July 9, 2018

Federal Housing Finance Agency
Proposed Rule on Enterprise Capital Requirements
Comments/RIN 2590-AA95

Andrew Davidson & Co., Inc. (AD&Co) is pleased to have the opportunity to comment on the recently released FHFA Proposed Rule on Enterprise Capital Requirements. This comment will be limited to a discussion of the Proposed Approach for Single-Family Credit Risk Transfer (CRT) Capital Relief (discussion section II.4.b, Proposed Rule §§ 1240.14 through §§ 1240.16). We may provide comments on other aspects of the Proposed Rule at a later date.

Andrew Davidson & Co was founded in 1992 and is a leading provider of mortgage loan prepayment and credit models. Several hundred financial institutions and many regulators utilize our models to evaluate the value and risk of mortgage loans, mortgage-backed securities and related portfolios. Andrew Davidson was an early proponent of credit-risk sharing. He and the firm have contributed significantly to the development of CRT transactions and the CRT market. It is in this light that we comment on the Proposed Rule.

The FHFA Proposed Rule represents a significant step forward in the development of the CRT market because it establishes a clear process for transactions which provide significant risk transfer to meaningfully reduce capital requirements. Unlike current banking regulations, the rule does not require that the Enterprises achieve sale treatment for their mortgage assets to offset a portion of the capital requirement for those loans.

While we applaud this achievement, we believe that the rule should be further refined in order to better facilitate the growth and success of CRT. Even though the Proposed Rule will be suspended during the Conservatorship of the Enterprises, the rule is still likely to affect Enterprise activities. It may be also be used as a blueprint for GSE reform and could stimulate discussions with other financial regulators on how much capital relief should be provided for CRT transactions in other contexts. Thus, there are powerful incentives to make improvements to this aspect of the Proposed Rule.

CRT REDUCES RISK, BUT IS NOT EQUITY

Our recommendation is based on the observation that while CRT may reduce losses experienced by the Enterprises, the CRT transactions, even when fully collateralized by cash equivalents will not provide the same level of protection against loss (and ultimately to the taxpayer) as equity. Equity is superior to CRT in two important dimensions: fungibility and income.

First, CRT balances are not transferable between reference pools. If one reference pool has losses that do not fully absorb a CRT bond balance in a stress scenario, but another reference pool does have losses that exceed the CRT bond balances, the excess balances from the first bond cannot be used to absorb losses from the second pool. Equity, on the other hand, is fungible and will absorb losses from any part of the portfolio.

Second, in attracting investors to CRT, the Enterprises pay a spread over funding cost to investors to take on the credit risk of the mortgage loans. This income is not available to cover losses or rebuild net worth. On the other hand dividends

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paid to equity are generally subordinate to credit losses. While FHFA says that the rule does not directly include income as a source of claims-paying ability, income can provide a substantial amount of protection against losses.

As a result of these observations, we believe that the rule should be modified to alter the computation of how credit-risk capital is allocated to the tranches. The Proposed Rule has a five-step process to compute capital relief for CRT. Our recommendation would only change the first step, the other four steps would remain as proposed. After describing the treatment of CRT under the Proposed Rule, we outline our recommendation and then provide a discussion and support for the recommendation.

THE PROPOSED TREATMENT OF CRT

In step 1, (§1240.15.c.1) the Enterprise computes the Tranche Credit Risk Capital. The Proposed Rule first allocates expected losses to the most junior tranche and then continues to allocate capital to the most junior tranche first and then to the second most junior tranche and so forth until the amount of capital allocated equals the total pool group's credit risk capital. The Proposed Rule shows this in its Figure 1, replicated below. Tranche M1 has an attachment point of 50 basis points and a detachment point of 450 bp.

Figure 1. Single-Family CRT Example
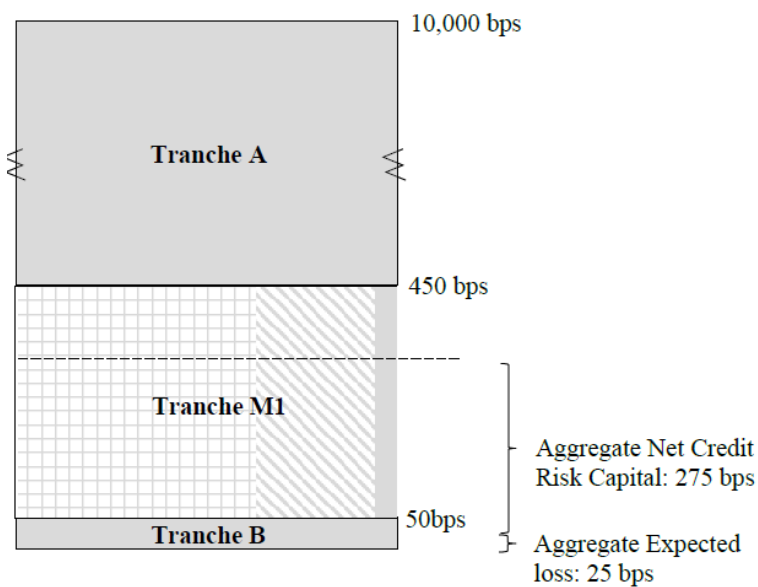
Ownership:
Tranche A: 100% retained (in solid gray).
Tranche M1: 60% to capital markets (gray grid lines), 35% reinsured (in gray diagonal lines), and 5% retained (in solid gray).
Tranche B: 100% retained (in solid gray).

Source: FHFA Proposed Rule p.153.

In this this calculation, no capital is assigned to any attachment point beyond 300 basis points, and all 275 basis point of capital is assigned to tranches M1 and B. (25 basis points of expected loss is essentially assigned to Tranche B, but is not capital.

