account lifetimes T_i are summarized by a distribution function, F(t), and survival function, S(t), here defined as

$$F(t) = 1 - S(t) = Probability(T_i < t).$$

F(t) and S(t) are both defined for 0<t<∞. Using statistical survival analysis, one can use sample data to make reliable inferences about these population functions.

Note that F(t) reports the proportion of accounts in the population with lifetimes less than t, while S(t), reports the proportion of accounts with lifetimes greater than or equal to t. Also, as t increases from zero, F(t) monotonically increases from zero toward one, while S(t) monotonically decreases from one toward zero.

Closely related to the distribution function, F(t), is the density function, f(t). When t is measured in continuous units, f(t) is defined by

$$f(t) = \partial F(t)/\partial t.$$

The density function can be thought of as the instantaneous probability of the account lifetime ending at t.

The hazard function or age-specific failure rate function, h(t), is related to the distribution, survival and density functions. The hazard function is defined by

$$h(t) = f(t)/S(t).$$

The hazard, h(t), may be interpreted as the "instantaneous" conditional probability that an account will close at age t, given that it has remained open to at least age t. Hazard functions are particularly useful in the analysis of account lifetimes, since they specify the risk of immediate closure of an open account

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at age t. The choice of an appropriate statistical model for account lifetimes is aided by the careful study of empirical hazard functions constructed from sample data.

The distribution, survival, density and hazard functions are mathematically equivalent representations of the distributional characteristics of a population of account lifetimes, since each one of them can be derived given any of the others.

b. Cox Proportional Hazard Models

As part of this study, Promontory estimated a Cox Proportional Hazard (PH) Model to investigate and quantify the relative performance of piggyback and insured loans while controlling for loan-level factors that are commonly thought to be important in describing loan performance. The Cox Proportional Hazard Model is originally due to David Cox (1972). The model has been extended significantly by others (see Therneau and Grambsch (2000)), and has received widespread empirical application. The model is usually written as

$$h_i(t) = \lambda_0(t) \, Exp(\beta_1 X_{i1t} + \beta_2 X_{i2t} + ... + \beta_k X_{ikt}).$$

This model specifies that the hazard rate for individual "i" at time "t" is made up from the product of two components: a non-negative "baseline" hazard function $\lambda_0(t)$, and an individual-specific proportionality factor $Exp(\beta_1 X_{i1t} + \beta_2 X_{i2t} + ... + \beta_k X_{ikt})$, where $X_{i1t}, X_{i2t}, .., X_{ikt}$ are the values of the observed, possibly time-varying, covariates (hence the indexing of the individual covariates by t.[1]) The corresponding covariate coefficients, $\beta_1, \beta_2, ... \beta_k$, are unknown parameters which have to be estimated from the data.

Taking natural logs, the model is also written as:

$$log \, h_i(t) = \alpha_0(t) + \beta_1 X_{i1t} + \beta_2 X_{i2t} + ... + \beta_k X_{ikt},$$

The Proportional Hazards Model gets its name from the fact that the ratio of hazards for any two individuals is given by the ratio or their proportionality factors. However, there is sometimes a reason to believe that the proportionality assumption underlying the Cox specification might not be warranted, and that it is appropriate to consider extensions of the model for non-proportional hazards. One such extension is through "stratification."

In a stratified model, there is a presumption that the hazards of two (or more) groups of individuals may be written as

$$log \, h_i(t) = \alpha_1(t) + \beta_1 X_{i1t} + \beta_2 X_{i2t} + ... + \beta_k X_{ikt}, \text{ for individuals i that are members of group 1, and}$$

$$log \, h_j(t) = \alpha_2(t) + \beta_1 X_{j1t} + \beta_2 X_{j2t} + ... + \beta_k X_{jkt}, \text{ for individuals j that are members of group 2.}$$

These two specifications can be combined into a single specification for both groups by writing

$$log \, h_i(t) = \alpha_c(t) + \beta_1 X_{i1t} + \beta_2 X_{i2t} + ... + \beta_k X_{ikt}, \text{ where } \alpha_c(t) = \alpha_1(t)D_{i1} + \alpha_2(t)D_{i2}$$

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[1] In order to incorporate time-varying covariates, we utilize a representation of the survival model as a counting process; see Hosmer and Lemeshow (1999), Appendix 2.

where D_{i1} and D_{i2} are zero-one indicator functions identifying an individual's membership in group 1 or 2.

In order to estimate the Cox PH model, methods of partial likelihood maximization are employed (which allows one to avoid specifying the baseline hazard function.)[2] In the case of a stratified model, partial likelihood estimation requires a slightly more complex estimation procedure. Separate partial likelihoods functions are first constructed for each stratification group; these functions are then multiplied together to form an aggregate partial likelihood model that is maximized though numerical estimation of the coefficient vector **β**.

4. Estimation

a. The Survival Analysis Modeling Dataset

Due to the size of the Genworth dataset and the computational demands in terms of memory and time required to estimate the partial likelihood algorithms for the alternative survival models, particularly in the presence of time-varying covariates , Promontory did not find it feasible to estimate the stratified proportional hazard models with the full dataset that had been provided by Genworth. Instead, we have utilized a 10% randomly selected subsample for use as a modeling dataset.[3] This dataset is still very large, containing 538,500 mortgage lifetimes. Summary information is given in the following table.

Table 7: Counts and Dispositions of Observations in the Modeling Dataset

Rate Type	Type	Default	Paid Off	Paying	Total by Rate Type
All Rate Types	Insured	83,641	144,807	203,240	538,500
	Non-insured w/ Piggyback	31,198	33,323	42,291	
Fixed Rate	Insured	73,764	126,260	188,923	452,026
	Non-insured w/ Piggyback	12,774	21,275	29,030	
Adjustable Rate	Insured	9,877	18,547	14,317	86,474
	Non-insured w/ Piggyback	18,424	12,048	13,261	

Appendix B contains additional summary information on loans characteristics in the modeling dataset.

b. Results

Estimation of Nonparametric (Empirical) Survival Curves

Rather than proceeding directly to the estimation of a stratified proportional hazards model, it will be useful to first consider the empirical survival distribution curves for default that are implied by the sample data. To this end, we have constructed smoothed estimates of the empirical survival function using the method of Kaplan and Meier (1958.) Figures 3 and 4 show the empirical, or non-parametric, estimated default survival curves for insured and non-insured (with piggyback) mortgage loans, computed for subsamples defined by whether the loans were of fixed rate or adjustable rate type.

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[2] Estimation of Cox Proportional Hazards and other survival models is discussed in Kiefer (1988).

[3] Promontory has obtained similar results with alternative randomly selected samples of a similar size.

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These curves, as do all the estimates presented in this section, focus exclusively on the risk of default, and treat the competing risk of payoff as a censoring event. This approach is a conventional and meaningful way to present results for a risk of interest (here, default) when competing risks are present.

Figure 3. Empirical Survival Curve Estimate, Fixed Rate Loans
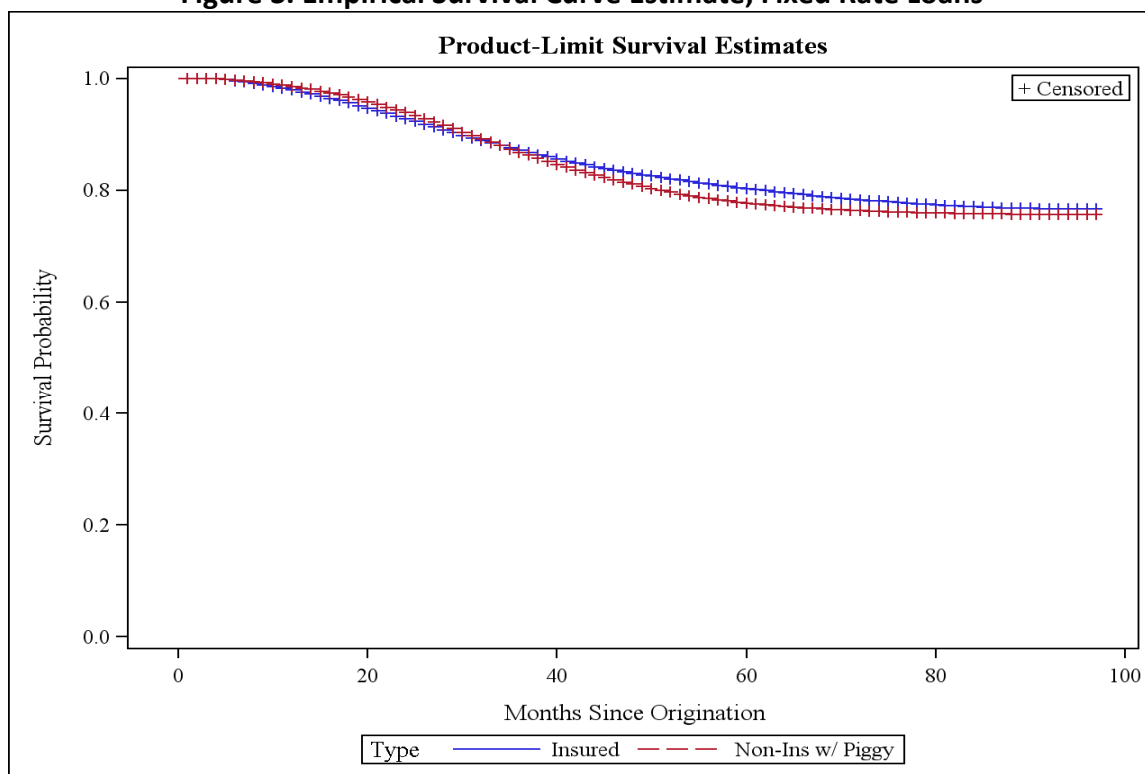
Figure 4. Empirical Survival Curve Estimate, Adjustable Rate Loans
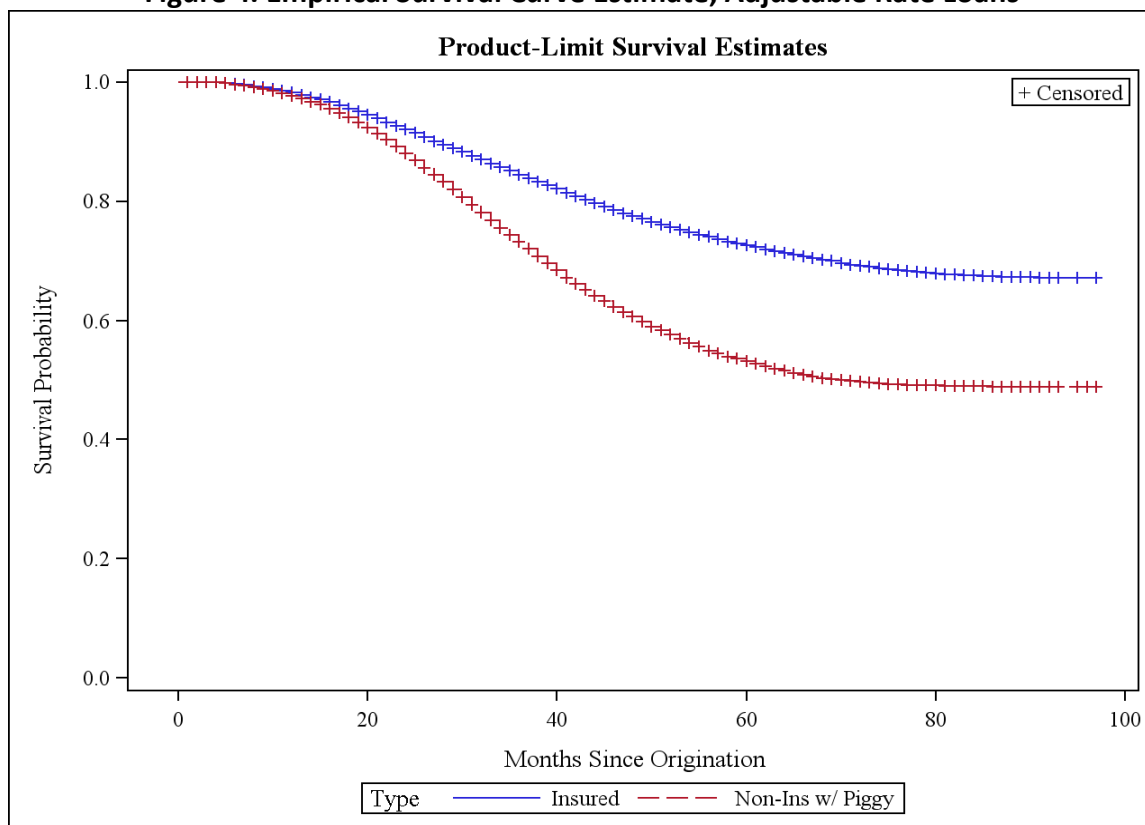
Note that even in the empirical survival curves, the long-term higher default risk associated with non-insured loans having piggyback second liens is easy to identify. This is particularly true for the adjustable rate loans, where the survival proportion for the uninsured mortgages ultimately drops well below that of the insured loans.

Estimation of a Stratified Proportional Hazards Model
We are now ready to turn to the estimation of the stratified Cox proportional hazards model. As suggested earlier, we have chosen to specify a model in which we include additional covariates and in which we estimate separate stratified models for subsets of our sample, with loans grouped by rate type. Part of the rationale for estimating different models for different rate types (fixed vs. adjustable) is that borrower behavior in response to changes in economic conditions is likely to be very different across these products. Furthermore, differences in mortgage product types or borrower underwriting practices may exist that are unobservable in our data, but which may result in different magnitudes of the estimated covariate coefficients or in different baseline hazard and survival estimates.

<u>Covariates</u>

The covariates in our model include several zero-one categorical (or dummy) variables. For each of these variables, a case that has one of the characteristics is coded as a one, and cases without the characteristic are coded as a zero. These variables include the following

- Documentation level (low or full documentation, with full documentation = 1);
- Loan purpose (purchase or refinance, with purchase = 1), and
- Occupancy status (Owner-occupied or not, with owner-occupied = 1).

The model also includes four continuous variables measured at the time of loan origination:

- Combined Loan-to-Value;
- FICO score at origination;
- Original Interest Rate, and
- Original Payment, a constructed variable equal to Original Loan Balance X Initial Interest Rate.

Finally, the model includes four time-varying covariates:
- Interest Rate Differential(t) = Original Interest Rate - Market Interest Rate(t)
- Change in Payment(t) = [Original Interest Rate - Market Interest Rate(t)] x Original Balance
- Change in Value(t) = (Original Value) x [%Change in Case-Shiller Index(t)], and
- Unemployment Rate(t)

The seasonally adjusted civilian unemployment rate and Case-Shiller Index data were matched to each loan based upon MSA/CBSA if available; otherwise a state or national level measure was used, respectively. The market interest rate data was obtained from Freddie Mac, and it was matched based upon the rate type of the loan. Fixed rate loans were matched to the monthly average of the average weekly 30-year rate; adjustable rate loans were matched to the monthly average of the average weekly 1-year rate.

Parameter Estimates

Table 8 presents estimation results for the fixed rate and adjustable rate loan group models. Recall that each estimated rate type model has been stratified across insured and non-insured mortgage classes. As a result, we have two sets of parameter estimates, with a given parameter set applying equally to both strata within a given rate group.

The estimated coefficients have signs that are consistent with expectations (recall that due to the proportional hazard specification, a positive parameter indicates that the hazard of default is increasing with the covariate value).

