Looming Risk for Mortgage Credit and MBS Investors from "Lender Choice"?

Dr. Clifford Rossi

EXECUTIVE SUMMARY

The FHFA's announcement allowing lenders to select between Classic FICO® and Vantage Score 4.0 in determining which credit score to send to Fannie Mae or Freddie Mac in their automated underwriting systems (AUS) has profound implications for credit risk to the GSEs as well as MBS and credit risk transfer security (CRT) investors and mortgage insurers. Giving lenders the option to choose between two credit scores to deliver to the GSEs for underwriting opens the door to a form of adverse selection that will lead to higher credit risk for Fannie and Freddie and will negatively impact borrowers. Consumers already facing significant housing affordability headwinds will be further burdened by higher MI premiums and mortgage rates because of the "lender choice" policy.

For decades both GSEs maintained minimum credit score requirements for their AUS as an important and effective credit screening mechanism to guard against potential errors the underlying credit scoring models might make on borrowers with credit scores below 620 that were not well represented in the historical data on which those models were built. Removing the minimum credit score requirements amplifies the potential for adverse selection to the GSEs under the "lender choice" policy. This white paper quantifies how lender adverse selection would affect GSE credit risk exposure under several scenarios of the "lender choice" policy. Specifically, it shows that the GSEs would potentially face significant credit losses under a scenario where all lenders engage in adverse selection.

It is impossible to predict the degree to which adverse selection will manifest, however, any adverse selection will lead to higher credit losses for the GSEs, more uncertainty for MBS and CRT investors and ultimately higher costs for consumers. Therefore, the FHFA should immediately suspend "lender choice" until a comprehensive vetting of potential adverse selection to credit and MBS investors and consumers has been conducted.

Chesapeake Risk Advisors, LLC

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Overview

Determining the creditworthiness of a borrower for a mortgage loan is one of the key pillars of underwriting along with collateral value and the ability to repay the obligation.[1] Doing so protects credit investors as well as mitigates the tragic personal and financial consequences from a default event for borrowers. For decades, both Fannie Mae and Freddie Mac (i.e., the GSEs) have relied on one credit score (FICO[2]) to assess creditworthiness. The Federal Housing Finance Agency's (FHFA) policy allowing lenders to choose ("lender choice") between Classic FICO and VantageScore 4.0 in determining which credit score to send to the GSEs represents a major break from longstanding credit policy that has significant implications for credit and MBS investors.[3] Given the importance of this policy, FHFA should request that both GSEs provide a comprehensive assessment of the risks posed by such changes to their automated underwriting systems.

This white paper provides strong empirical evidence that absent the imposition of comprehensive screening controls in GSE underwriting systems, the FHFA's "lender choice" policy allowing lenders to select between credit scores to send to the GSEs has the potential to impose higher credit losses onto Fannie Mae and Freddie Mac as well as adversely impact MBS and credit risk transfer (CRT) pricing in the mortgage secondary market. Such effects would increase the cost of homeownership for borrowers by raising guarantee fees, mortgage insurance (MI) premiums and mortgage rates at a time when homeowners are already reeling from a housing affordability crisis. This policy change is exacerbated by the elimination of minimum FICO scores, another longstanding credit policy for

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[1] Together creditworthiness, collateral value and capacity (ability-to-pay) form the commonly known 3Cs of mortgage underwriting.
[2] Classic FICO is a reference to FICO® Score 2, FICO® Score 4, and FICO® Score 5.
[3] FHFA, https://www.fhfa.gov/policy/credit-scores.

the GSEs.[4] It is highly recommended that the FHFA suspend the "lender choice" policy until the full ramifications on credit and MBS investors are understood.