RECOMMENDED APPROACH

The goal of our approach is to better align the risk reduction from CRT to the economic benefit of CRT. We will first describe the method and then discuss the conceptual underpinnings.

In our method, capital allocation to tranches below the expected loss plus aggregate net risk capital (25 plus 275 basis points in the example) will be reduced and there will be additional capital allocation to tranches beyond that point.

In keeping with the approach of the FHFA proposal we created Table 1 as a small set of factors to facilitate the allocation.

Table 1. Capital Allocation Factors

Percent of EL + Net Credit Risk Capital	Capital Allocation % of Detach - Attach
0% - 50%	90%
50% - 100%	60%
100% to 150%	30%

In Table 2, we show how our proposed method would reduce the allocation of capital to Tranche M1 of Figure 1. Under the proposed method, 225 basis points of capital would be allocated to the tranche versus 250 under the FHFA method.

Table 2. Tranche M1, Attachment 50, Detachment 450

Percent of EL + Net Credit Risk Capital	Allocation Factor	Collateral Loss (bp) up to:	Attach (bp)	Detach (bp)	Attach minus Detach	ADCo Method	FHFA Method
0 – 50%	0.9	150	50	150	100	90	100
50% - 100%	0.6	300	150	300	150	90	150
100% to 150%	0.3	450	300	450	150	45	0
TOTAL						225	250

In Tables 3A and 3B, we show the how our recommended method changes the allocation of capital. Suppose that Tranche M1 had the same attachment point of 50 basis points but had a detachment point of 300 basis points. Under the FHFA method there would be no reduction in the capital allocation at all. The capital allocation would remain at 250 basis points despite a 150 basis point decrease in the attachment point. There would be no capital-based incentive to issue CRT with any attachment point beyond 300 basis points. Under our proposed method the capital allocation would be reduce to 180 basis points on this Tranche M1, with an additional 45 basis points of possible capital reduction available by increasing the detachment point or by issuing an M2 bond with an attachment point at 300bp and a detachment point at 450 basis point as shown in Table 3B.

Figure 2 is a schematic of the methodology showing the weighting of each segment of the CRT bonds. The first 150 basis points receives a 90% weight, the next 150 basis points a 60% weight and the third 150 basis points receives a 30% weight.

Table 3A. Tranche M2, Attachment 50, Detachment 300

Percent of EL + Net Credit Risk Capital	Allocation Factor	Collateral Loss (bp) up to:	Attach (bp)	Detach (bp)	Attach minus Detach	ADCo Method	FHFA Method
0 – 50%	0.9	150	50	150	100	90	100
50% - 100%	0.6	300	150	300	150	90	150
100% to 150%	0.3	450	0	0	0	0	0
TOTAL						180	250

Table 3B. Tranche M1, Attachment 300, Detachment 450

Percent of EL + Net Credit Risk Capital	Allocation Factor	Collateral Loss (bp) up to:	Attach (bp)	Detach (bp)	Attach minus Detach	ADCo Method	FHFA Method
0 – 50%	0.9	150	0	0	0	0	0
50% - 100%	0.6	300	0	0	0	0	0
100% to 150%	0.3	450	300	450	150	45	0
TOTAL						45	0

Figure 2. Illustration of Recommended method assuming sale of M1 and M2.

Bond	FHFA	ADCo
M1	0	45
M2	250	180
Total	250	225
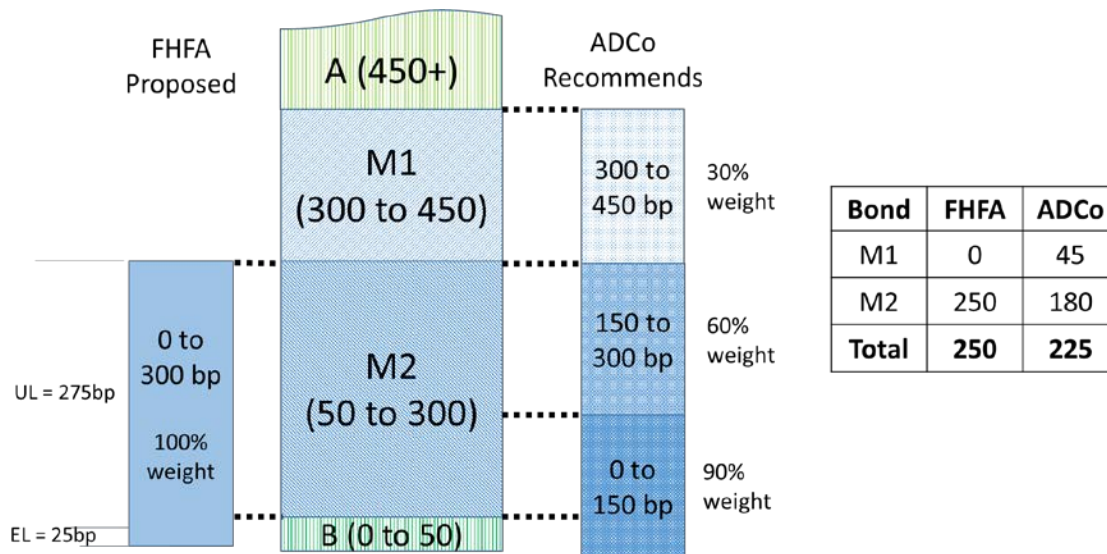
DISCUSSION

Our proposed method has two main features. First, an extension of capital relief to higher attachment points as described above, and second, a slight reduction in total capital relief. While presented together they are two separate features of the method. The total amount of capital relief can be adjusted by altering the allocation factors. For example, allocation factors, 1.0, .65, .35, would result in total capital allocation of 275 basis across CRT tranches M1, M2 and B.