Table 8: Cox Stratified Proportional Hazards Model Parameter Estimates

Loan Type	Fixed Rate	Adjustable Rate
Documentation Level (1=Low)	0.37310	0.76391
Loan Purpose (1=Purchase)	-0.05802	-0.22628
Occupancy Status (1=Owner-Occupied)	-0.14402	-0.38135
Combined LTV at Origination	0.02400	0.03127
FICO Score at Origination	-0.00880	-0.00589
Original Interest Rate	0.21298	-0.12347
Original Payment (Original Int. Rate*Original Balance)	-0.00478	0.01213
Rate Differential (Original Int. Rate - Market Int. Rate)	0.15648	0.09901
Change in Payment (Original Int. Rate - Market Int. Rate)*Original Balance	0.04650	-0.00108**
Change in Value (Original Value)*(%Change in Case Shiller Index)	0.04439	0.02643
Unemployment Rate	0.16021	0.18988

*Note: **Estimate not significantly different from zero. All other estimates are significant at the 0.0001 level.*

Low documentation, non owner-occupied, high CLTV, and low FICO loans are of greater default risk than loans with the opposite characteristics. Somewhat surprisingly, loans supporting refinancing are of greater risk than loans supporting a new purchase – a result seen in the simple descriptive statistics for this period. The coefficients on the time varying covariates measuring the rate differential between original and current market rates, the change in payment and the change in value are also positive. The greater the difference between the original interest rate and the current market rate, or the greater the different between the original home value and the current implied market value (i.e., the absolute value of potential equity loss), the greater the default risk. Similarly, the higher the current level of unemployment in the MSA or state when the property is located, the higher the default risk. All these impacts are similar across both fixed rate and adjustable rate mortgage groups.

In contrast, when we consider the impact of the level of the original interest rate or the level of the original payment, the signs of the coefficient estimates are reversed between fixed and adjustable rate groups. However, the sign differences make sense: for fixed rate loans, holding original balance constant, higher original interest rates mean higher fixed payments and higher default risk. For

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adjustable rate loans, the higher original rate probably implies that the risk of a payment shock when the original rate adjusts to market rates is lowered, along with default risk.

Baseline Survival Curve Estimates

To illustrate the differences between insured and non-insured loans, it is useful to compare the implied baseline survivor functions for the strata corresponding to our estimated set of models[4]. Figures 4 and 5 shows the implied baseline survival curves resulting from our stratified Cox PH model; estimates reflect the survival probability at month t, evaluated at the mean value covariates across the sample population. Effectively, these baseline survival curve estimates illustrate the fundamental differences in performance between insured and non-insured loan groups, controlling simultaneously and equally for all the effects we have been able to attribute to covariates.

Figure 5. Parametric Baseline Survival Curve Estimates, Fixed Rate Loans

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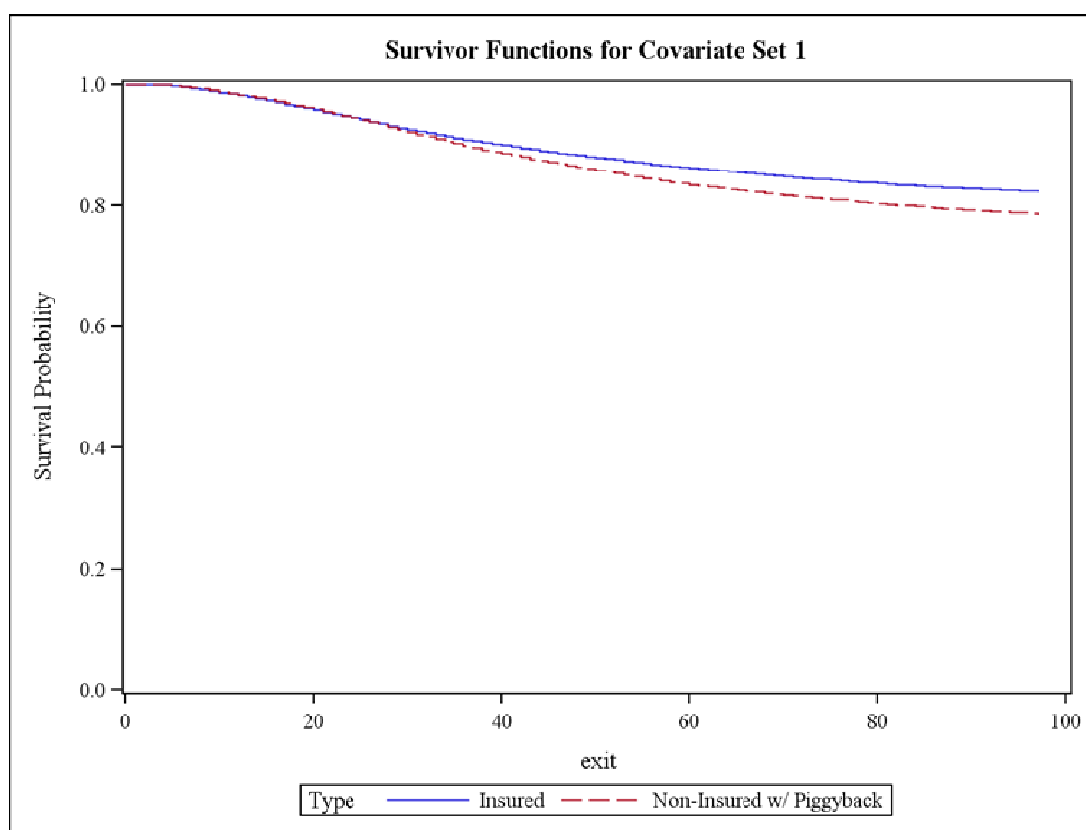
[4] The baseline hazards and survival functions are estimated as arbitrary functions of time through implementation of a restricted maximum likelihood estimation of the $\alpha_c(t)$ function, in which the covariates for explanatory variables are restricted to their previously estimated values.

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Figure 6. Parametric Baseline Survival Curve Estimates, Adjustable Rate Loans
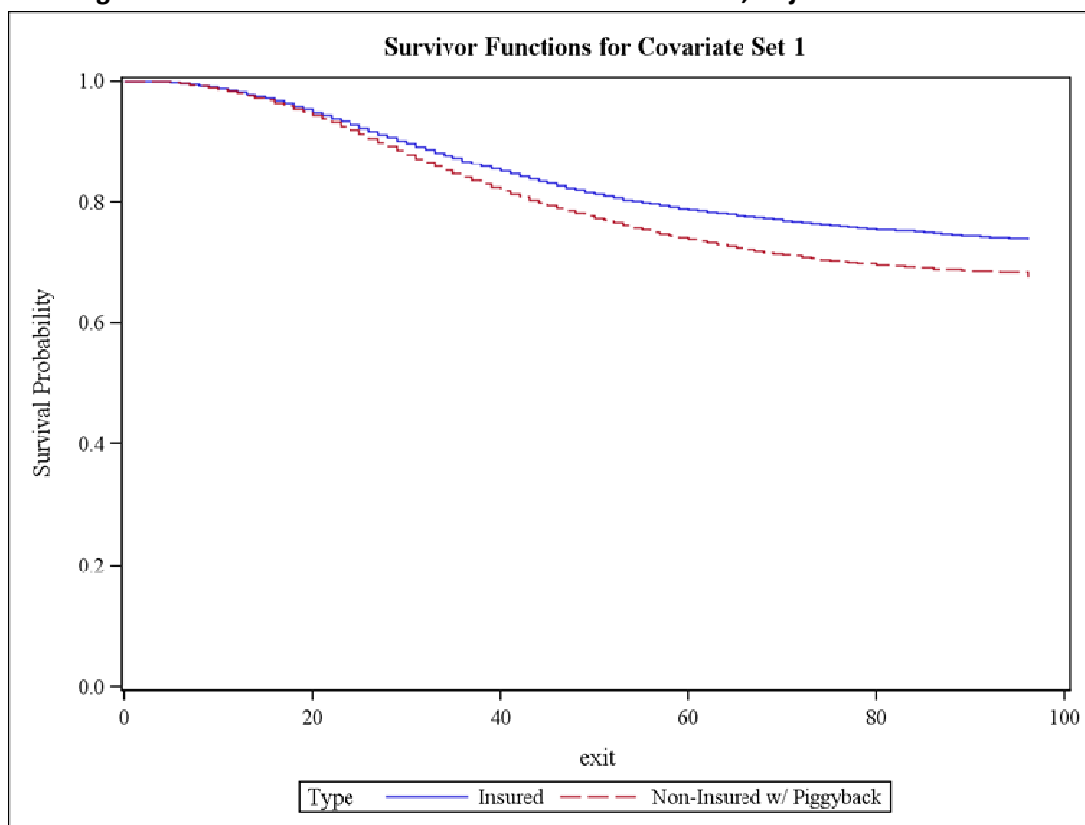
In these curves, the higher default risk associated with the non-insured (with piggyback) loans is very clear – at times even more so than in the empirical survival curves (which did not control for the effect of covariates). For both fixed rate and adjustable rate mortgages, controlling for the impact of covariates results in implied baseline (strata specific) survival curve estimates in which insured loans continue to demonstrate lower extreme delinquency and default risk than non-insured (with piggyback) loans.

Tables 9 and 10 respectively present the estimated numerical baseline survival rates and cumulative default rates, by strata, for selected months-since-origination. Overall, across both fixed and adjustable rate loans, the proportion of non-insured loans surviving to 72 months was .798, compared to .833 for insured loans. Significantly, as shown in Table 10, this difference implies that the baseline cumulative default rate of non-insured loans is 20.98% percent higher than that of insured loans.

Table 9. Estimated Baseline Survival Rates, S(t)

Proportion Surviving to Selected Months

Rate Type	Type	Months					
		12	24	36	48	60	72
All	Insured	0.983	0.943	0.903	0.873	0.851	0.833
	Non-Insured w/ Piggyback	0.983	0.942	0.890	0.851	0.820	0.798
	Percent Difference (Non-Insured relative to Insured)	0.04%	-0.13%	-1.44%	-2.52%	-3.65%	-4.20%
Fixed Rate	Insured	0.983	0.946	0.910	0.884	0.863	0.846
	Non-Insured w/ Piggyback	0.983	0.946	0.900	0.865	0.835	0.815
	Percent Difference (Non-Insured relative to Insured)	0.08%	0.04%	-1.13%	-2.15%	-3.22%	-3.66%
Adj. Rate	Insured	0.983	0.930	0.869	0.820	0.788	0.767
	Non-Insured w/ Piggyback	0.981	0.920	0.841	0.782	0.740	0.710
	Percent Difference (Non-Insured relative to Insured)	-0.19%	-0.99%	-3.16%	-4.62%	-6.10%	-7.32%

Table 10: Estimated Baseline Cumulative Default Rates, F(t)

Cumulative Proportion Defaulting by Selected Months

Rate Type	Type	Months					
		12	24	36	48	60	72
All	Insured	0.017	0.057	0.097	0.127	0.149	0.167
	Non-Insured w/ Piggyback	0.017	0.058	0.110	0.149	0.180	0.202
	Percent Difference (Non-Insured relative to Insured)	-2.15%	2.09%	13.47%	17.40%	20.79%	20.98%
Fixed Rate	Insured	0.017	0.054	0.090	0.116	0.137	0.154
	Non-Insured w/ Piggyback	0.017	0.054	0.100	0.135	0.165	0.185
	Percent Difference (Non-Insured relative to Insured)	-4.60%	-0.65%	11.38%	16.32%	20.23%	20.10%
Adj. Rate	Insured	0.017	0.070	0.131	0.180	0.212	0.233
	Non-Insured w/ Piggyback	0.019	0.080	0.159	0.218	0.260	0.290
	Percent Difference (Non-Insured relative to Insured)	10.78%	13.11%	20.99%	21.08%	22.66%	24.02%

c. Diagnostics: Evaluating the Proportional Hazards Assumption

The assumption of the proportional relationship between hazards and covariates that is implied by the Cox model specification should be subjected to an empirical assessment. To perform such an assessment, it is increasingly common to construct residuals along the lines proposed by Schoenfeld (1982). Instead of a single residual for each individual observation, Schoenfeld's method results in

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constructing separate residuals for each covariate, for each individual loan, using only those loans that defaulted (were not censored.)

Since the Schoenfeld residuals are, in principle, independent of time, a plot that shows a non-random pattern against time is evidence of violation of the proportional hazards assumption. Appendix C provides plots of the estimated, scaled Schoenfeld Residuals against rank time. The minimal departures from a general, random zero-slope pattern vs. time provide reasonable support for the proportional hazards specification used in our analysis.

5. Conclusions

The analysis conducted by Promontory generally confirms the results presented in Genworth's 2010 study, and shows that, controlling for various factors, mortgages with piggyback second lien loans have historically experienced higher lifetime rates of severe delinquency than insured mortgages. This conclusion is supported by tabular analysis, graphical vintage curve analysis and by the results from conducting an analysis using statistical methods of survival analysis.

We present the results from estimation from both simple and extended versions of stratified Cox proportional hazards models, the latter estimated across and by US census region. Risk factor parameter estimates are generally in line with expectations as to sign, although variability in the magnitude of estimates exists across regions. We also compare the implied baseline survival curves from the estimated models to smoothed Kaplan-Meier estimates of the empirical survival function. Our modeling approach allows us to produce separate baseline survival estimates for insured and non-insured (with piggyback) mortgages. These baseline curves have been controlled for the impact of risk factors on performance in a way that cannot accomplished by simple tabular or graphical analysis of empirical data

Overall, our analysis supports the assertion that the historical performance of first lien MI-insured loans has been associated with lower rates of extreme delinquency or default, when compared to non-insured first lien loans accompanied by a piggyback second lien, and when controlling for various risk factors.

In closing, it is important to note that the stratified survival analysis regression methodology we deploy does not measure the impact that MI-related underwriting may have on adjusting the factors which are controlled for in the study, such as LTV. Any impact that MI may have on mitigating the risk associated with such factors is likely to be embedded in the model covariates, and would not be reflected in our estimated baseline performance differences between insured and non-insured loans.

The above point should serve to emphasize the importance of the multi-pronged approach that we have taken to consider the impact of MI, and should stimulate further research on this important issue.