When Fannie Mae and Freddie Mac rolled out the use of FICO scores in their automated underwriting systems (AUS) in 1996, it revolutionized the mortgage underwriting process by enabling lenders to obtain in real time an underwriting decision on single family mortgages that would be purchased by the two housing GSEs. FICO scores were determined to significantly improve the ability of credit models to distinguish between defaulted and non-defaulted loans above and beyond other known risk factors such as loan-to-value (LTV) and debt-to-income (DTI) ratios, among others. Since then, FICO scores have become nearly ubiquitous at all phases of the mortgage lending process including origination, loan loss provisioning, loss forecasting, guarantee fee pricing and determination of MBS and CRT pricing.[5]

In recent years, the three credit repositories, Experian, Equifax and TransUnion introduced a competitor credit score to FICO called VantageScore 4.0. VantageScore 4.0 along with Classic FICO and FICO 10T has been reviewed and validated by the GSEs and their regulator, the Federal Housing Finance Agency (FHFA) and found to be effective in assessing credit risk and approved for use in the underwriting processes at both Fannie Mae and Freddie Mac in July 2025, most notably as part of their AUS'.[6] FHFA now permits lenders to select between the current version of FICO employed by the GSEs, referred to as Classic FICO and VantageScore 4.0.[7]

According to the FHFA, the central objective of the "lender choice" policy is to lower borrower closing costs through competition between the two scores. While the intent of the policy is

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[4] Fannie Mae announced in November 2025 the decision to eliminate the minimum credit score requirement for automated underwriting though for manual underwriting, which represents a small share of loans sold to Fannie Mae, the minimum credit score requirement still exists. Earlier, Freddie Mac dropped its minimum credit score for its AUS platform. National Association of Mortgage Underwriters, Fannie Mae Drops Minimum FICO Score Requirements, Reshaping Credit Standard, November 11, 2025.

[5] FICO scores are an important risk factor in determining whether a borrower will prepay (refinance) their mortgage. Assessing the level of prepayments in a pool of mortgages underlying an MBS instrument is crucial to determining the yield and investor must receive to absorb that risk. This spread over a benchmark rate such as the 10-year US Treasury rate is called the option-adjusted spread, or OAS.

[6] FHFA, https://www.fhfa.gov/news/news-release/fhfa-announces-validation-of-fico-10t-and-vantagescore-4.0-for-use-by-fannie-mae-and-freddie-mac and https://www.fhfa.gov/news/news-release/fhfa-announces-validation-of-classic-fico-for-use-by-fannie-mae-and-freddie-mac.

[7] An updated version of FICO, FICO 10T has also been approved for use but is not yet deployed by the GSEs.

laudable, it poses additional risk to credit and MBS investors that on balance could eventually be reflected in higher mortgage rates for borrowers.

The financial performance of the mortgage banking business model depends on the success of the firm's underwriting process to close loans. Loans that do not close provide no income to the originator while incurring costs to the company. Given the relatively thin margins of mortgage banking, lenders are incented to get as many loans approved as possible while also balancing their repurchase risk.[8] The potential for adverse selection in the mortgage origination process has always existed as a result. Adverse selection in the case of the GSE-eligible mortgage origination process refers to situations where originators possess more knowledge about the credit risk of a borrower than Fannie Mae or Freddie Mac and are incented to sell mortgages with higher risk borrower characteristics to the GSEs under their established underwriting criteria.[9]

Concerns about potential adverse selection have been raised over the "lender choice" policy from sources such as the Urban Institute.[10] A growing body of literature has explored the nature of adverse selection in mortgage securitization and substantial empirical evidence shows that lenders will engage in such actions to their advantage.[11] Specifically, in the case of "lender choice" a lender could use publicly available credit performance information provided by both GSEs to assess the expected credit risk from a borrower by using Classic FICO or VantageScore 4.0. More sophisticated lenders would be able to build and use separate statistical models predicting each borrower's expected default rate (EDR) using Classic FICO and VantageScore 4.0 along with other borrower, loan and property-related risk factors. While the two scores may each effectively rank order credit risk, there may be differences in their prediction of EDR in an analysis combined with other risk attributes that poses higher credit losses to credit investors. Lenders would be incented to send to the GSEs the credit score that generates the lowest EDR for a borrower according to their models. However, such a strategy would lead to higher actual default rates compared to a strategy where the lender randomly selects between the two model EDRs. Credit investors include not just

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[8] Mortgage Bankers Association, https://www.mba.org/news-and-research/newsroom/news/2025/11/18/imbs-report-production-profits-in-third-quarter-of-2025.