These two features address the observations that CRT is not a direct substitute for equity. By providing an extension of capital relief to higher levels of loss, the recommended approach would encourage higher detachment points for CRT

and make it more likely that CRT could cover losses on individual reference pools. This would serve to offset the disadvantage that CRT is not fungible across deals.

In the event of a severe decline in home prices, it is likely that most reference pools will experience some degree of increased loss. Thus for lower attachment points there is little need for fungibility as the CRT bonds will likely experience losses and CRT balances will offer almost the same protection as equity. At higher attachment points there is greater risk that actual losses will be higher for some pools and lower for other pools reducing the effectiveness of CRT balances to offset total portfolio losses. Thus, the recommended approach decreases capital relief at higher attachment points. In addition, because CRT balances cannot cover losses on other pools, we extend capital relief beyond the average portfolio stress level so that coverage for losses on reference pools with higher than average losses will be offset by CRT.

This leads to the three categories of adjustment. A small reduction for CRT with low attachment points below 50% of the expected loss plus net credit risk capital, a larger reduction for CRT with attachment points from 50% to 100% of the expected loss plus net credit risk capital, and the introduction of capital relief for attachment points from 100% to 150% of the expected loss plus net credit risk capital.

The slight reduction in total capital relief serves to reflect the fact that CRT reduces income to the enterprises and in other ways decreases flexibility relative to equity. Yet the reduction is not so great as to discourage the use of CRT since the cost of CRT is generally well below the cost of equity, especially beyond a small slice of first loss.

COMPARISON TO OTHER APPROACHES

Following the style and approach of the Proposed Rule, we have presented a method that relies on simple and transparent multipliers. In order to develop the multipliers we looked to other methodologies that address these issues.

A May 2002 article in *Risk Magazine* by Pykhtin and Dev, entitled "Credit Risk in Asset Securitizations: An Analytical Model" describes the marginal capital requirements for these types of transactions. The underlying theory is that the loans in the securitization are correlated with each other, and that the bank portfolio contains many of these transactions that are not perfectly correlated with each other.

Figure 3 taken from their article and reproduced below shows the impact of imperfect correlation on the marginal capital requirement at each attachment point. Note the impact of even a small decline in correlation below 100%.

Figure 3. From Pykhtin and Dev, 2002, Marginal Capital and Expected Loss
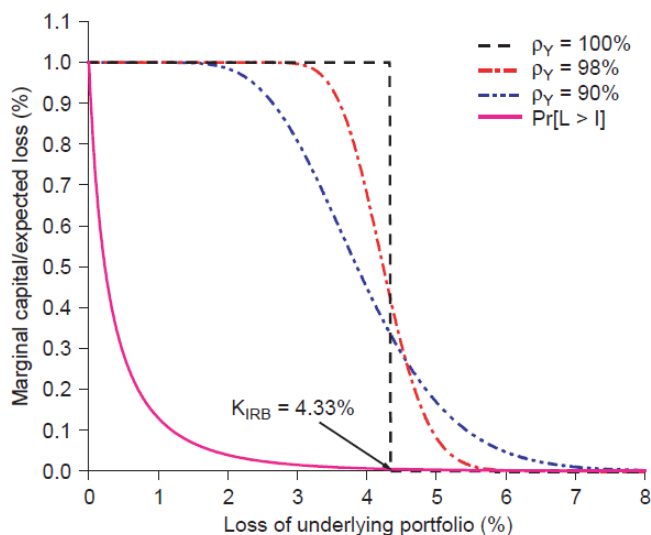
We have replicated the Pykhtin and Dev approach using parameters similar to those used in the Proposed Rule. Figure 4, shows the marginal capital contribution by attachment point, for various correlations. Our recommended approach represents a simplification of this pattern, splitting these curves into three tiers.

Figure 4. Pykhtin and Dev Method Applied to CRT Assumptions
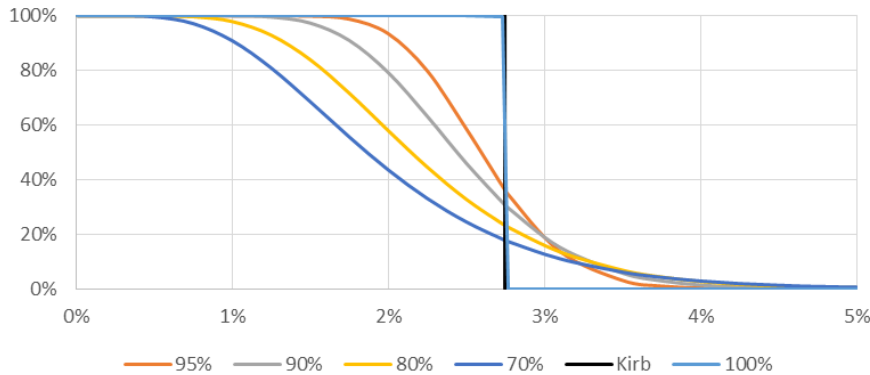
Another benchmark is the Standardized Supervisory Formula Approach (SSFA) of Basel, used by the banking regulators. The SSFA approach is more punitive to securitization and increases the amount of capital requirement. SSFA assigns 100% capital to any tranche retained up to the capital requirement of the underlying collateral and then also greatly extends the capital requirement into more senior tranches.