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Appendix A: Vintage Curves

Cumulative Bad Rates for 2003 Vintage and CLTV LE90
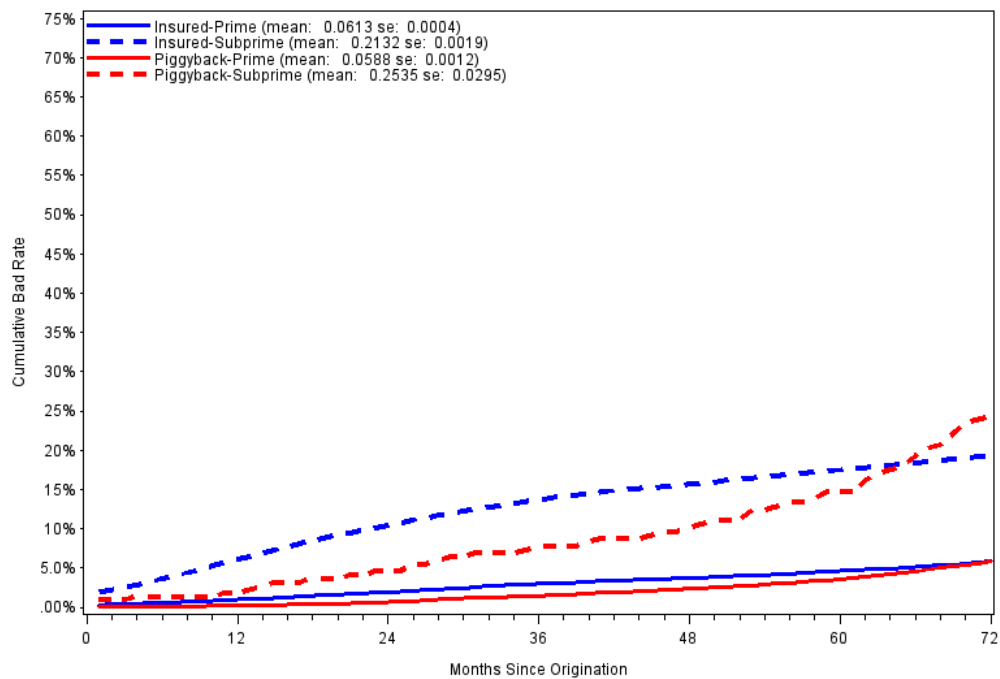
Legend:
- Insured-Prime (mean: 0.0613 se: 0.0004)
- Insured-Subprime (mean: 0.2132 se: 0.0019)
- Piggyback-Prime (mean: 0.0588 se: 0.0012)
- Piggyback-Subprime (mean: 0.2535 se: 0.0295)

Cumulative Bad Rates for 2003 Vintage and CLTV GT90

Legend:
- Insured-Prime (mean: 0.084 se: 0.0003)
- Insured-Subprime (mean: 0.2925 se: 0.0011)
- Piggyback-Prime (mean: 0.0686 se: 0.0013)
- Piggyback-Subprime (mean: 0.307 se: 0.0432)

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Cumulative Bad Rates for 2004 Vintage and CLTV LE90

Cumulative Bad Rates for 2004 Vintage and CLTV GT90

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Cumulative Bad Rates for 2005 Vintage and CLTV LE90

Insured-Prime (mean: 0.1777 se: 0.0008)
Insured-Subprime (mean: 0.3016 se: 0.0031)
Piggyback-Prime (mean: 0.3029 se: 0.0013)
Piggyback-Subprime (mean: 0.5265 se: 0.0197)

Cumulative Bad Rates for 2005 Vintage and CLTV GT90

Insured-Prime (mean: 0.1754 se: 0.0007)
Insured-Subprime (mean: 0.4051 se: 0.0016)
Piggyback-Prime (mean: 0.2496 se: 0.0011)
Piggyback-Subprime (mean: 0.4383 se: 0.0187)

Cumulative Bad Rates for 2006 Vintage and CLTV LE90

Insured-Prime (mean: 0.24 se: 0.0009)
Insured-Subprime (mean: 0.3189 se: 0.0034)
Piggyback-Prime (mean: 0.3924 se: 0.0013)
Piggyback-Subprime (mean: 0.5246 se: 0.0261)

Cumulative Bad Rates for 2006 Vintage and CLTV GT90

Insured-Prime (mean: 0.2073 se: 0.0007)
Insured-Subprime (mean: 0.4049 se: 0.0016)
Piggyback-Prime (mean: 0.3484 se: 0.0011)
Piggyback-Subprime (mean: 0.6094 se: 0.0126)

22

Cumulative Bad Rates for 2007 Vintage and CLTV LE90

Insured-Prime (mean: 0.2632 se: 0.0008)
Insured-Subprime (mean: 0.3781 se: 0.003)
Piggyback-Prime (mean: 0.3324 se: 0.0015)
Piggyback-Subprime (mean: 0.5138 se: 0.0276)

Cumulative Bad Rates for 2007 Vintage and CLTV GT90

Insured-Prime (mean: 0.2589 se: 0.0006)
Insured-Subprime (mean: 0.4295 se: 0.0014)
Piggyback-Prime (mean: 0.3567 se: 0.0013)
Piggyback-Subprime (mean: 0.566 se: 0.0116)

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Appendix B: Survival Analysis Modeling Dataset Summary

