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## **Executive-in-Residence Briefing Note 07-1**

### ***Pitfalls of QRM and a Simple Solution***

The proliferation of exotic mortgage products during the housing boom clouded the understanding of investors, rating agencies and regulators of credit risk concentrations embedded in mortgage securities. In response to the lack of transparency and moral hazard issues surrounding mortgage securitization, the Dodd-Frank Act (Section 941) required regulatory agencies to establish risk retention rules for certain entities engaged in securitization activities.<sup>1</sup> These provisions require such firms to retain a portion of the credit risk associated with a securitized transaction unless the underlying loans qualify for exemption under a set of rules known as the Qualified Residential Mortgage (QRM) provisions. Congress defined QRM-eligibility on the basis of risk attributes that would reduce the risk of mortgage default. The proposed QRM rules, however, oversimplify the risk tradeoffs among borrower, product and collateral attributes in such a manner that is likely to raise borrowing costs and prevent a large segment of well-qualified borrowers from obtaining a mortgage.<sup>2</sup> With the excesses of the housing boom etched indelibly in policymakers' memories, it is not surprising that these experiences coupled with the relatively short

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<sup>1</sup> US Treasury, Office of the Comptroller of the Currency, Proposed Rule, Credit Risk Retention Requirements, 12 CFR Part 43, April 2011.

<sup>2</sup> Testimony of Acting Assistant Secretary for Housing and FHA Commissioner Bob Ryan, U.S. Department of Housing and Urban Development (HUD) Hearing before the House Financial Services Committee Subcommittee on Capital Markets and Government Sponsored Entities on Understanding the Implications and Consequences of the Proposed Rule on Risk Retention, Thursday April 14, 2011.

deadline to implement thoughtful policy have yielded a QRM proposal that has a better chance at harming the housing market than it has at addressing underlying weaknesses in the securitization process.

As the revised deadline for QRM comments approaches, this policy briefing presents an alternative approach for addressing QRM that meets the need for transparency, allows for prudent risk-taking while also permitting well-qualified borrowers to participate in housing at reasonable costs. The proposed approach relies on the same data used by the agencies to establish the QRM criteria, allows for the statistical interaction among factors to define overall credit risk as well as expert judgment to shape risk boundaries. This approach provides greater precision in the measurement of credit risk than the proposed QRM rule that simply establishes limits on individual factors without regard to compensating factors that could offset the incremental risk of a factor. For example, purchase-money mortgages with loan-to-value (LTV) ratios over 80% have been originated for decades with relatively low default risk experience so long as these loans exhibited strong evidence of a borrower's capacity and willingness to repay their obligation. In the current QRM configuration, such loans would not be exempt from risk retention. That could lead to higher borrowing costs or in some cases products not being originated. Such outcomes would create a further drag on housing recovery at a time when the market is already experiencing extraordinary weakness. The proposed QRM policy by not permitting appropriate risk tradeoffs among factors will do more harm than good while overreacting to excessive risk-taking during the housing boom.

QRM establishes a set of risk factors that would qualify a mortgage from exemption of the risk retention rules. These factors generally fall into the following categories; eligible loans, borrower credit history, payment terms, LTV ratio, qualifying appraisal, and ability to repay.<sup>3</sup> Among the QRM limits imposed are restrictions on eligibility for purchase money mortgages to 80% LTV, total debt-to-income (DTI) ratios to 36%, and full documentation of income. Moreover, borrowers must not be currently 30 days past due on any debt and more than 60 days delinquent on any obligation over the last 2 years.<sup>4</sup> A number of the QRM restrictions reflect areas of product excess during the boom years such as negatively amortizing mortgages or piggyback 2<sup>nd</sup> lien mortgages that were used extensively in many markets as affordability products. While it may be prudent to preclude them from QRM-eligibility, it was extensive

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<sup>3</sup> US Treasury, Office of the Comptroller of the Currency, Proposed Rule, Credit Risk Retention Requirements, 12 CFR Part 43, April 2011, pp.118-140.