Table 4 converts the SSFA methodology into marginal capital factors on the same basis as our recommendation. The SSFA is designed, not to show the amount of capital relief, but rather to show the amount of capital that must be held against any retained risk. Thus under the SSFA, a bank would be required not only to hold 100% capital for attachment points below 3% but would also hold 61% capital for retaining the 300 bp to 450 basis point tranche. Not until the 6% attachment point would the capital requirement reach the 4% capital requirement generally applicable to mortgage loans.

Table 4. SSFA Method

Attachment	Detachment	Equity Factor
0.0%	0.5%	100%
0.5%	3.0%	100%
3.0%	4.5%	61%
4.5%	6.0%	20%
6.0%	10.0%	4%

The calculation of the SSFA is based upon a p factor of 0.5. The p factor can be thought of as a securitization-aversion factor. A p-factor of approximately 0.2 would lower the equity factor on the 3% to 4.5% tranche to approximately 30% as in our recommended approach, indicating that our approach is less securitization adverse than current banking regulation.

In addition to these theoretical measures, the approach we recommend is also consistent with pricing in the CRT market. We have recently introduced total-return indices for the CRT market. The indices are tiered by attachment point. Table 5 shows the current yield for each of these tiers. We compare the spread over Libor, which represents the net cost to the GSE, across the tiers to the capital relief factors. We assume an equity premium of 8% over Libor. We see

that the relative cost is lower than capital relief factors so that the GSEs would retain significant financial incentives to pursue CRT, except for the first loss tranche.

Table 5. Market Spreads by Attachment Point

Tier	Tranche	Attachment	Current Yield	Spread vs. Libor	Relative Cost	ADCo Factors
0	B / B2	0	9.16%	7.16%	90%	90%
1	B1 / M3	0.25%	5.65%	3.65%	46%	90%
2	M3 / M2	0.95%	5.14%	3.14%	39%	90%/60%
3	M2 / M1	1.75%	3.30%	1.30%	16%	60%/30%
4	Old M1s	3.75%	2.62%	0.62%	8%	30%

In sum, our proposed approach would provide the tax payers with greater protection against loss, and is consistent with economic theory, with other regulatory approaches and with market pricing of CRT bonds.

OTHER ISSUES

There are several other issues that we would like to highlight here that have some bearing on CRT capital relief and we offer a few suggestions.

The Proposed Rule provides for haircuts for non-fully collateralized deals. The calculations for those haircuts might need to be adjusted to reflect the capital-allocation factors. We believe that haircuts for non-fully collateralized deals should be compared to the net amount of capital relief so that if the capital-relief factor were 30% and the counterparty had posted 30% collateral there would be no need for an additional haircut.

FHFA has the alternative of treating CRT as additional capital available to cover credit losses as opposed to a reduction in capital requirement: We have a slight preference for treating the benefit of CRT as additional capital rather than as a reduction in risk.

We understand that under current regulations, reserves for expected losses are considered a component of total capital and can be used to meet the capital requirement. We would recommend that capital requirements then be increased to include expected losses, until such time that loan loss reserves are removed from total capital.

CONCLUSION

We thank FHFA for the opportunity to present our ideas on capital relief for CRT bonds. We applaud FHFA for taking a clear step toward providing incentives for CRT issuance and recognition of the risk reduction value of CRT. We recommend refinements of the approach that would somewhat reduce the capital benefit for CRT below the amount of expected loss plus net credit risk capital, and would extend capital relief to higher attachment points. We believe such a change would provide taxpayers with greater protection against loss and better align CRT as an alternative to equity. Our recommendation is consistent with economic theory, with other regulatory approaches and with market pricing of CRT bonds.

October 18, 2018

Federal Housing Finance Agency
Proposed Rule on Enterprise Capital Requirements
Comments/RIN 2590-AA95

Andrew Davidson & Co., Inc. (AD&Co) is pleased to have the opportunity to comment on the recently released FHFA Proposed Rule on Enterprise Capital Requirements. This comment will be limited to a discussion of the potential pro-cyclicality of the Proposal. Our earlier comment (July 9, 2018) addressed the treatment of Single-Family Credit Risk Transfer (CRT) Capital Relief. We may provide comments on other aspects of the Proposed Rule at a later date.

Andrew Davidson & Co was founded in 1992 and is a leading provider of mortgage loan prepayment and credit models. Several hundred financial institutions and many regulators utilize our models to evaluate the value and risk of mortgage loans, mortgage-backed securities and related portfolios.

To address the Proposed Rule, we begin with a discussion of cyclicality in the economy and financial markets and the role of the federal government. We also briefly contrast the FHFA proposed capital approach to the "through the cycle" approach used in other capital rules.

CYCLICALITY

Economic cycles can be viewed as the consequence of malfunctioning feedback mechanisms. For example, the ups and downs in commercial real estate markets are often attributed to the long lead time between the initiation of development projects and the completion of those projects. Projects are initiated when there is high demand for real estate and projections of profits are strong. As many projects start during the same period, they may all come on line at similar times, creating a glut of properties which depress valuations.

The financial crises of 2007 and 2008 can be attributed in large part to the growth of the markets for subprime mortgages and CDOs for subprime mortgage-backed securities. The CDO market severed the relationship between the declining credit quality of the mortgages and the spreads required by investors to take on the risk of those loans. Incentives did not properly flow from the secondary market to the primary, so high risk mortgages were originated without adequate compensation to investors. Finally, when the actual risk of the loans was realized, the losses led to contagions in global financial and real markets.

FEDERAL ROLE IN FINANCIAL MARKETS

When financial (or any) markets have attributes that satisfy competitive conditions, and when the benefits and costs are fully borne by the buyers and sellers, there is little need for government intervention. However, as seen in the financial crisis, the mortgage market does not meet these criteria, and in any case

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the government is inextricably involved with the GSEs. It is therefore important to structure the federal role wisely. Government involvement should be informed by guiding principles, a few of which we outline below.