Loan Volume by US Census Region and Type

Loan Volume by Loan Type

Legend:
- Insured
- Non-Ins w/ Piggy

Loan Volume by Owner-Occupied Status

Loan Volume by Purpose

Loan Volume by Documentation Level
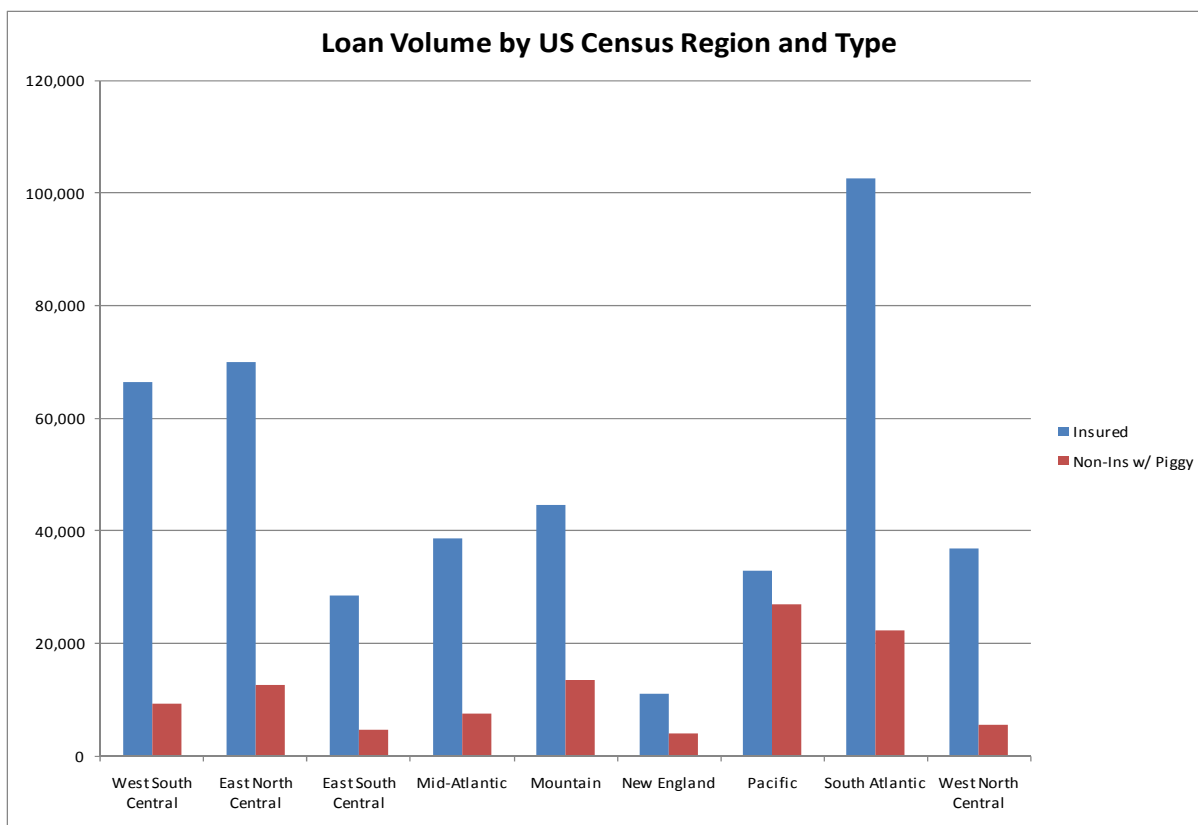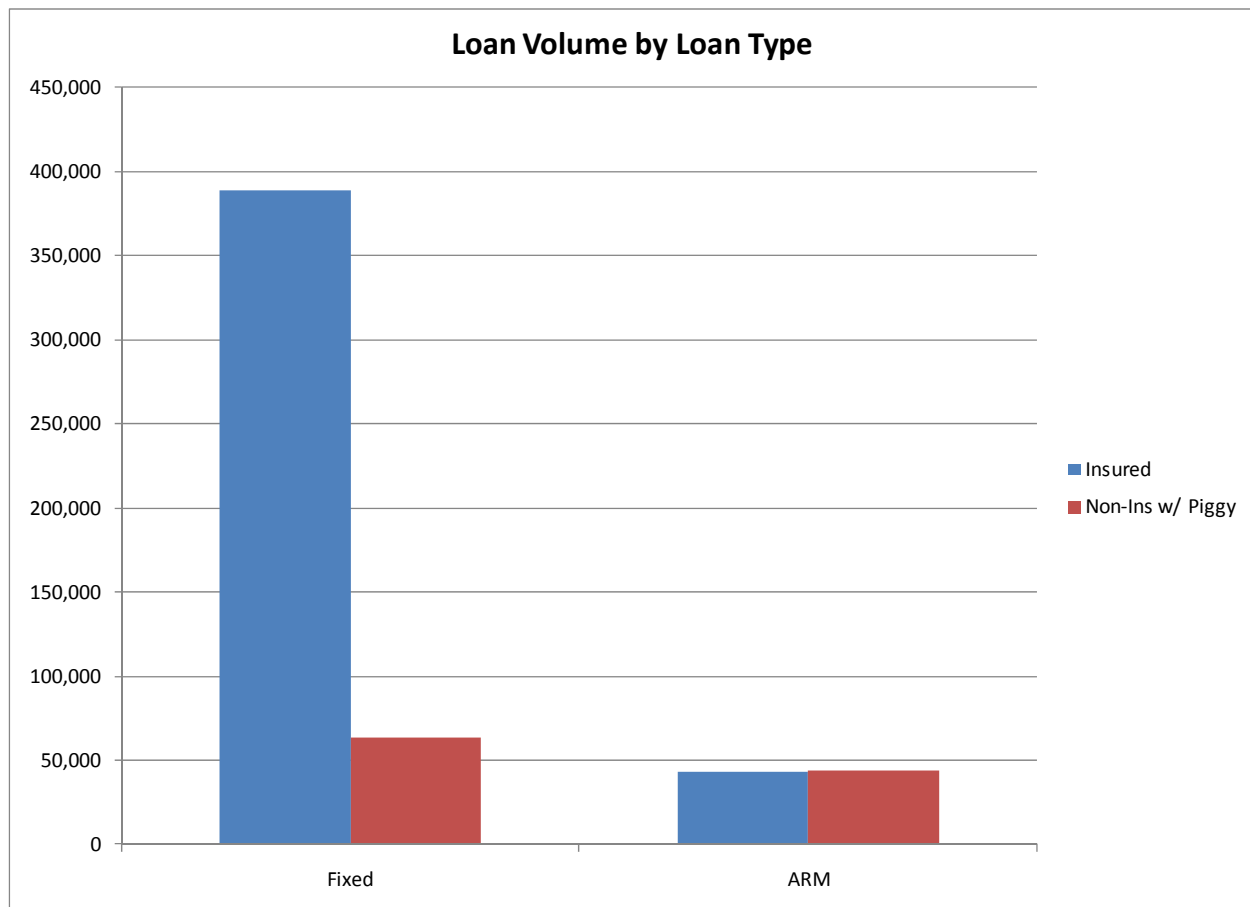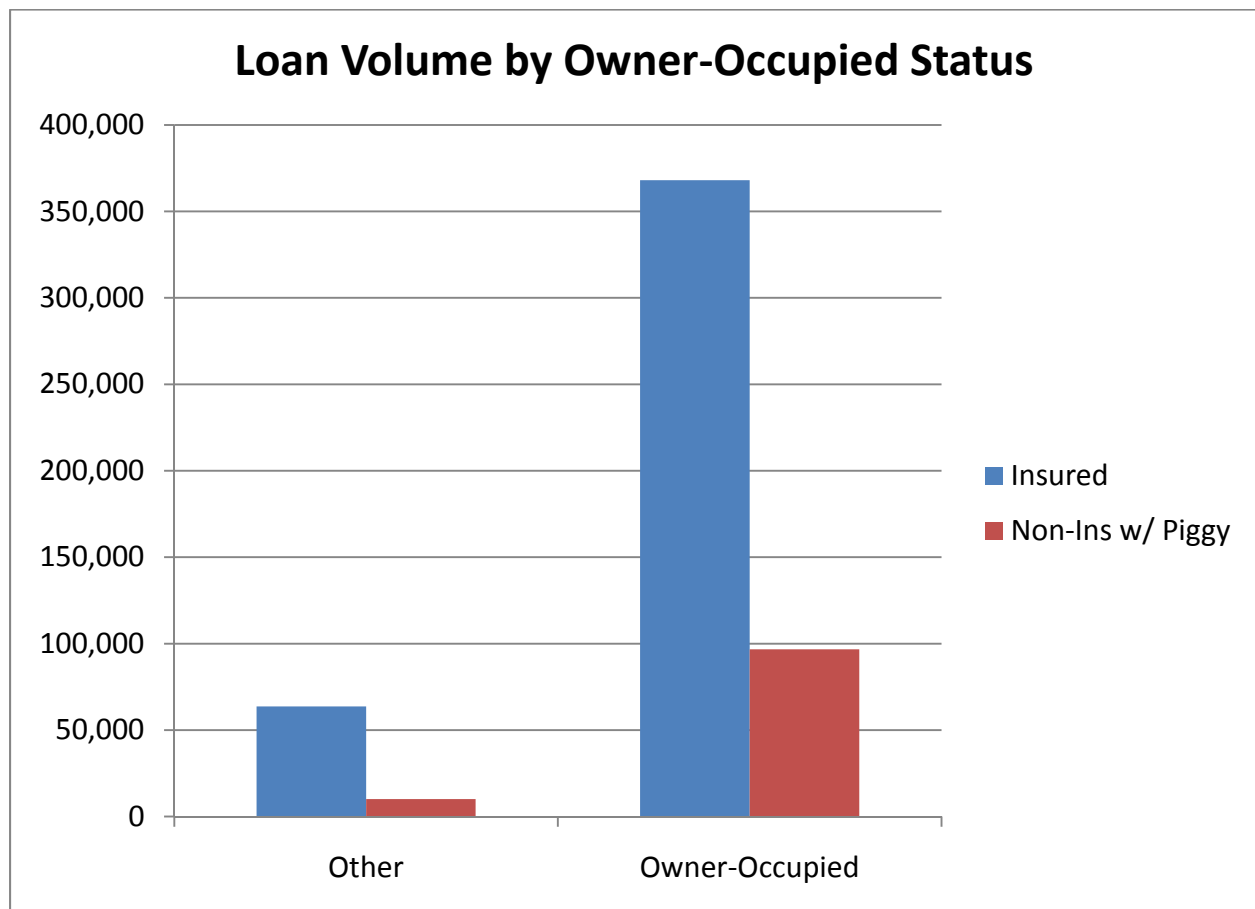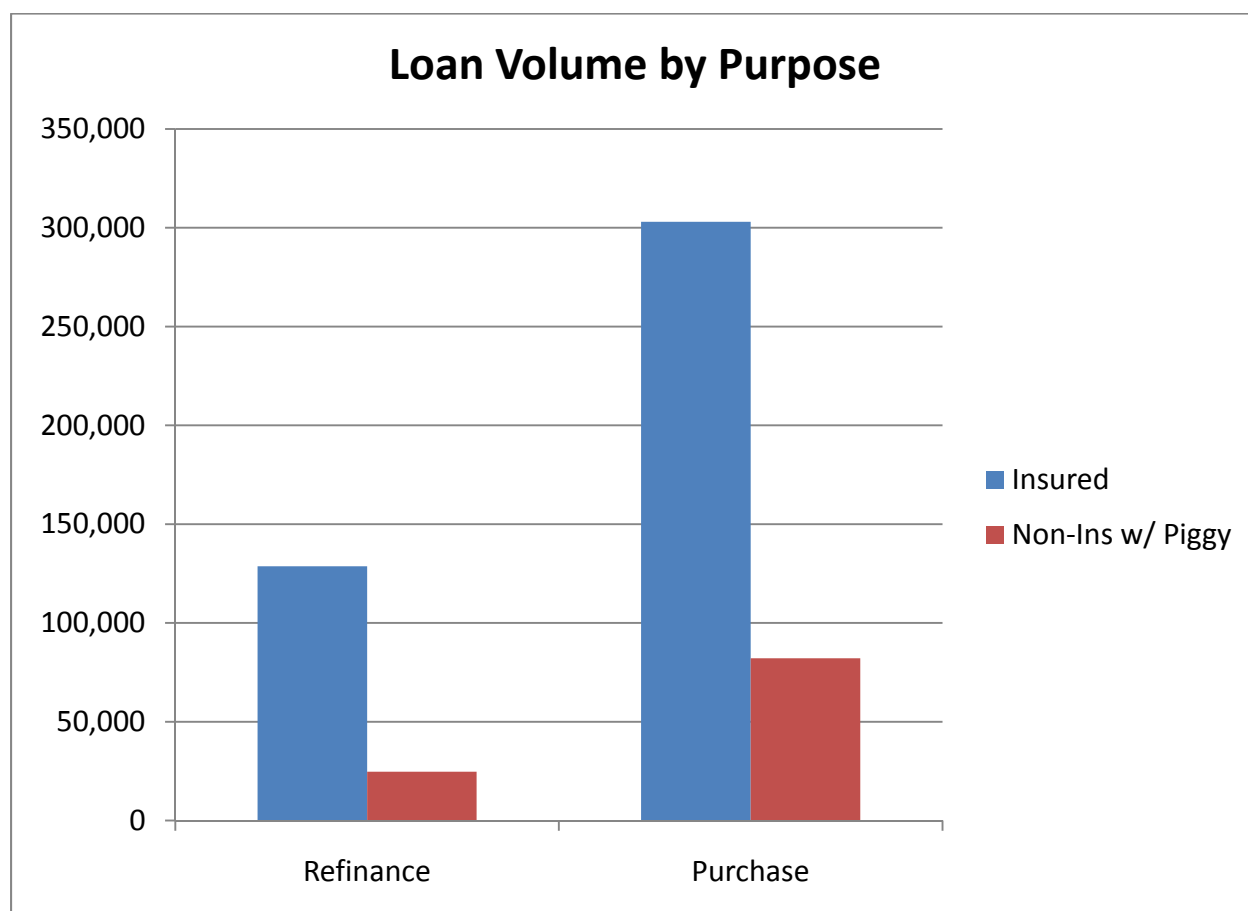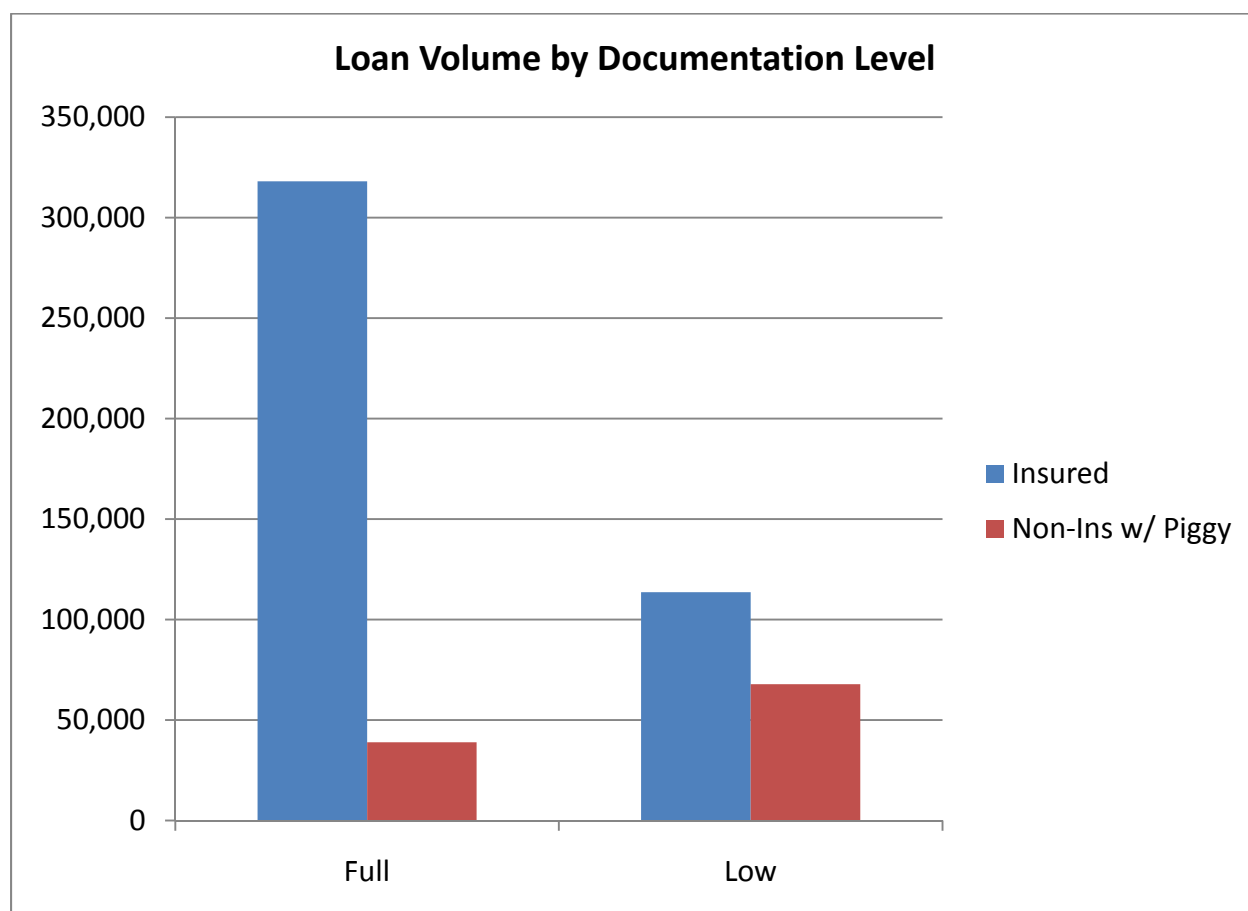
Combined LTV at Origination
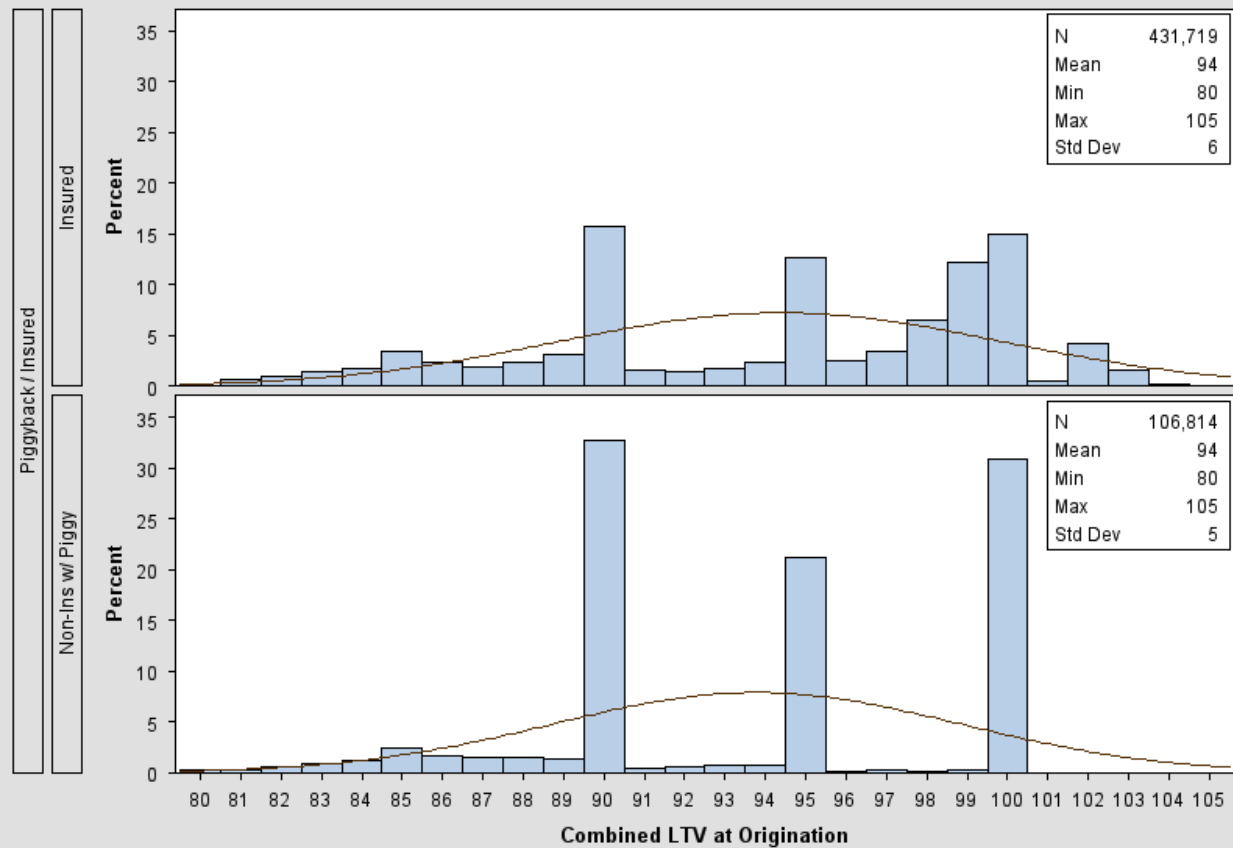
FICO Score at Origination
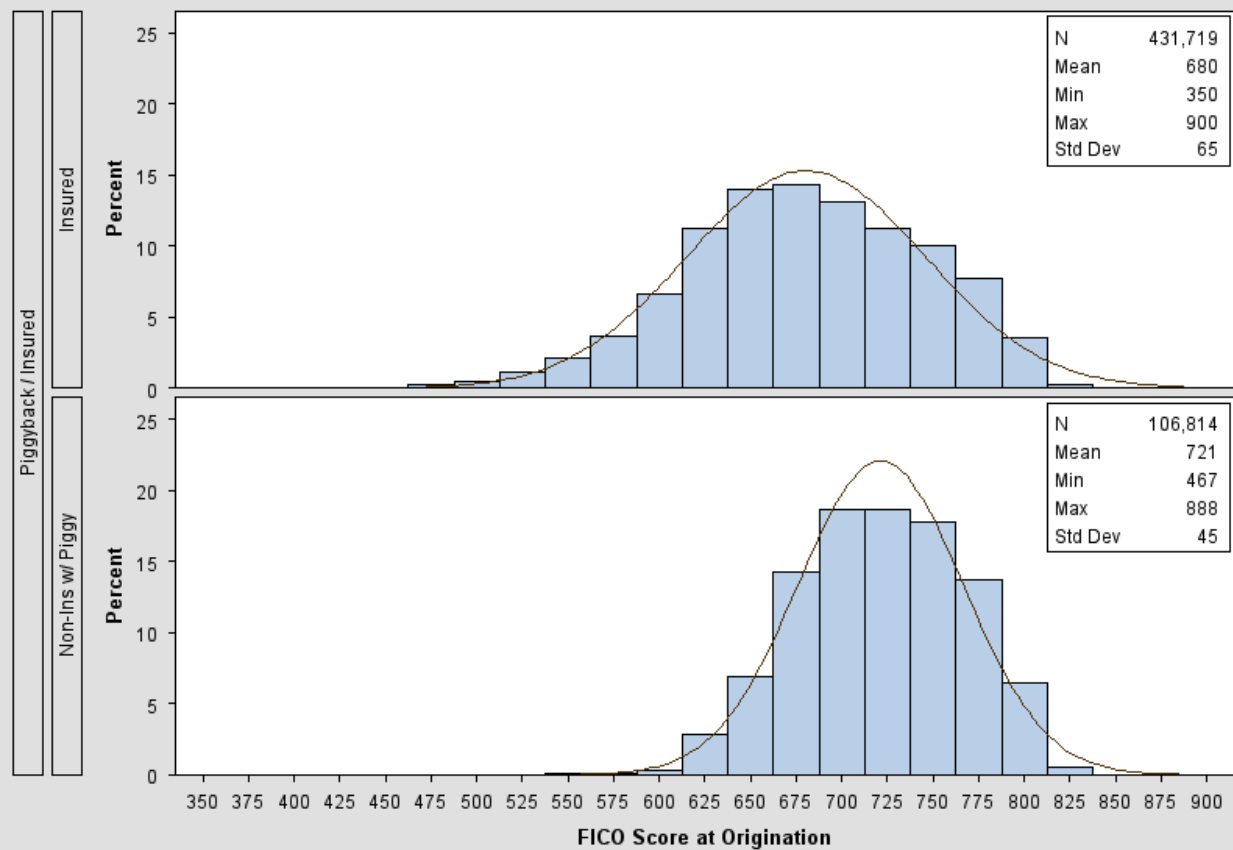
Appendix C: Scaled Schoenfeld Residual Plots

The Schoenfeld residual, r_{ik} is the covariate value, X_{ik}, for the ith loan which actually defaulted at time t, minus the expected value of the covariate for the risk set at time t (i.e., a weighted-average of the covariate, weighted by each loan's likelihood of defaulting at t).

Because they will vary in size and distribution, the Schoenfeld residuals are usually scaled before being analyzed. The k-dimensional vector of **Scaled Schoenfeld Residuals, SR,** for the ith loan is defined as:

 SR= **β** + D*Cov(**β**)*$\mathbf{r_i}$'

where

β=the estimated Cox model coefficient vector

D= the number of loans defaulting, and

$\mathbf{r_i}$= the vector of Schoenfeld residuals for loan i.

Plots for Fixed-Rate Loans, by Covariate

Documentation Level

Scaled Schoenfeld residuals as a function of time.
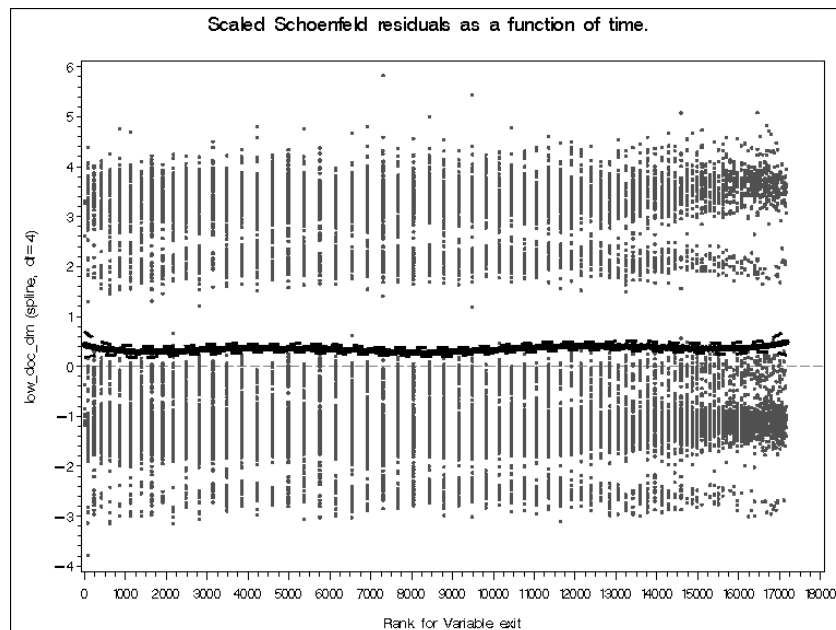
Loan Purpose
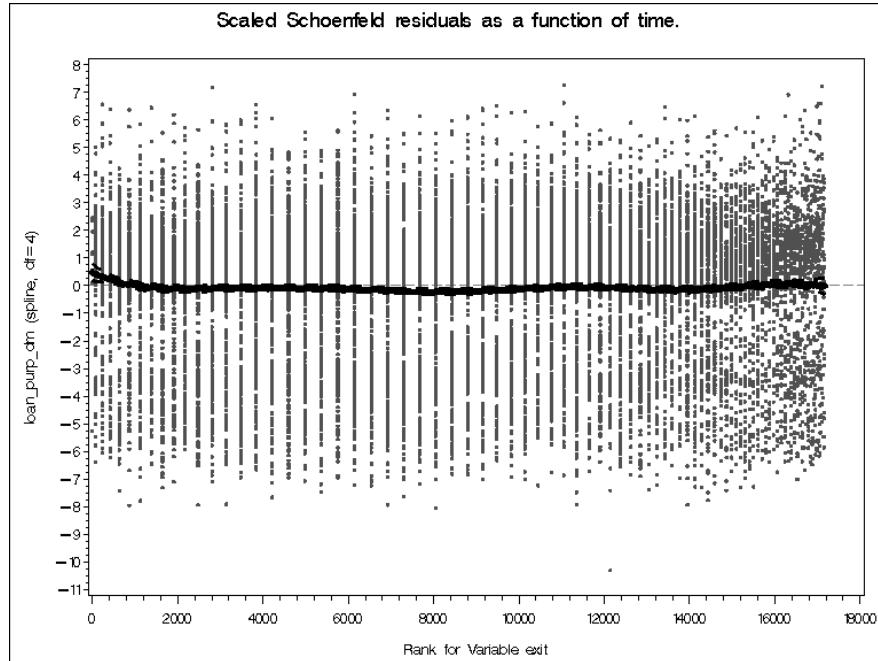
Occupancy Status

Combined LTV at Origination

Scaled Schoenfeld residuals as a function of time.