[9] The adverse selection concept in the lender choice context assumes that an information asymmetry exists between lender (more information) and GSE (less information) leading to higher risk concentrations for the GSE than would otherwise be the case.

[10] Laurie Goodman, Jung Hyun Choi and Todd Hill, Considerations for Implementing New Credit Scores in Mortgage Lending, Urban Wire, Urban Institute, August 18, 2025.

[11] Sumit Agarwal, Yan Chang and Abdullah Yavas, Adverse selection in mortgage securitization, Journal of Financial Economics, Vol. 105, Issue 3, September 2012, pp.640-660.

the GSEs, but also other market participants such as private mortgage insurance companies (PMIs) and CRT investors. A study by Milliman, for example, of the "lender choice" policy showed that a process whereby lenders select the highest credit score results in significantly higher default rates across credit score categories than using either Classic FICO or VantageScore 4.0. [12]

To be clear, some degree of information asymmetry underlies the classic economic definition of adverse selection and at first glance it may appear that no such information asymmetry exists in this case since the GSEs possess the same underwriting information as lenders. The opportunity to select between credit scores, however, introduces the potential for lenders to search for combinations of risk factors that may seemingly reduce the apparent risk of using the highest score when sold to the GSE while fully meeting their underwriting criteria and hence maximizing the loan's approval despite the potential for higher actual credit risk to the credit investor. Such latent factors might arise in the form of interaction effects between other risk factors such as LTV and DTI ratios, among others with Classic FICO and VantageScore 4.0. Without further testing and analysis, it is unknown to what extent such effects exist or how they might manifest in terms of the "lender choice" policy. Moreover, the advent of such techniques as machine learning that can more easily identify subtle patterns in the data among risk factors better than standard statistical models used in mortgage underwriting are available to originators today.

The "lender choice" policy fosters an environment for well-informed lenders to game the process on an ongoing basis by virtue of granting them the option to choose between credit scores. Even if there was a way to prohibit lenders from gaming in practice, it would simply push the gaming upstream to others, such as brokers, real estate agents, and borrowers themselves. As part of this gaming, applicants will likely be advised to "shop" for the higher score from multiple lenders or discover their higher score from other sources and then be directed to lenders utilizing the higher score. For these reasons FHFA should suspend the "lender choice" policy until a full vetting of the potential for adverse selection has been conducted and appropriate risk mitigation controls have been identified.

Compounding the potential risk from the "lender choice" policy is the recent elimination of minimum credit scores used by both GSEs in their underwriting processes. Both Freddie Mac and Fannie Mae for decades set a minimum FICO score for submission through their AUS systems. These minimum scores acted as overrides to the AUS scorecard. Since the historical data is quite limited in terms of performance of borrowers with FICO scores less than 620 (see box on Page 6), the rationale for a minimum FICO was to provide an additional control on an area where the underwriting scorecards might be inherently weaker due to limited performance experience on these loans.

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[12] Jonathan Glowacki, Ryan Huff, and Brett Ludden, "Lender Choice" introduces a bias to default rates for mortgage underwriting," Milliman, October 2025.