We focus this response on FHFA's proposed capital standard for the GSEs in the context of the following three principles:

- **Orderly markets** (persistent market clearing prices; minimized contagion)
- **Incentives flow through** (price is related to risk; subsidies can be OK)
- **Rational pricing** (similar prices for the same risk across markets or constituents; fair)

The purpose of capital is survivability, so more is better; but the amount and cost of capital for a regulated entity need to be efficient to avoid making the regulated service so expensive that eligible consumers are priced out, or more dangerously, the regulated entities are disintermediated by unregulated actors that cannot or will not fulfill the purpose of the regulated entity in times of financial stress. This tension is epitomized by the debate concerning pro-cyclical vs counter-cyclical capital. Approaches to capital that do not recognize the three principles described above may serve to exacerbate rather than address market instability.

"THROUGH THE CYCLE" CAPITAL REQUIREMENTS

"Through the cycle" capital requirements, such as those of Basel II, are based upon the idea that financial institutions can weather changes in economic seasons and only need to hold capital against longer term systemic risks. This presumes that short-term fluctuations in economic conditions are indeed temporary and smaller than longer-term risks so that institutions will not fail during downturns or be disintermediated during the recovery. Such static capital requirements can result in too much capital in normal times and too little under stress, violating all three principles for federal presence in financial markets: (a) Illiquid or insolvent lenders will not be able to provide persistent pricing, (b) lenders are at risk of being disintermediated by unregulated institutions who charge less for risk, and (c) the incentive link is broken between risk and pricing since the capital standard does not change with risk.

The FHFA capital rule is not based on a "through the cycle" approach to capital, but rather dynamically updates requirements to reflect the risk to the institution at every period. This necessarily makes capital requirements more volatile than a static rule, but also more successfully achieves rational pricing and proper incentives. Thus, allowing capital requirements to fluctuate can actually promote orderly markets. The challenge is that firms must not only meet capital requirements now, but they must also be prepared to increase capital in a rapidly unfolding downturn. Nevertheless, we support FHFA's bold approach to capital requirements because it better aligns with the federal principles laid out above and therefore has a better chance of long-term success. In the next section, we discuss ways to design the capital regime to address the problem of raising capital during stress.

DYNAMIC CAPITAL REQUIREMENTS

Based on the matrices in the FHFA proposal and the estimates of capital requirements for the enterprises under the proposed rule, we have estimated the potential fluctuation in enterprise capital from changes in home prices flowing through to changes in current loan-to-value ratios.

In the base case, the enterprises are expected to require $130 billion (2.5%) of capital for their single- family businesses. If home prices were to rise 10%, the overall capital requirement might fall by about 40% to $75 billion. Additional increases in home prices might reduce the capital requirement a bit further, but several risk-invariant components of the capital rule, such as the going-concern buffer and the minimum capital requirements, would limit further reductions in required capital.

On the other hand, we estimate that should home prices fall by 10%, the amount of capital required would increase by about 50% to approximately $200 billion for single-family businesses. If home prices fell by 20%, the capital requirement would be double the initial requirement and would be over $275 billion. Raising that much capital during an economic decline would be nearly impossible. Yet that requirement might be a good estimate of the risk to the institutions of further declines in home prices or increases in unemployment.

Figure 1. GSE Single-Family Capital Requirement
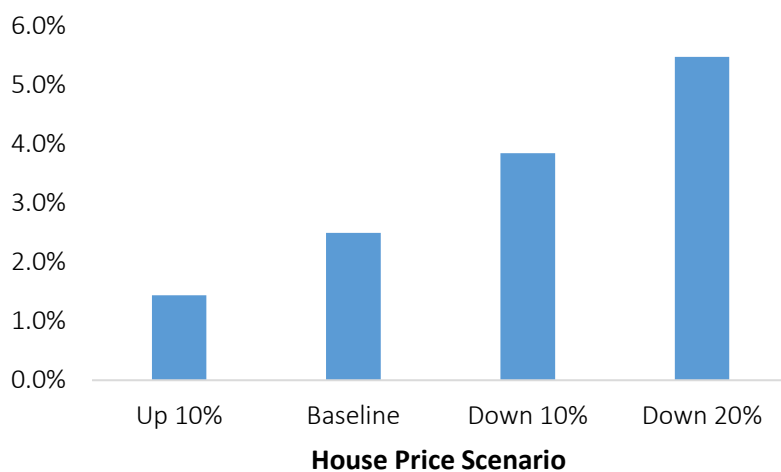
These estimates do not include any offset for the increased value of Credit Risk Transfer (CRT) transactions. Such transactions currently total about $50 billion and could provide about a $30 billion (0.6%) incremental reduction in capital requirement in the severe stress scenario. These types of transactions may point the way to a solution to the capital volatility as we shall discuss.

(**Note**: *While bank capital requirements under current rules would be mostly invariant under such scenarios, the bank stress tests would indicate the need for additional capital to handle further stresses. One difference however, is that the bank stress tests could be adjusted to reflect the likelihood of recovery, while the FHFA rule essentially assumes that risk remains symmetric throughout the decline.*)

As a result of the highly volatile nature of the enterprise capital requirement, we believe it would be imperative for FHFA and the Enterprises to establish procedures and policies to address the changing capital requirements in advance of the economic events. While it certainly would be possible for FHFA to make adjustments to the capital requirements during periods of stress, a set of procedures and policies would provide greater certainty to the market. Ad hoc adjustments may still be required, but those should be reserved for unexpected events, rather than those events that can be anticipated, such as the impact of changing home prices on capital requirements.