FICO Score at Origination

Scaled Schoenfeld residuals as a function of time.
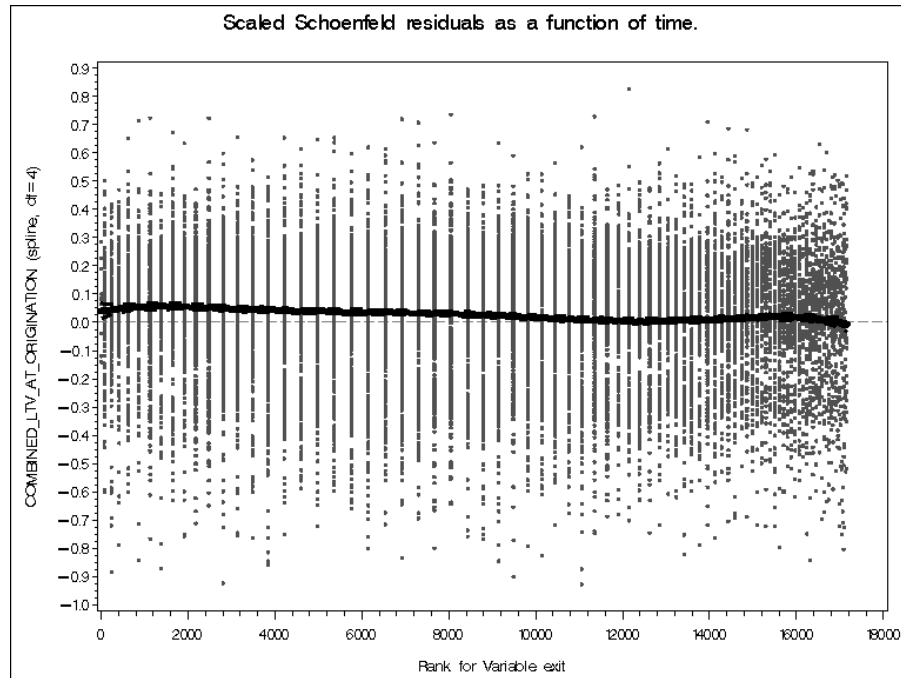
Original Interest Rate

Rate Differential (t)

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Original Payment

Scaled Schoenfeld residuals as a function of time.

Change in Payment (t)

Scaled Schoenfeld residuals as a function of time.
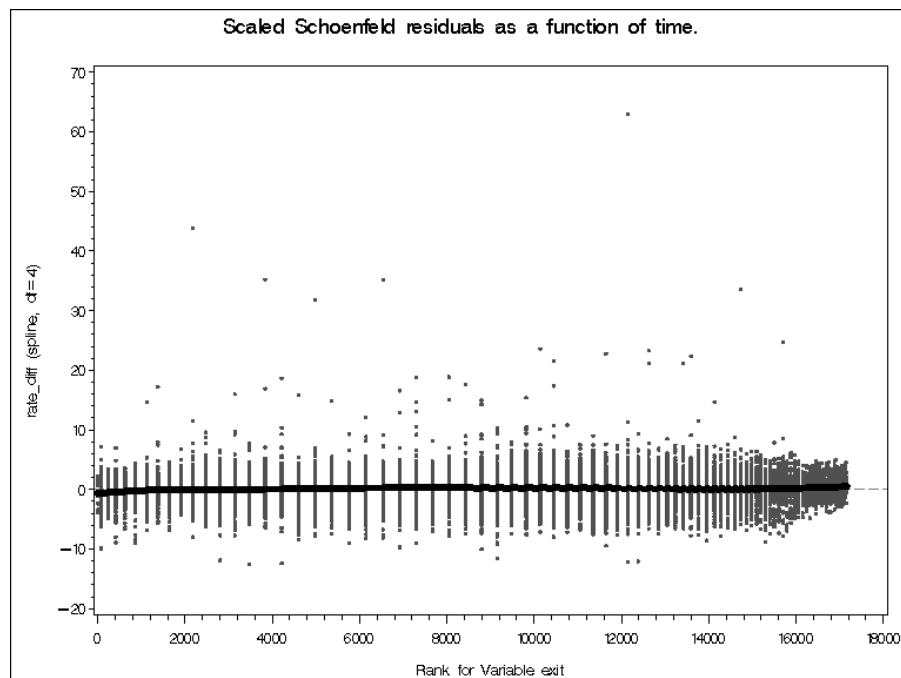
Change in Value (t)

Unemployment Rate (t)
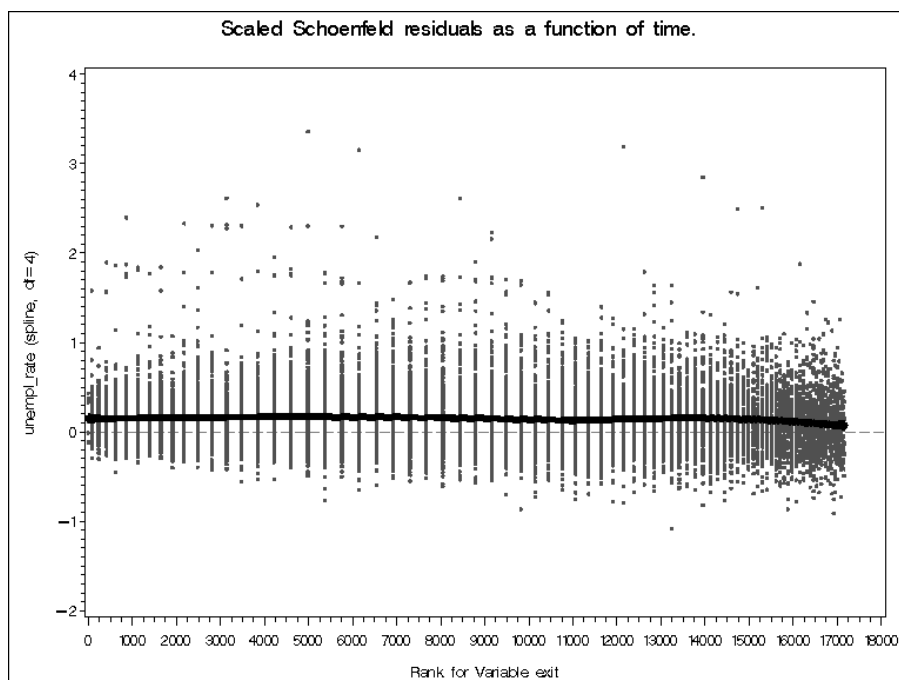
Plots for Adjustable-Rate Loans, by Covariate

Documentation Level

Scaled Schoenfeld residuals as a function of time.

Loan Purpose

Scaled Schoenfeld residuals as a function of time.

37

Occupancy Status

Scaled Schoenfeld residuals as a function of time.

Combined LTV at Origination

Scaled Schoenfeld residuals as a function of time.

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FICO Score at Origination

Scaled Schoenfeld residuals as a function of time.

Original Interest Rate

Scaled Schoenfeld residuals as a function of time.

Rate Differential (t)

Original Payment

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Change in Payment (t)

Scaled Schoenfeld residuals as a function of time.

Change in Value (t)

Scaled Schoenfeld residuals as a function of time.

Unemployment Rate (t)

Scaled Schoenfeld residuals as a function of time.
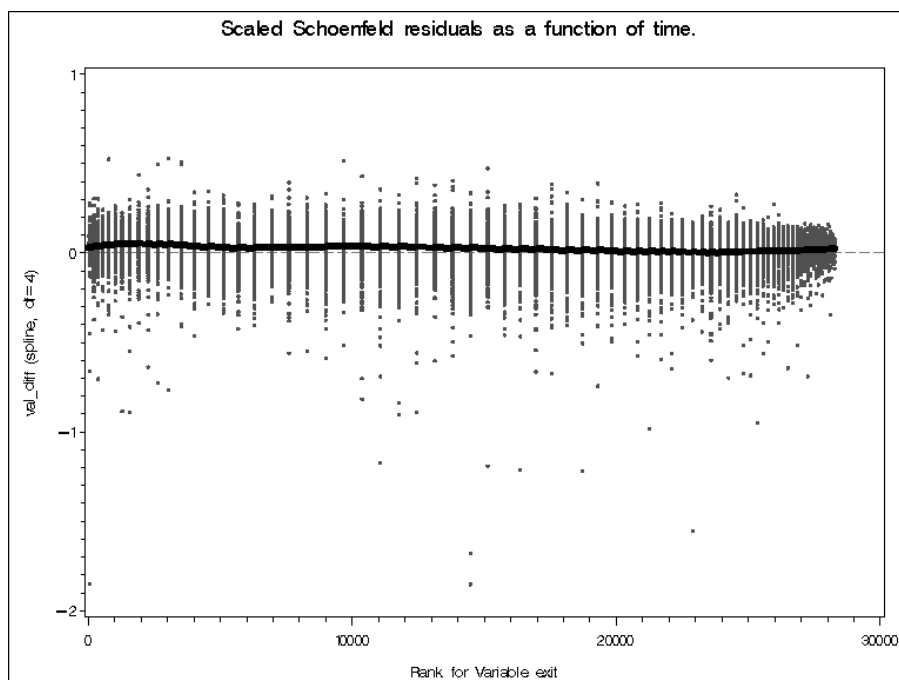
Exhibit I
MI Impact Analysis

Performance of Insured vs Piggyback Mortgage Loans

Genworth Financial

August 2010

Study Concept Summary

Genworth is pleased to report a more thorough examination of the differences in insured loan versus piggy back loan performance.
The Original study focused on 30+ delinquencies over four origination years with cuts by origination year, CLTV, and FICO, and two geographic cuts.
The sub group combination differences were then weighted by the overall volume of both insured and piggy-back loans in each segment,
and then rolled up to display the relative differences in performance given the specific segmentation. Overall that study suggested
that piggy-back loans performed 55% worse than insured loans with similar characteristics.

This revised study now focuses on ever 90+ delinquency rates and the cure rates on loans ever 90 days delinquent. The new study adds
an additional origination year, 2003, and more importantly, adds additional characteristic cuts such as document type, loan purpose, and expands
the geographic breaks to the nine US Census regions. The overall number of possible combination sets therefore increases nearly 20 fold
going from 256 combination segments to 5,040 in this expanded study.
This greater degree of detail should have the effect of removing the effects of differences in the distributions of insured loans relative to piggy-back loans.
Theoretically, increasing the degree of segmentation should move the overall weighted ratio of performance directionally from the 1.55 in the former study closer to 1.0.

The new study also differs from the former in that the older study used the total volume of both the insured and piggy-back loans to weight
the ratios of each identified segment. However, with a 20 fold increase in segmentation, and because piggy-back loans were smaller in volume than insured loans
some segments had extremely low piggyback volumes where it it would be entirely possible for all or none of the loans to be delinquent.
Consequently, the use of total volume weights (piggyback plus insured) would distort the effects of differences in the distribution of piggy-back loans.
For instance, for the 2003 originations 100 CLTV loans accounted for 48.9% of both the insured and piggy back volume for 2003. However, Piggy-back loans with
100% CLTV were only 17.8% of the 2003 piggy volume. Using the total volume would over-weight CLTV 100 ratios, whereas using the piggy-back volume would
put the relative difference in 100 LTV performance in a more appropriate perspective.

The other major component of this updated study is the inclusion of an analysis of the cure rates on loans ever 90 days delinquent.
The study will show that even for segments where there is little difference in ever 90+ delinquency rates, MI insured loans
exhibit significantly higher cure rates, thereby affecting the ultimate foreclosure rates on such segments. The expertise and willingness
of MIs to work with delinquent insured borrowers plays a major role in reducing the real risk of default on high LTV loans.

Study Composition

Total Volumes Of Originations	Piggy-Back Volume	$260.6 billion	Insured Volume	$588.9 billion	**Total Volume**	**$849.5 billion**
Numbers of Loans		1,045,328		3,872,318		4,917,646

Expanded Study On Ever 90 Days Delinquent And Subsequent Cure Rates	Original Study On 30+ Delinquency Rates
5 Origination Years 2003 - 2007	4 Origination Years 2004 - 2007
2 Documentation Types : Full Docs, Low or No Docs	
2 Loan Purpose Categories: Purchase, Refinancing (Other was excluded)	
4 CLTV Ranges : 80.1 to 85, 85.1 to 90, 90.1 to 95, GT 95	4 CLTV Ranges : 80.1 to 85, 85.1 to 90, 90.1 to 95, GT 95
7 FICO Ranges : <620, 620-659, 660-699, 700-719, 720-739, 740-759, 760+ (No FICOs were excluded)	8 FICO Score Ranges
9 US Census Regions	2 Market Segments : Distressed States FL,NV,CA,AZ,MI), All Others
Number of Combination Segments = 5x2x2x4x7x9 = **5,040**	Number of Combination Segments = 4x4x8x2 = **256**

19.7   Fold Increase In Segmentation
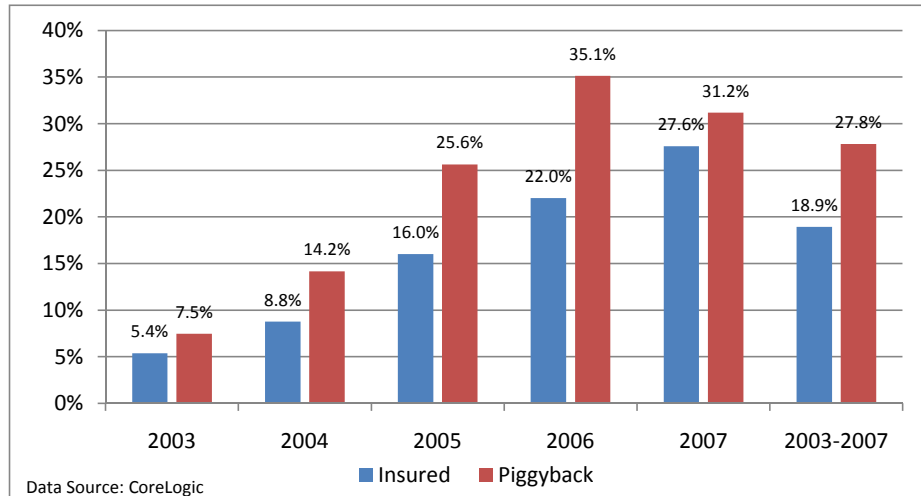
Data And Methodology

Genworth utilized the servicing data set of Corelogic which has collected highly detailed loan level loan perfromance information from several large major servicing companies. Piggyback loans are identified as first lien loans with an LTV of 80% and a CLTV greater than 80%. Insured loans are identified by the coding of an insurance provider, whether it be a private mortgage insurer or FHA or VA. Our study focused on loans with CLTV greater than 80%, originated from 2003 through 2007. The sample selected totals 4,917,646 loans of which 3,872,318 are insured high LTV loans, and 1,045,328 are first lien structured or piggyback loans. The overall volume totaled $0.85 trillion.