<sup>4</sup> The borrower also cannot have been a debtor in a bankruptcy proceeding in the last 3 years, been subject to property repossession or foreclosure, short sale or deed-in-lieu of foreclosure or Federal or State judgment on unpaid debt.

product morphing that contributed to the levels of credit losses observed during the crisis and not the presence necessarily of a specific risk factor.<sup>5</sup> That is, taking otherwise standard mortgage products with historical performance and overlaying them with multiple risk factors created a set of new products with limited to no credit history from which to gauge future performance. Striking an appropriate balance between such risk layering and individual risk factor restrictions as presented in QRM is critically important to understanding mortgage credit risk.

The QRM rules also miss a number of important risk factors that should be accounted for in any assessment of mortgage credit risk. For example, the proposed QRM rules ignore the impact of sourcing channel such as whether the loan was originated by the retail channel of the bank (e.g., branch office), a correspondent lender such as another bank, or by a mortgage broker. The risks of non-retail originated loans are much higher than those from the retail channel and yet this is not captured in the QRM provisions.<sup>6</sup> Likewise, loan amount is absent from the proposed rule and this also affects default risk controlling for all other risk factors. More astonishing is the fact that the QRM rules are based only on default incidence and not on loss. For the holder of mortgage risk, loss severity is critically important and QRM ignores the benefit of various forms of credit enhancement such as mortgage insurance to mitigate losses. Thus, the QRM rules in their proposed form are a crude and incomplete way of assessing mortgage risk.

A more effective approach to introducing QRM-eligibility to the mortgage market would be to allow individual risk factors to trade off with each other. For example, it is possible that a 90% LTV purchase money loan with a 720 FICO, 24% debt-to-income ratio, and fully documented income could have the same default risk as an 80% LTV, 690 FICO, 36% DTI loan that is also fully documented. Standard mortgage underwriting practices allow for such tradeoffs and technological innovations in the form of statistically-based automated underwriting systems (AUS) since the mid-1990s have demonstrated the power of such techniques to consistently and objectively evaluate multiple risk attributes together.

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<sup>5</sup> Clifford V. Rossi, *Anatomy of Risk Management Practices in the Mortgage Industry: Lessons for the Future*, Research Institute for Housing America, May 2010, pp. 32-34.

<sup>6</sup> Jiang, Nelson, and Vytlačil, "Effects of Origination Channel and Information Falsification on Mortgage Delinquency," Working Paper, 2009.

The Federal Housing Administration (FHA), Fannie Mae and Freddie Mac as well as most large mortgage originators, among others have relied on AUS models for many years to assess mortgage risk.<sup>7</sup> These models are based on extensive historical loan level data such as that used by the agencies in developing the QRM thresholds. Risk factors such as LTV, FICO, loan documentation, DTI, product type as well as others typically are found in these underwriting models which predict the likelihood that an individual loan would default. The definition of default varies from model to model and can easily accommodate an ever-90 day delinquency rate used in the Federal Housing Finance Agency's analysis of QRM factors.<sup>8</sup>

An underwriting scorecard takes all of the loan level information for thousands of individual loans and statistically assigns a weight to each risk factor based on that attribute's contribution to default controlling for all other risk factors at the same time. Once these weights are estimated, a mortgage scorecard can be developed that applies these weights against each attribute and then aggregates these results across risk factors to generate a unique expected default rate for a loan. This is presented below for a stylized and simplified scorecard using only three risk attributes; FICO, LTV, and DTI. The weights for each factor from the statistical analysis are displayed.<sup>9</sup> In Exhibit 1, three loans are shown with their individual attributes. Note that the weight for FICO score is negative, signifying that the higher the FICO score the lower its contribution to default risk. Conversely, the weights for LTV and DTI carry a positive sign, indicating higher credit risk as those attributes increase. Loan 1 could be loosely interpreted as a QRM-eligible mortgage with risk attributes that meet the criteria.<sup>10</sup> This combination results in an ever-90 day delinquency rate of about .4%, an estimate generally comparable with the FHFA's estimated historical performance of QRM-eligible loans.<sup>11</sup> Loan 2 might be viewed as a non-QRM-eligible mortgage since all three risk factors exceed the QRM criteria for eligibility. Not surprising, the combination of these

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<sup>7</sup> In 1996, Freddie Mac introduced its' AUS, Loan Prospector, followed shortly thereafter by Fannie Mae's Desktop Underwriter and FHA's TOTAL scorecard. Despite the increased risks borne by these companies during the housing boom, mortgage scoring remains a best practice tool for risk management.