POTENTIAL REGULATORY ACTIONS TO MITIGATE VOLATILITY

Declining Risk Environments

The issue in declining risk environments is not capital shortfall, but what limitations should be placed on either using or distributing excess capital. These limitations would provide a cushion against the increased capital requirements if home prices decline, and would also limit excessive pro-cyclical risk taking. The limitations could be in the form of a counter-cyclical or minimum capital requirement, or more specific limits on distributions or balance sheet growth. For example, distributions, dividends, or stock buybacks could be limited to enterprise income, or growth could be limited to some percent of the balance sheet.

Rising Risk Environments

In rising risk environments the situation is more complex. Without specific countercyclical requirements the enterprises could face significant capital shortfalls and imperil an orderly functioning market. If the enterprises believed that FHFA would provide forbearance (or is forced to because the capital framework has failed) they may not prepare for the increased capital requirements. We envision four possible approaches to address the capital needs in a stress environment:

- **A pre-designed capital forbearance program**. Such a program would limit the rate of increase in capital requirement for declining home prices and provide the enterprises with an extended time frame to reach capital compliance. Since the capital requirement is already designed to meet a high degree of stress, this would amount to a determination that in a stress environment there is a higher likelihood of recovery than repeat of an additional stress scenario.
- **A capital cushion.** A cushion against increases in capital requirements would reflect the amount of capital that would be required in a downturn. For example, FHFA could run a stress test and require that the enterprises hold sufficient capital to meet their capital requirements throughout the stress.
- **Contracts for contingent capital or income.** These contracts would be a source of financial resources during stress scenarios. CRT transactions already serve this purpose to some extent. Deeper and greater amounts of CRT could serve this purpose. Due to the extreme nature of the scenarios that might generate the higher capital requirements, it would be essential to carefully evaluate and minimize counterparty risk.
- **Purchase loss coverage from the government.** This coverage would be designed to offset enterprise losses in extreme scenarios. Congress would probably need to authorize such coverage, although there may be ways to achieve this outcome using Ginnie Mae under existing authorities. The government insurance would act as a backstop to the enterprises.

In other forums, we have recommended the use of vintage-based guarantees from the government to provide stability to the housing finance system. These would essentially be CRT transactions between the enterprises and the government. The attachment point for the transaction would be well out of the money, possibly at a level of 1.5 times the credit risk capital requirement for the cohort at origination. These instruments would be priced, and the enterprises would be required to pay for the loss coverage.

In a declining home price environment, the value of these guarantees would rise and would serve to offset the increased capital requirement. The use of such instruments would be a recognition that the government was the guarantor of last resort for the housing finance system and served a necessary counter-cyclical function. These guarantees would appear on the government balance sheet and would be accounted for using the government cost of capital.

A practical way for this to work for the GSEs and for federal budgeting is to set the federal insurance premiums by vintage year at origination. In riskier environments, the premiums would be somewhat higher than in normal times, but the insurance would eliminate the need to raise capital in the midst of a downturn or raise guarantee fees post crisis to offset prior losses. In this way, the government contributes in its appropriate role as the catastrophic, countercyclical backstop for well-capitalized GSEs.

Given the size and scope of the enterprises and the degree of variability of risk of their business as the economy changes, it may be appropriate to use all four of these methods: predesigned forbearance, capital cushion, contingent capital/income, and government loss coverage.

CONCLUSION

FHFA's choice to develop a capital rule that reflects the dynamics of risk is a bold choice and a good choice. In conjunction with adoption of the capital rule, FHFA should work with the enterprises, Treasury and Congress to develop approaches to address the inevitable fluctuation in enterprise risk and capital requirements.

November 16, 2018

Federal Housing Finance Agency
Proposed Rule on Enterprise Capital Requirements
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This comment addresses aspects of the proposed rule that were not covered in our previous two letters. Our first letter (July 9, 2018) concerned the treatment of risk transfer. We argued that credit risk transfer (CRT), while providing a reduction in risk, is not equity. Capital relief is appropriate for CRT and should be available to all regulated financial institutions, but the method chosen by FHFA is too generous for low attachment points and not generous enough for higher attachment points.

Our second letter (October 18, 2018) addressed the pro-cyclicality of the Proposed Rule, which is created primarily by linking the capital charge for single-family mortgages to the current loan-to-value (LTV) ratio of the loans rather than to the original LTV. Specific countercyclical measures in both the rule and the management of the enterprises are necessary to counteract the pro-cyclicality of the rule.

In this third and final letter, we address other specific areas of the rule, such as the computation of single-family credit risk and the relationship between sources of risk and capital, and we provide some overall comments on what the rule does not cover. We conclude with a comment on the potential use of a computed capital shortfall to determine a commitment fee for the enterprises under the Preferred Stock Purchase Agreement (PSPA). The topics for this comment include the following:

1. Single-family Credit Risk
2. Geography
3. Mortgage Insurance
4. Market Risk

5. Leverage Capital
6. Capital Definition
7. Mission Risk
8. PSPA

SINGLE-FAMILY CREDIT RISK

Overall we find that the risk weight tables for single-family credit risk are reasonable and broadly consistent with the results of the AD&Co LoanDynamics Model for similar stresses, that is, a decline in a national measure of home prices by 25%. We note that the capital charge for the GSEs book of business is 273bp, which is well below the 4 to 5% capital charge provided for by Basel II under the standardized approach. Banks that can use internal models may have lower capital charges. However, as pointed out in our second letter, the capital charges for the assets held by the enterprises may rise significantly in a declining home-price environment.