The previous study focused on loans that were currently deliquent 30+ days and loans that had terminated in default. This study takes the analysis much farther. This study reviewed the monthly status of all 4.9 million loans in the sample to see which loans were ever 90 days delinquent, and then follows the monthly status reports until the loan either cures or goes to foreclosure. Consequently, this study evaluates both the performance of the loans and also permits a review of actual cures of previous delinquencies that ultimately resulted in current status for loans still outstanding or successful payoff .

The delinquency rate for the piggyback loans is somewhat understated in that the data set only captures the delinquency rates on first liens. There are likely loans where the 1st lien is still current, but the 2nd lien is delinquent. If these delinquencies were added to the piggyback data, their delincency rate would be even higher than shown and the differential to Insured loans would be even larger.
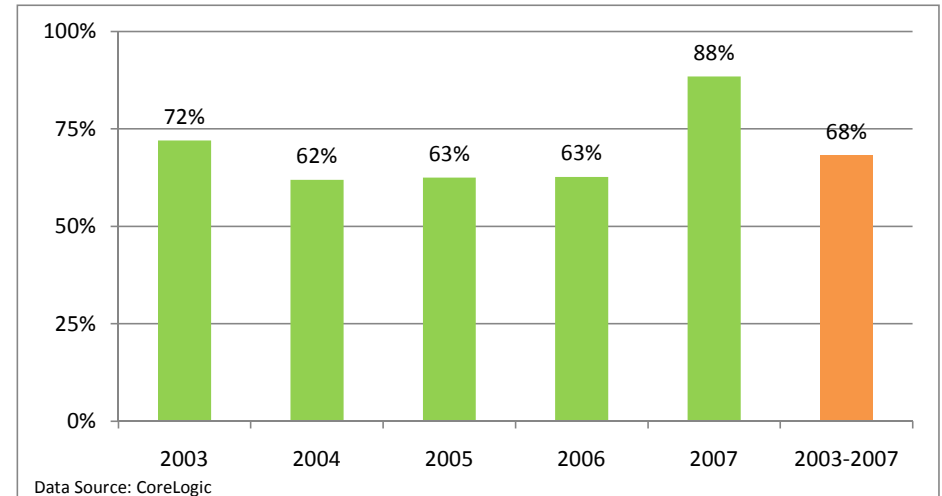
Ever 90 Day Delinquency Rates By Origination Year
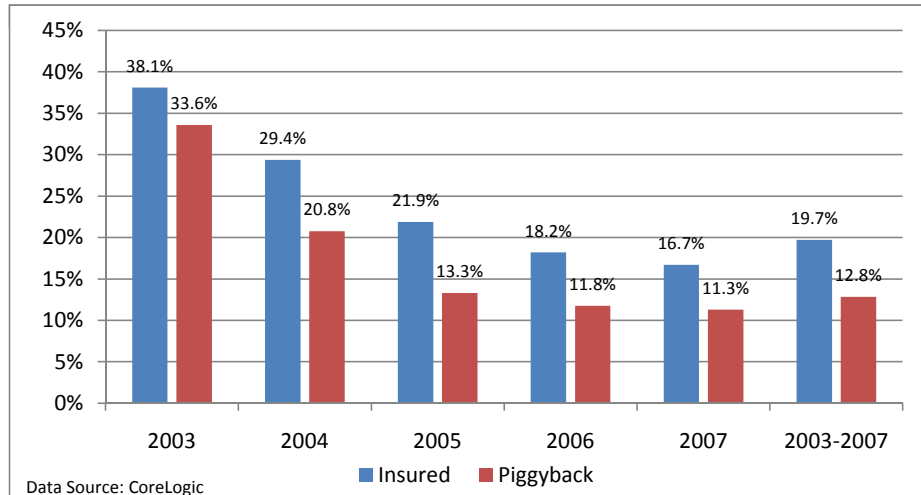### Weighting Segments By Piggyback Profile

Insured / Piggyback bar chart:

Year	Insured	Piggyback
2003	5.4%	7.5%
2004	8.8%	14.2%
2005	16.0%	25.6%
2006	22.0%	35.1%
2007	27.6%	31.2%
2003-2007	18.9%	27.8%

Data Source: CoreLogic

Weighted Ratios Of Piggyback Delq Rates To Insured Delq Rates
Insured Ever 90 Rate / Piggyback Ever 90 Rate

Year	Ratio
2003	72%
2004	62%
2005	63%
2006	63%
2007	88%
2003-2007	68%

Data Source: CoreLogic

Cure Rates On Ever 90 Day Delinquencies By Origination Year
Weighting Segments By Piggyback Profile

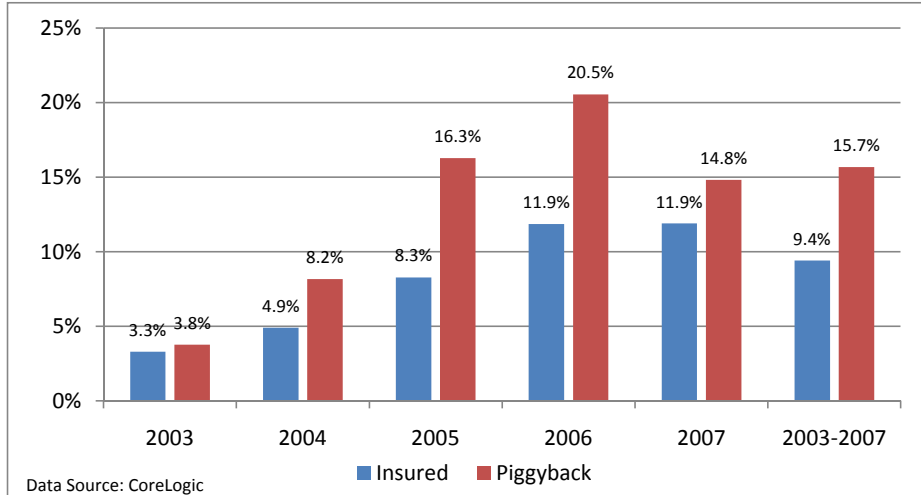| Year	Insured	Piggyback
2003	38.1%	33.6%
2004	29.4%	20.8%
2005	21.9%	13.3%
2006	18.2%	11.8%
2007	16.7%	11.3%
2003-2007	19.7%	12.8%

Data Source: CoreLogic

Weighted Ratios Of Insured Cure Rates To Piggybacks
Insured Cure Rate % / Piggyback Cure Rate %

| Year	Ratio
2003	113%
2004	141%
2005	164%
2006	155%
2007	148%
2003-2007	154%

Data Source: CoreLogic
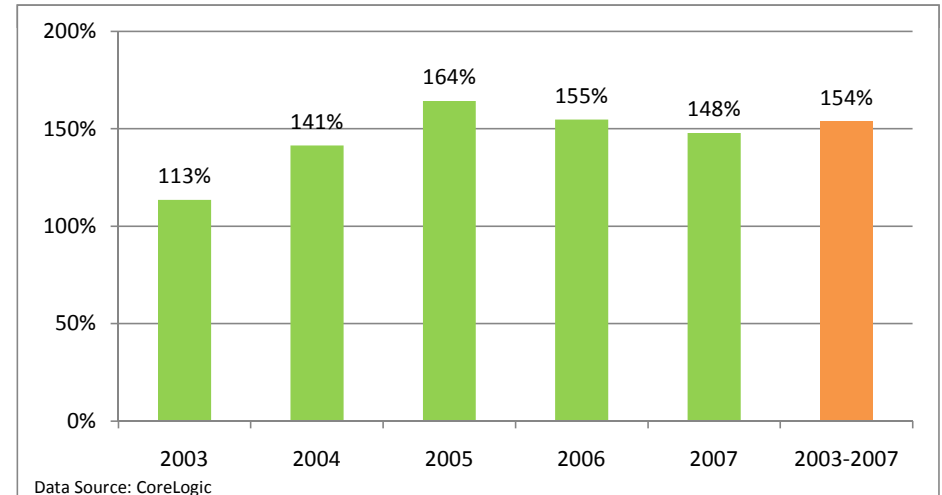
Insured Loans Performed 32% Better than Piggyback Loans

Once Delinquent 90 Days Or More, Insured Loans Exhibited Cure Rates 54% Higher Than Piggybacks

Non-Performing Rates By Origination Year
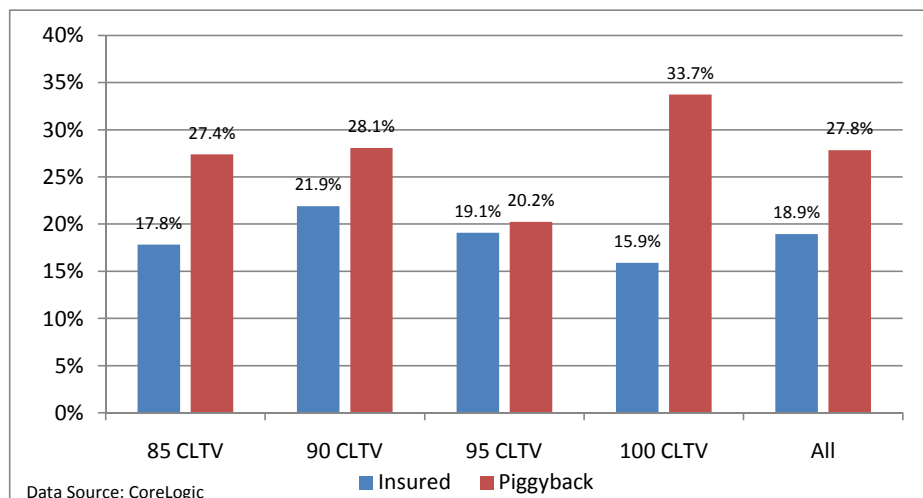### (Currently 90+ Days Delinquent & Defaults)

Ratios Of Piggyback Non-Performing Rates To Insured
Piggyback Non-Performing Rate / Insured Non-Performing Rate
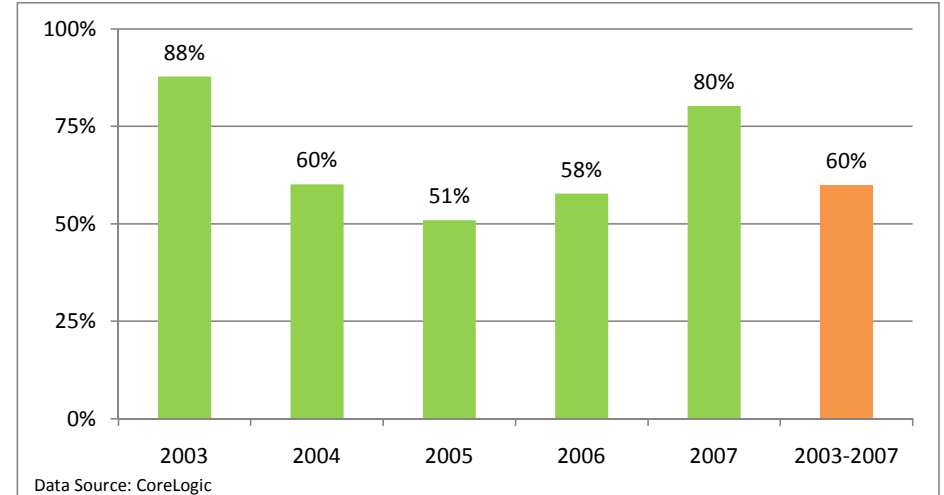
Lower Ever 90 Delqs Combined with More Cures Result in Insured Loans Having 40% Less Defaults (90+ & F/C)
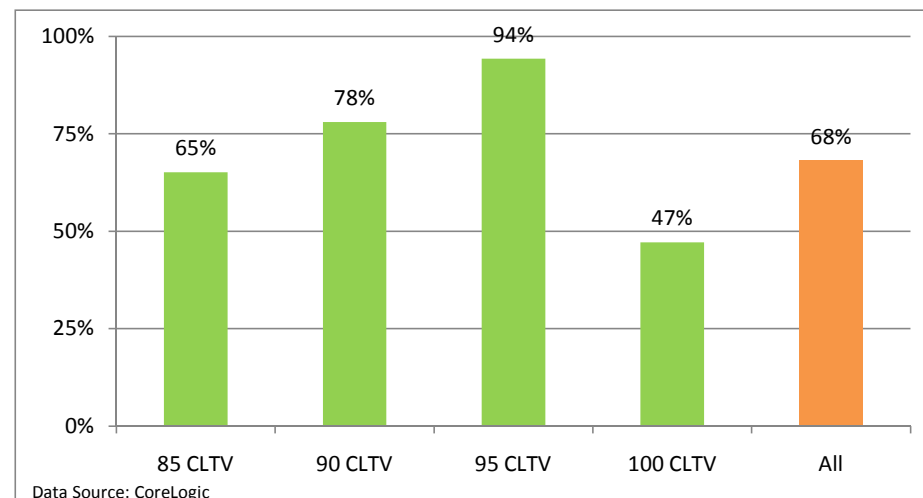
Ever 90 Day+ Delinquency Rates By CLTV
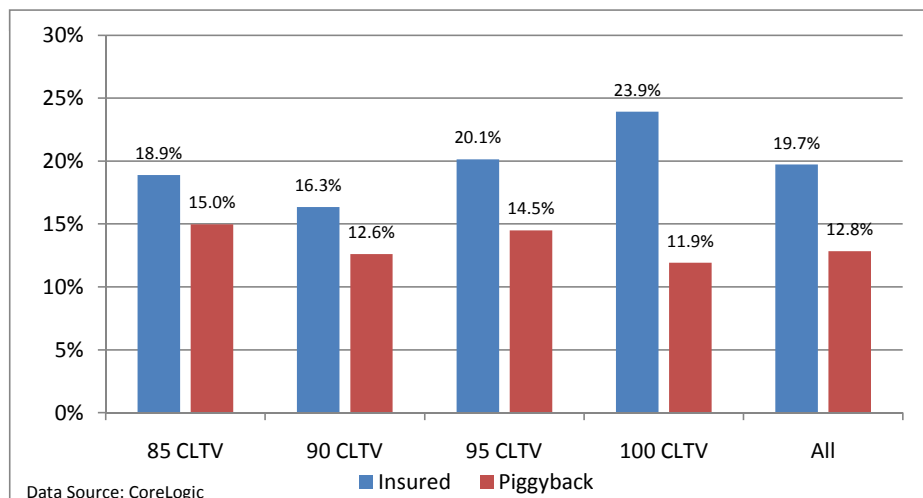### Weighting Segments By Piggyback Profile

CLTV	Insured	Piggyback
85 CLTV	17.8%	27.4%
90 CLTV	21.9%	28.1%
95 CLTV	19.1%	20.2%
100 CLTV	15.9%	33.7%
All	18.9%	27.8%

Data Source: CoreLogic

Weighted Ratios Of Piggyback Delq Rates To Insured Delq Rates
Piggyback ETD 90 Rate / Insured ETD 90 Rate

CLTV	Ratio
85 CLTV	65%
90 CLTV	78%
95 CLTV	94%
100 CLTV	47%
All	68%

Data Source: CoreLogic

Cure Rates On Ever 90 Day Delinquencies By CLTV
Weighting Segments By Piggyback Profile