<sup>8</sup> Federal Housing Finance Agency, Qualified Residential Mortgages, Mortgage Market Note 11-02, April 11, 2011.

<sup>9</sup> At no loss of generality, additional factors could be included and each risk attribute could be segmented further (e.g., FICOs ranging between 620-640) with weights assigned to each category.

<sup>10</sup> In reality the QRM provisions do not have a FICO-based rule, but rather a set of credit derogatory attributes described earlier in the briefing. The FHFA used a FICO score of 690 in their analysis as a proxy for QRM-eligibility since they did not have credit derogatory information in their dataset. For purposes of exposition and consistency with the FHFA analysis, a 690 FICO is used in Exhibit 1 as the QRM credit history threshold for eligibility.

<sup>11</sup> FHFA, Qualified Residential Mortgages, Mortgage Market Note 11-02, p. 7.

### Exhibit 1: Simplified Mortgage Scorecard

	Weight	Loan 1		Loan 2		Loan 3	
		Loan Attribute	Attribute Risk	Loan Attribute	Attribute Risk	Loan Attribute	Attribute Risk
		FICO	-0.00120	690	-0.828	620	-0.744
LTV	0.00400	80	0.320	90	0.360	90	0.360
DTI	0.00300	36	0.108	50	0.150	34	0.102
Expected Default Rate (%)			<b>0.401</b>	<b>0.442</b>	<b>0.401</b>		

risk characteristics result in an expected default rate that is 1.1 times that of Loan 1. Loan 3, however, highlights the limitation of the proposed QRM rules. This loan exceeds the QRM criteria for LTV but offsets this risk with a higher FICO score and lower DTI. As a result, the combined risk of Loan 3 is identical to that of Loan 1, the QRM-eligible loan. Unfortunately, under proposed rules, Loan 3 would be subject to risk retention requirements and thus higher costs and in some cases the loan might not be originated at all.

Clearly, the use of a QRM mortgage scorecard to assign loan-specific risk provides a more accurate and comprehensive indicator of mortgage credit risk. But a key issue is whether implementing such a tool is tractable across the entire mortgage industry. The answer is that it is actually quite easy to develop and deploy such a model. The same data used by FHFA could be used, and/or augmented with credit derogatory information. Estimating the scorecard would be a relatively straightforward exercise. The agencies would then need to provide each lender and securitizing entity with a scorecard tool containing the weights and default risk calculator. This could be easily deployed in an Excel spreadsheet made available to any party. Inside the scorecard tool would be a score cutoff and a set of policy overrides. The score cutoff would be established by the agencies and reflect a level of acceptable default risk. For instance, a cutoff could be set at the weighted average ever-90 day delinquency rate of mortgage performance preceding the boom years. With that cutoff, any loan that generated an expected delinquency rate based on the QRM tool at or below that target would be QRM-eligible. Surrounding the scorecard would be a set of policy overrides that would preclude QRM-eligibility altogether. This might include neg am and interest only mortgages, or other attributes thought to pose unusual risk on their own. Lenders and securitizers could easily run their loans through this tool and quickly determine eligibility and/or code the scorecard directly into their origination system. Ongoing changes to the scorecard weights and cutoffs could be maintained by a designated agency such as the Office of Financial Research

with periodic changes provided to the industry. Periodic reporting by lenders and securitizers could be made to the agencies in a consistent form to validate adherence to the QRM requirements. Agencies such as the Office of Thrift Supervision (OTS) in fact have experience in developing, deploying and updating risk management tools for industry use such as the OTS Net Present Value (NPV) model for interest rate risk assessment.<sup>12</sup> Thus the data, tools and resources to sharpen the pencil on mortgage risk for determining QRM-eligibility are available to federal bank regulators with ample risk management precedents existing in the mortgage industry and regulatory arena. Implementing a QRM scorecard for determining QRM-eligibility would not only ensure an accurate depiction of mortgage credit risk, but would provide a large segment of well-qualified borrowers access to mortgage markets at reasonable costs.

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<sup>12</sup>Office of Thrift Supervision, Thrift Bulletin TB 1a, Management of Interest Rate Risk, Investment Securities, and Derivatives Activities, December 1, 1998.