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We also find that multipliers for the risk parameters we explored appeared to be reasonable when viewed individually. However, it is generally not appropriate to treat all adjustments as strictly multiplicative when combined, so it is likely that some combination of effects might overstate or understate losses using this method.

For this reason, and more generally, we believe it is essential that as part of the adoption of the rule, FHFA also establish a process to assess the various tables, multipliers and methodologies used in the rule on a predetermined schedule. We recommend that each numerical assumption in the rule, as well as each broad methodology, be reviewed and, if necessary, revised every five years. (We would recommend that the review be placed on a rotating schedule so that portions of the rule are under review each year.)

Experience shows that changes in mortgage products, market conditions and the availability of more data can lead to significant changes in the expected performance of mortgages. A regular timetable for assessing the quality of the assumptions and making revisions is essential for the long-term relevance of a risk-measurement process. Indeed it is clear that one of the major flaws of the prior stress-test regime under OFHEO was that models were not updated to reflect changing market conditions and products.

GEOGRAPHY

An example of an area that could be reviewed is geography. In our modeling we find a strong relationship between geography and credit risk from two sources: differences in local housing price dynamics and differences in default resolution timelines. Housing price dynamics differ from region to region in two ways: momentum in home price changes and differences in the volatility of home prices across markets. The effect of persistence is clear. If a region of the country is experiencing home-price declines, those declines are likely to continue for a few more years, as home prices are generally slow to adjust to changing economic fundamentals.

As for the relative volatility of home prices, one need only consider that default acts much like an option. The borrower can "put" the home to the lender if the value of the home falls below the amount of the mortgage. As with any option—even one that is not exercised efficiently or ruthlessly—the value of the option increases as the volatility of the underlying asset increases.

The value of this option also depends on the costs associated with resolving defaults. These expenses are strongly related to the time it takes to foreclose, which may be greater in judicial states than non-judicial states. Using AD&Co models, we replicated a stress scenario similar to the one described by FHFA in the proposed rule using a representative new loan with an 80% LTV and a 750 FICO. The computed credit risk capital varied greatly, with the highest risk states having more than triple the cost of the lowest cost states.

In our analysis, variations in HPI volatility reveal loans in CA, FL, NV and AZ to be riskier than average, while TX is among the least risky states. Extended resolution timelines raise costs in NY, NJ and other Northeastern states. From a policy perspective, FHFA may have chosen not to differentiate price and capital by geography, perhaps assuming that the enterprises would maintain geographically diverse portfolios. This would clearly be a limitation if there were new entrants which had different geographic diversification. Even with nationally diversified portfolios, GSE average credit pricing should reflect the full variation of these geographic factors. We find that a nationally diversified portfolio has greater risk than a portfolio of loans evaluated based upon the national average home price.

MORTGAGE INSURANCE

Based on our modeling it appears that for the most part the initial credit given to mortgage insurance (without counterparty haircuts) in the proposed rule is about equal to the benefit that mortgage insurance (without recision) would have provided in a benign environment. However, in the stress scenario described, our models show lower effectiveness for mortgage insurance (MI). In the table below, the base case represents non-stressed home prices, the stress scenario is similar to housing crisis levels of decline, and the severe stress scenario roughly matches what we believe to be the FHFA stress used to compute the single-family credit losses for the proposed rule.

	LTV Range	*81-85*	*86-90*	*91-95*	*96-97*
	Coverage	12	25	30	35
FHFA	Multiplier	86.7	55.1	41.2	32.2
AD&Co Model	Base Case	88.5	57.5	40.9	30.9
	Stress	91.9	66.5	52.1	42.4
	Severe Stress	94.2	73.7	61.8	53.3

We believe that the capital reduction for MI may be overstated somewhat, because severities may rise in the severe stress case, and average realized mortgage insurance coverage is always somewhat less than the stated coverage percentage due to the loan-by-loan nature of the MI contract. The automatic cancellation feature of MI at 78% LTV also reduces the effectiveness of MI, especially over longer time horizons.

MARKET RISK

Prior to the financial crisis, the enterprises retained large portfolios and bore a significant degree of market risk. This risk arose from potential mismatches between the mortgage and other assets held on balance sheet and the liabilities and swaps used to fund and hedge those assets. Market risk has several components: duration, convexity, prepayment, and spreads, but the current capital proposal addresses only one of them—spread risk. While current GSE operations may have reduced exposure to other market risks, not all risks have been eliminated. If this capital rule is used post conservatorship, there may be greater chance that the enterprises will increase their exposure to market risk.

We would recommend that at a minimum, the capital rule provide a backup method of computing and tracking total market risk, and either require that the GSEs not exceed a certain threshold or impose an additional capital charge for increased market risk.

LEVERAGE CAPITAL

The proposed capital rule offers two alternatives for leverage capital, bifurcated and combined. While recognizing that there is a trade-off between the approaches, we recommend using the bifurcated alternative because it aligns better with risk. The higher leverage capital requirement on non-trust assets partially offsets the incomplete measure of interest-rate risk and prepayment-risk in the proposed rule, as we describe above. The higher capital requirement is also more consistent with the treatment of those assets by bank regulators.

The greater alignment of the bifurcated approach has a downside in that it is less likely to be binding and might encourage activities that have a low capital charge but still bear other hidden risks. By contrast, a binding leverage requirement might encourage desired cross-subsidization and additional prudent risk taking.

On balance, we support the bifurcated approach, provided that the FHFA addresses the pro-cyclicality (discussed in our prior letter) and other capital reducing but risk-increasing strategies that the enterprises might choose to employ.