CLTV	Insured	Piggyback
85 CLTV	18.9%	15.0%
90 CLTV	16.3%	12.6%
95 CLTV	20.1%	14.5%
100 CLTV	23.9%	11.9%
All	19.7%	12.8%

Data Source: CoreLogic

Weighted Ratios Of Insured Cure Rates To Piggybacks
Insured Cure Rate / Piggyback Cure Rate

| CLTV	Ratio
85 CLTV	126%
90 CLTV	130%
95 CLTV	139%
100 CLTV	201%
All	154%

Data Source: CoreLogic
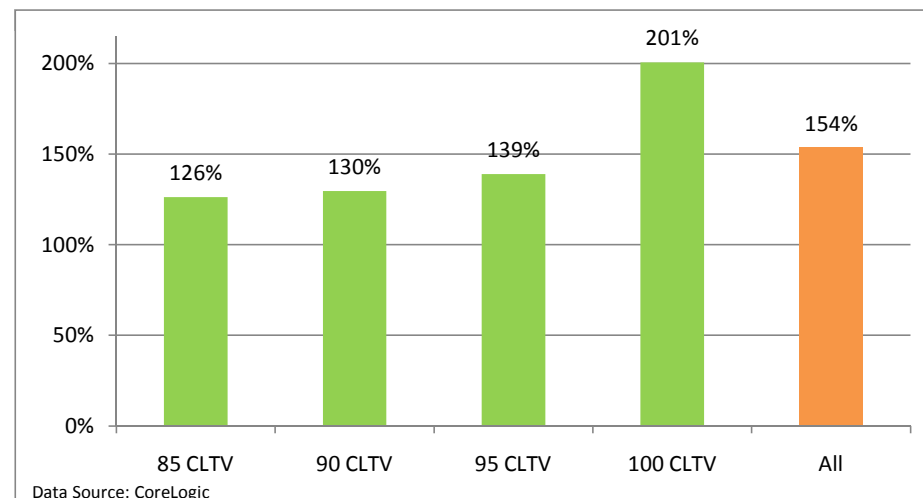
Piggyback 90+ Delinquency Rates Were Significantly Higher For All CLTV Ranges Except For 95 CLTV

Nevertheless, For ALL CLTV Ranges, Including 95 CLTV, Insured Loans Had Significantly Higher Cure Rates
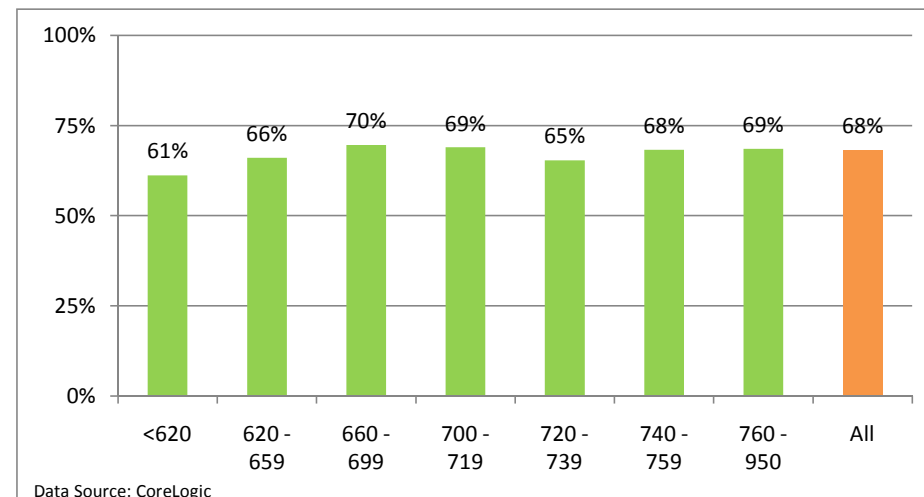
Ever 90+ Delinquency Rates By FICO Score
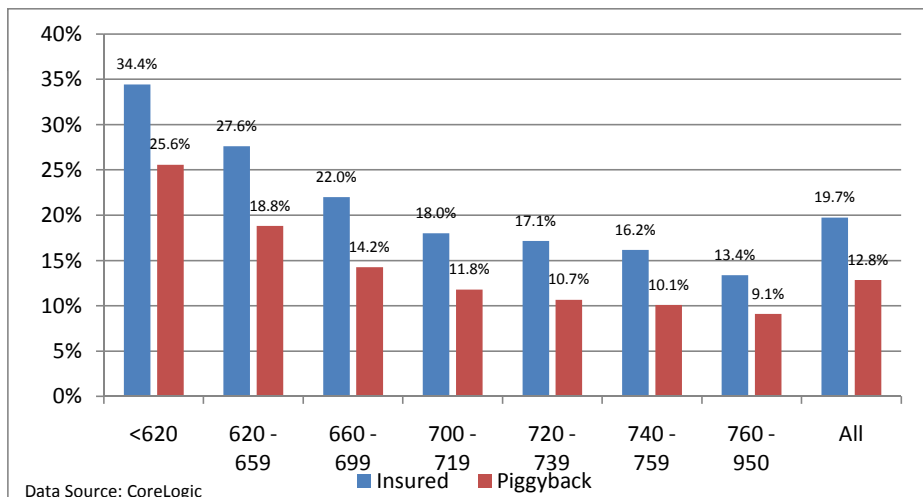Weighting Segments By Piggyback Profile
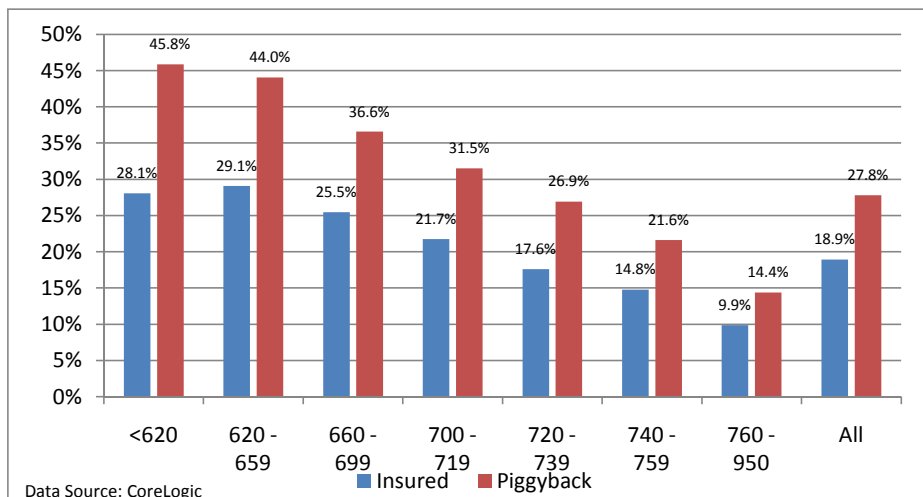
Weighted Ratios Of Piggyback Delq Rates To Insured Delq Rates
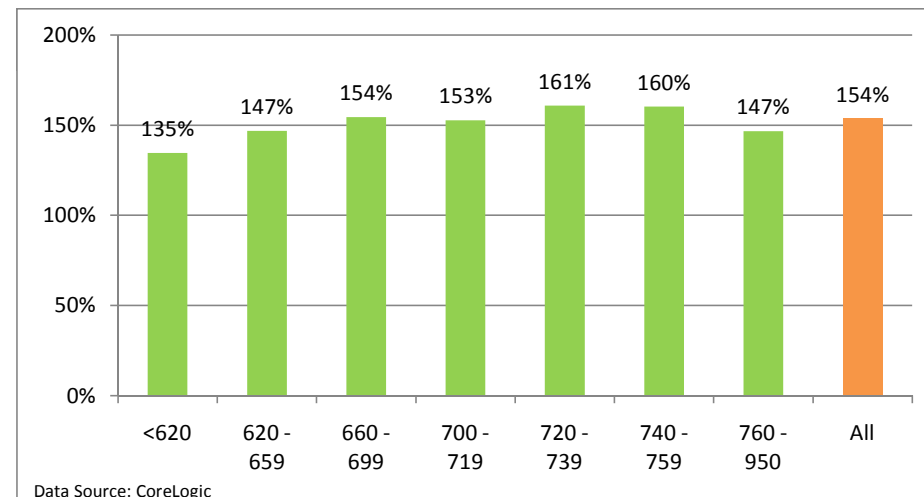Piggyback ETD 90 Rate / Insured ETD 90 Rate

Cure Rates On Ever 90 Day Delquencies BY FICO Range
Weighting Segments By Piggyback Profile

Weighted Ratios Of Insured Cure Rates To Piggybacks
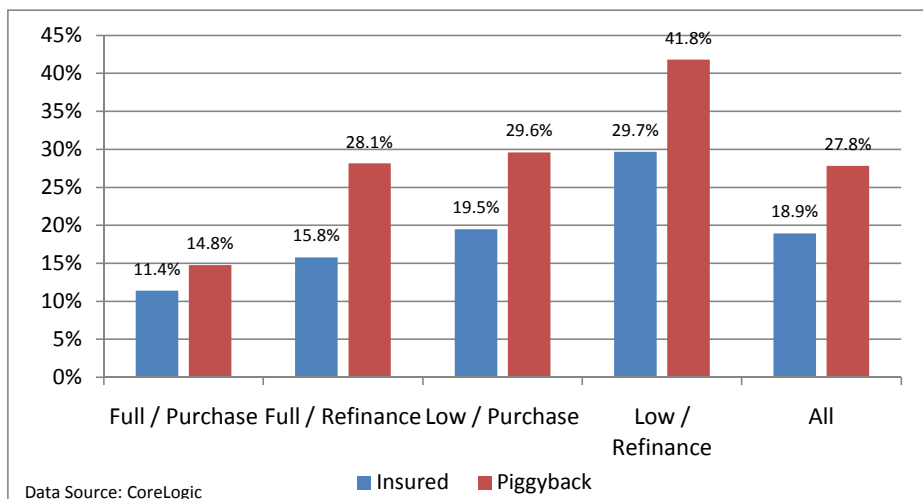Insured Cure Rate / Piggyback Cure Rate

Piggyback Performance Decidely Worse in Virtually All FICO Ranges

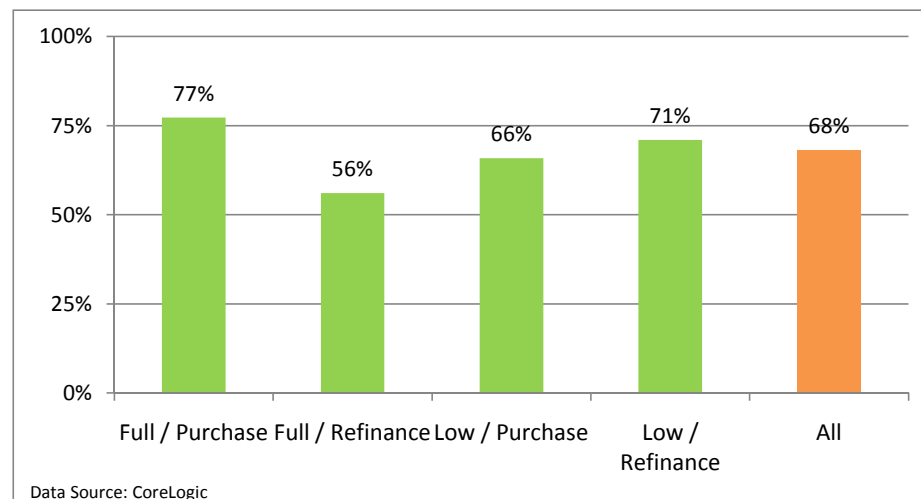**Cure Rates On Insured Loans Solidly Higher By 35% or More Depending On the FICO Range**

Ever 90+ Delinquency Rates By Doc Type/Loan Purpose
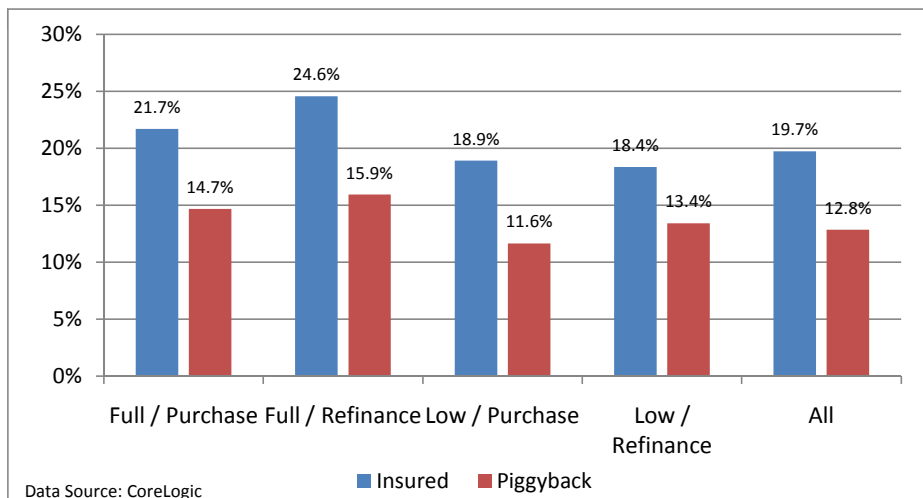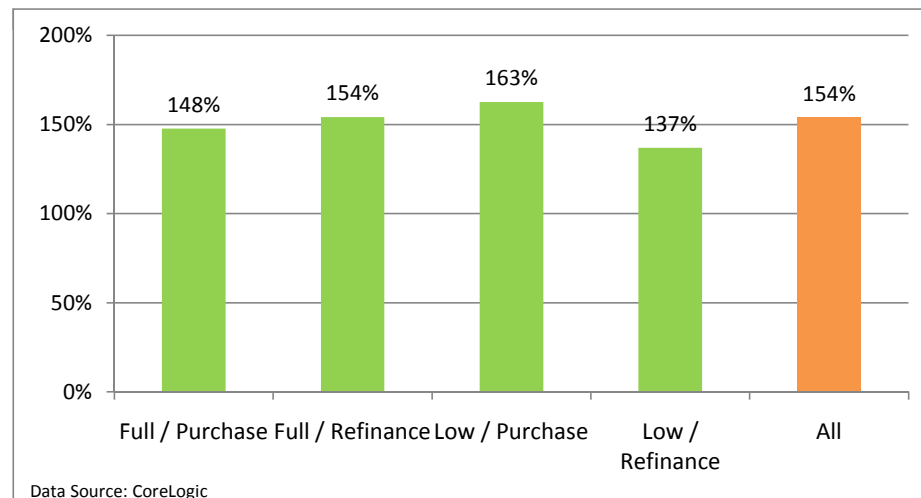### Weighting Segments By Piggyback Profile

Data Source: CoreLogic

Insured / Piggyback values:
- Full / Purchase: 11.4% / 14.8%
- Full / Refinance: 15.8% / 28.1%
- Low / Purchase: 19.5% / 29.6%
- Low / Refinance: 29.7% / 41.8%
- All: 18.9% / 27.8%

Weighted Ratios Of Piggyback Delq Rates To Insured Delq Rates
Piggyback ETD 90 Rate / Insured ETD 90 Rate

Data Source: CoreLogic

- Full / Purchase: 77%
- Full / Refinance: 56%
- Low / Purchase: 66%
- Low / Refinance: 71%
- All: 68%

Cure Rates On Ever 90 Day Delqs By Doc Type/Loan Purpose
Weighting Segments By Piggyback Profile

Data Source: CoreLogic

Insured / Piggyback values:
- Full / Purchase: 21.7% / 14.7%
- Full / Refinance: 24.6% / 15.9%
- Low / Purchase: 18.9% / 11.6%
- Low / Refinance: 18.4% / 13.4%
- All: 19.7% / 12.8%

Weighted Ratios Of Insured Cure Rates To Piggybacks
Insured Cure Rate / Piggyback Cure Rate