DEFINITION OF CAPITAL/PRESENTATION OF RESULTS

Assessing capital adequacy of the enterprises is complicated by the requirement that FHFA use a congressionally mandated definition of capital and by the presence of offsetting transactions, such as MI and CRT, which reduce the risk of the enterprises. We recommend that FHFA address these definitional issues and adopt a different approach for categorizing capital adequacy.

Our approach would address the capital requirement in two parts as in the table below. The first column would be the capital charges associated with the sources of risk, including any adjustment for pro-cyclicality, and the second column would be the capital benefit of the sources of support, including equity.

The sources of risk column would show the full loss (excess and expected) for each asset type, the additional operations and on-going concern charges, and any other capital charges. The full loss would not be offset by either mortgage insurance, credit risk transfer or other reductions.

The second column would be the sources to bear risk, including mortgage insurance, credit risk transfer and capital. Any offsetting adjustment to the countercyclical buffer would also be shown in this column. The difference between the capital benefits associated with the sources of support and the capital charges associated with sources of risk would be the capital surplus if positive, and the capital shortfall if negative.

Sample Capital Analysis (pro-forma, not intended to reflect actual values)

Sources of Risk		Sources of Support	
Credit Risk (gross)	134.1	Mortgage Insurance	22.1
Expected Loss (reserves)	12.5	Credit Risk Transfer	21.5
Market Risk	19.4	G-fee Income	42.3
Going Concern Buffer	39.9	Equity	5.4
Operational Risk	4.3	DTA (offset)	(26.8)
Total	**201.2**	**Total**	**64.5**
Countercyclical Buffer	35.2	Countercyclical Buffer	(9.3)
Total	**245.4**	**Total**	**42.7**
Capital Surplus (Shortfall)			**(190.2)**

In our analysis we adjust the sources of support for components of equity (as required by statute and GAAP) which would not be available to cover the sources of risk. Generally these items are not included in Tier I capital or are limited in their inclusion in Tier I capital. The proposed rule makes an adjustment for Deferred Tax Assets, but it does not make an adjustment for loan loss reserves. As loan loss reserves are included in the definition of capital, expected losses need to be included as a source of risk.

On the other hand, the rule does not provide any benefit for likely future income for guarantee fees, which could certainly offset future losses. Perhaps FHFA believed that g-fee income was an offset for loan loss reserves and so both could be excluded. We would prefer to directly include guarantee fees as a source of support, with appropriately conservative assumptions on prepayment rates, discounting and haircuts. Future payments to CRT counterparties would also be deducted from this calculation.

While the results above are roughly based upon the reported numbers in the proposed rule, the numbers in shaded blue boxes are approximations and are not intended to reflect actual values. The purpose of the table is only to show a possible presentation of the data.

The benefit of this approach is that that it would clearly show the total amount of risk passing through the enterprises and how that risk has been distributed. Furthermore, in the current approach, netting mortgage insurance from mortgage credit risk hides the amount of risk that is borne by the MI industry. We also believe that showing DTA as a reduction in the sources of support provides greater clarity as to the sources of support.

AREAS NOT ADDRESSED BY THE PROPOSED RULE

A capital rule is only one dimension of a regulatory structure. By itself, the capital rule cannot ensure safe and sound operation by the enterprises. While the rule is fairly comprehensive in addressing credit risk based on the current operations of the enterprises, it is somewhat sparse in dealing with deviations from these practices. In addition to market risk, as we described above, the rule also provides little guidance in how FHFA would address changes in underwriting practices or risk-sharing deal structures, both of which could significantly increase the risk of the enterprises but might not be captured by the proposed rule.

In addition, the enterprises have a public mission which may not be directly related to the capital rule, but fulfilling that mission may increase risk and capital charges. Therefore, mission, risk and capital must be evaluated in concert to avoid repeating the problems that led to failure of the GSEs. Such issues include: using cross subsidization to make homes more affordable for target populations; providing access to borrowers across the country and in underserved and risky markets; providing an outlet for loans for a wide range of mortgage originators; providing stability to the capital markets; and aligning interests between parties throughout the mortgage chain. FHFA should consider mechanisms to measure outcomes in these dimensions and find an appropriate way to balance these goals with capital efficiency.

CAPITAL AND THE PSPA

Under the PSPA, Treasury can be compensated for the advances it has made to the enterprises in the form of Preferred Stock through dividends or through a commitment fee for future potential advances. To date, the compensation for Treasury's support has been through dividends, which are a sweep of all excess retained earnings. With the proposal of a capital rule for the enterprises, it would be possible to restructure the payments using a commitment fee rather than a sweep.

The commitment fee amount could be set to 10% (or another rate) of the capital shortfall computed under the proposed rule. For example, with a current shortfall of approximately $200 billion, the commitment fee would be $20 billion, which is close to the current combined annual earnings of the enterprises.

The enterprises would pay up to that amount on a non-cumulative basis to Treasury. The dividend amount could be reduced back to a specific percentage of the outstanding balance, or even better, the outstanding balance of the preferred stock could be reduced by categorizing prior payments in excess of the original dividend rate of 10% as repayments.

Adopting such a structure offers a way to evaluate alternatives that would provide additional capital relief and a possible path to recapitalizing the enterprises, either under the current rules or under revised rules adopted by Congress.

CONCLUSION

As we stated in our first comment letter, the proposed capital rule is a major step forward for the housing finance system. As the enterprises are central players in the housing-finance system, a transparent and reasonable framework for evaluating the risk and returns to the enterprises is essential to the overall performance of the system. While we have proposed a number of revisions to the proposed rule, we believe the proposal provides an excellent basis for discussions of the enterprise risk during conservatorship and establishes a solid foundation for future housing finance reform.