Data Source: CoreLogic

- Full / Purchase: 148%
- Full / Refinance: 154%
- Low / Purchase: 163%
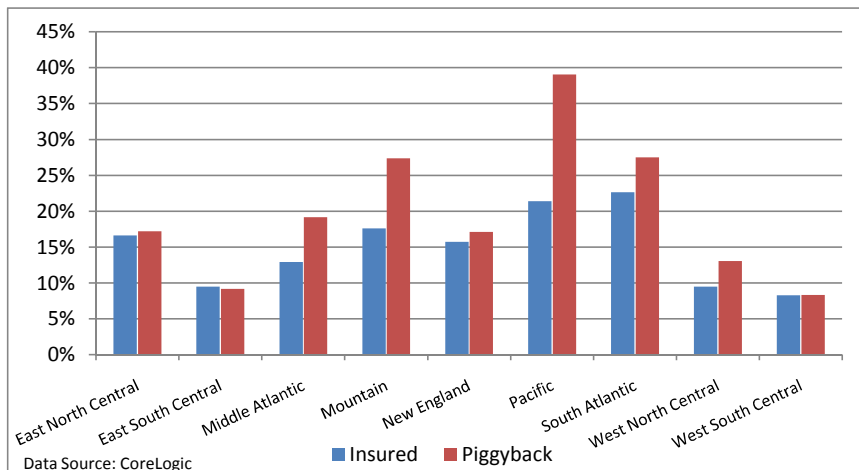- Low / Refinance: 137%
- All: 154%

Evaluation by Documenation & Loan Purpose Shows Insured Loans Clearly Outperform Piggybacks In Each of Segment Roll Ups

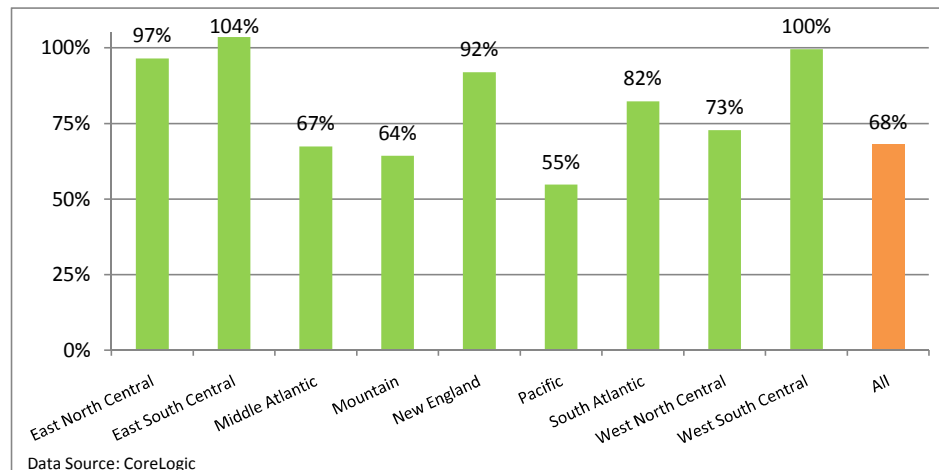**Insured Loan Cure Rates Were Substantially Higher in All Of These Roll -Up Combinations**

Ever 90 Day Delinquent Rates By US Census Region
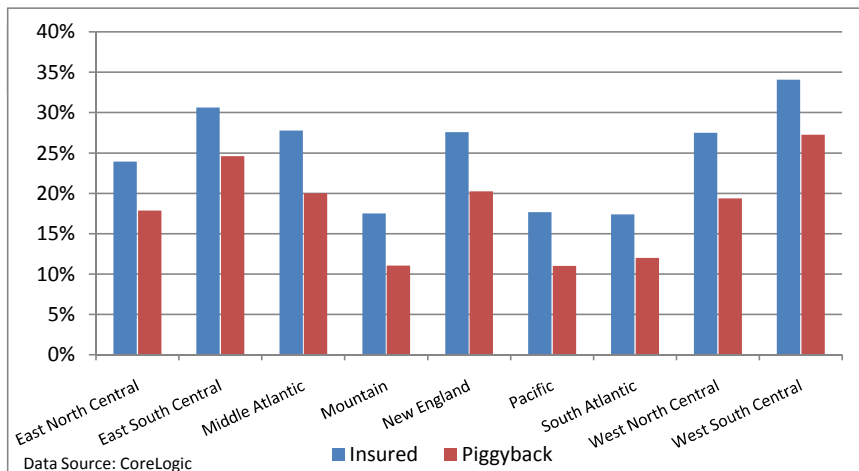### Weighting Segments By Piggyback Profile

Data Source: CoreLogic

Legend: Insured (blue), Piggyback (red)

Weighted Ratios Of Piggyback Delq Rates To Insured Delq Rates
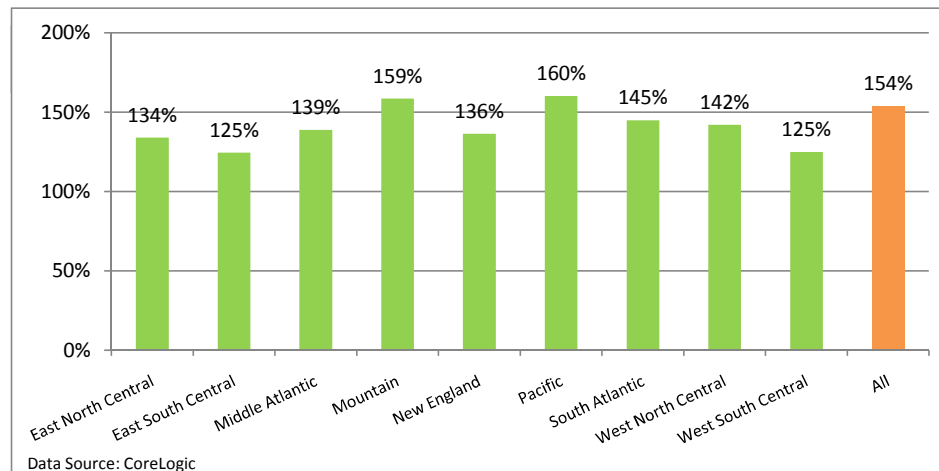### Piggyback ETD 90 Rate / Insured ETD 90 Rate

- East North Central: 97%
- East South Central: 104%
- Middle Atlantic: 67%
- Mountain: 64%
- New England: 92%
- Pacific: 55%
- South Atlantic: 82%
- West North Central: 73%
- West South Central: 100%
- All: 68%

Data Source: CoreLogic

Cure Rates On Ever 90 Day Delqs By US Census Region
Weighting Segments By Piggyback Profile

Data Source: CoreLogic

Legend: Insured (blue), Piggyback (red)

Weighted Ratios Of Insured Cure Rates To Piggybacks
Insured Cure Rate / Piggyback Cure Rate

- East North Central: 134%
- East South Central: 125%
- Middle Atlantic: 139%
- Mountain: 159%
- New England: 136%
- Pacific: 160%
- South Atlantic: 145%
- West North Central: 142%
- West South Central: 125%
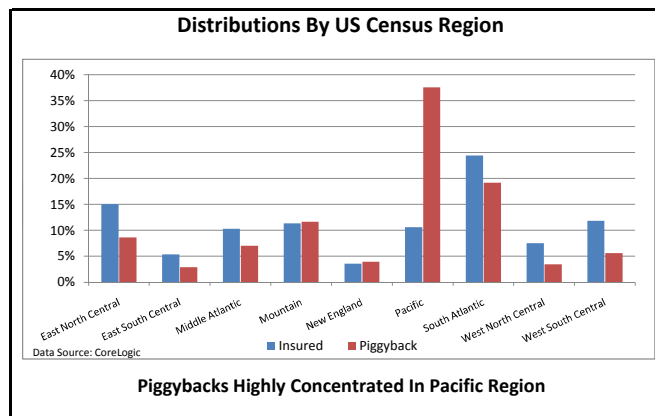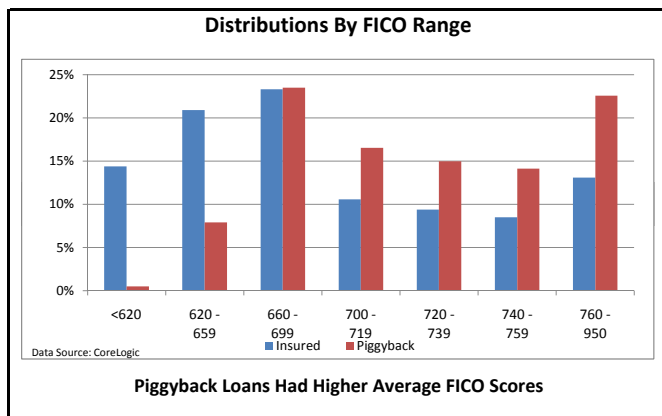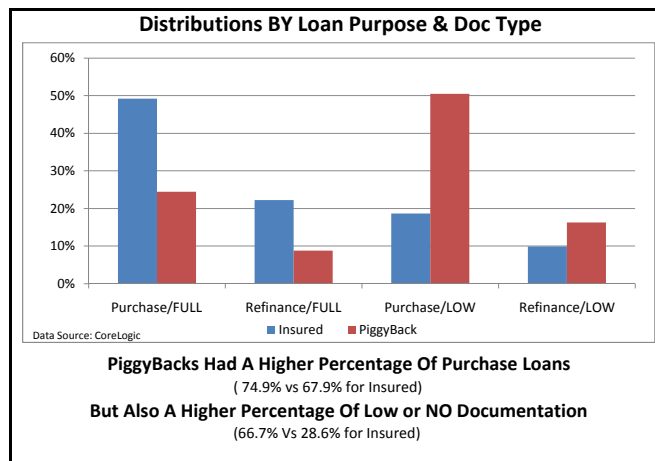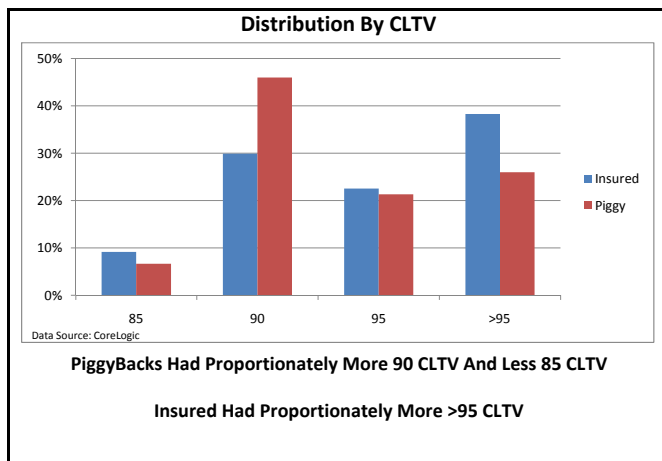- All: 154%

Data Source: CoreLogic

While Ever 90 Delinquent Performance Differences Were Not Uniform Across All Regions,

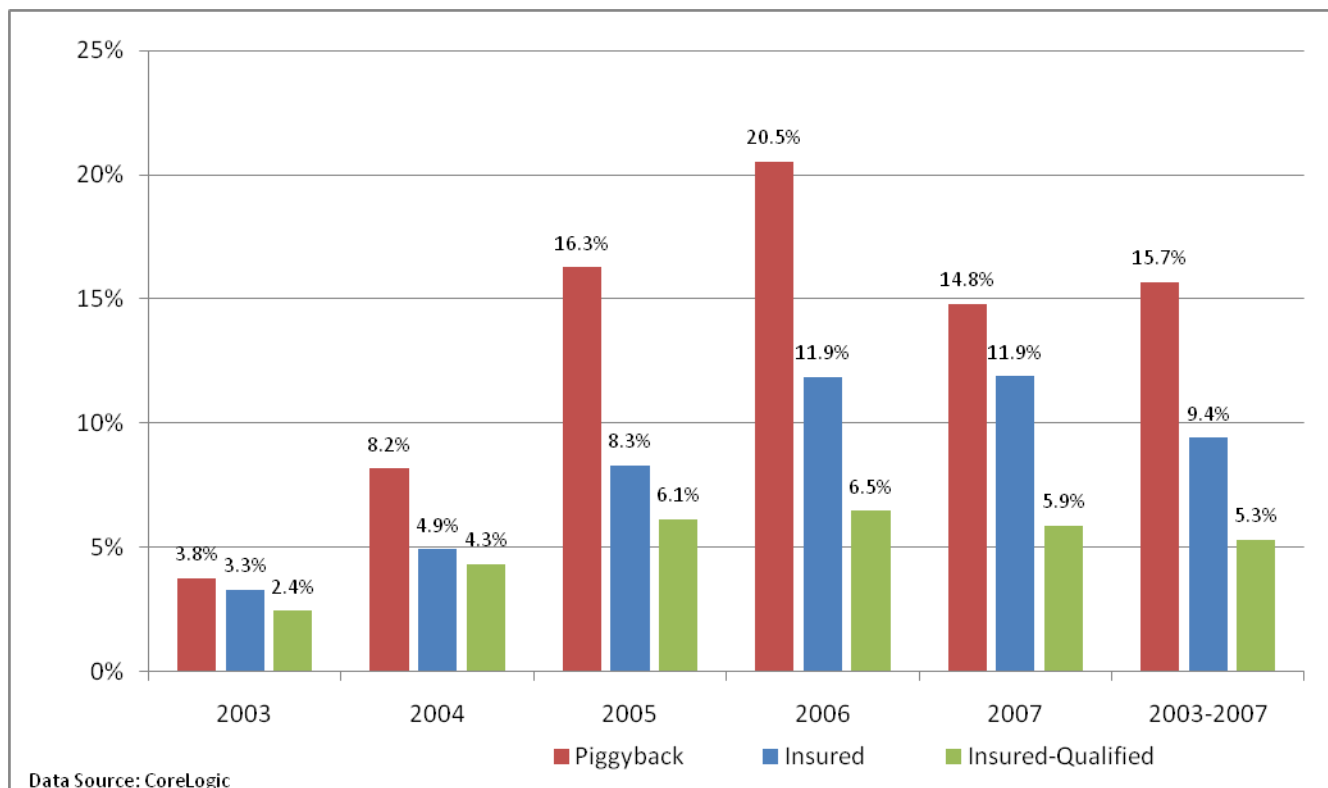**Such Differences Were Highest In Worse Performing Regions**

Cure Rates On Insured Loans Remained Significantly Higher Across All US Census Regions

Appendix - Differences In Distributions Across Key Metrics

Distribution By CLTV

PiggyBacks Had Proportionately More 90 CLTV And Less 85 CLTV

Insured Had Proportionately More >95 CLTV

Distributions BY Loan Purpose & Doc Type

PiggyBacks Had A Higher Percentage Of Purchase Loans
(74.9% vs 67.9% for Insured)
But Also A Higher Percentage Of Low or NO Documentation
(66.7% Vs 28.6% for Insured)

Distributions By FICO Range

Piggyback Loans Had Higher Average FICO Scores

Distributions By US Census Region

Piggybacks Highly Concentrated In Pacific Region

Insured Loan Distributions By CLTV BY Origination Year

Insured Loans Maintained Relatively Higher Risk Profile Throughout

Pricing For Risk By LTV Range Remained Constant

Piggyback Loan Distributions By CLTV By Origination Year

Piggybacks In Earlier Years Had Lower Risk CLTV Profile

Increasingly Riskier Profile Through 2007

Qualified Insured Loan Performance

NON-PERFORMING RATES*

Data Source: CoreLogic

"Qualified" Insured Loans Have Performed Well Through the Downturn

* Non-Performing Rate: (# Loans Currently 90 or more days delinquent + loans that terminated in default) / original number of loans