In 2025, Fannie Mae announced that they were eliminating the use of minimum credit scores for their AUS. Ostensibly the move provides greater access to mortgage credit for borrowers by taking a more comprehensive view of borrower credit risk in the underwriting scorecard. With the advent of changes in the credit information used to establish credit scores such as greater use of nontraditional credit, an argument supporting elimination of the minimum FICO requirement is that a minimum credit score is no longer essential when taking a broader view of a borrower's credit risk profile into account. While considerable analysis by the GSEs was conducted to understand the performance of borrowers with nontraditional credit in their evaluation of VantageScore 4.0 and FICO 10T, relaxing the minimum credit score requirement at a time when "lender choice" is in place amplifies the potential for greater credit risk exposure for the GSEs. In recent years, reflective of a relatively benign credit environment, relaxation of credit policy might appear to have minimal impact on credit performance, however, as conditions change a very different outcome can manifest. Currently, serious delinquency rates (SDQ) (90+ days past due or worse) for the GSEs are at historically low levels. Third quarter 2025 combined SDQ rates were 1.05% for Fannie Mae and Freddie Mac, the lowest level over the period from 2016 to the present.[13]

There is a natural tendency for credit policy expansion during periods of strong economic performance. An extreme version of this was observed during the boom period preceding the 2008 GFC. Relaxation of credit policy during a benign economic period has a muted effect on credit risk as favorable economic conditions (e.g., rising home prices, lower unemployment rates) tend to mask underlying credit risk issues, however it eventually results in significantly higher credit risk when the economy softens or worse.[14] While elimination of the minimum credit score for automated underwriting and the implementation of the "lender choice" policy cannot be equated to the deficient mortgage underwriting practices in place before the 2008 crisis, the FHFA would be well served to

FICO and VantageScore Distributions (2013-14)

Data from 2013-14 originations purchased by both GSEs clearly show the historical performance on which credit underwriting decisions are made do not have sufficient observations on credit scores below 620 to assess the tradeoffs needed from other risk factors such as LTV and DTI to offset higher credit risk from <620 FICOs

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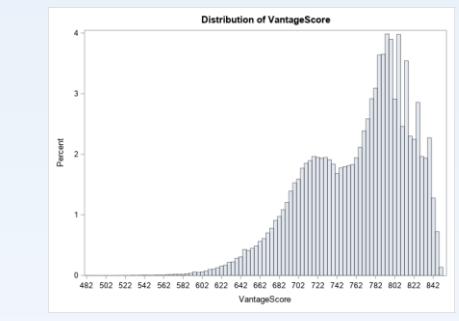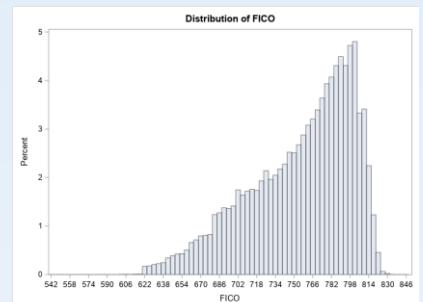
[13] Mortgage Bankers Association, Mortgage Delinquencies Increase in the Third Quarter of 2025, November 14, 2025.
[14] Clifford. V. Rossi, Mortgage Bankers Association, Research Institute for Housing America, Managing Mortgage Product Development Risk, August 2017.

conduct further analysis, including stress testing of the impact of "lender choice" and elimination of minimum FICO score policies on GSE credit risk and capital adequacy as well as impacts to the secondary mortgage market.

Adverse Selection Analysis & Methodology

To better understand the implications of the "lender choice" policy, a statistical analysis comparable to what a well-informed and analytically oriented lender might perform was conducted. Central to the analysis are four multivariate statistical models of mortgage default and prepayment.[15] Separate default and prepayment models are estimated that include Classic FICO and VantageScore 4.0 in conjunction with other borrower, loan, and property risk factors typical of such analytical mortgage models. The rationale for this multivariate modeling approach is to recognize that credit decisions by the GSEs take a number of risk factors into account in addition to credit score and these factors interact with each other allowing for tradeoffs in risk between factors. For example, a lower FICO could be offset with a lower LTV given a credit policy cutoff and still be an acceptable credit risk, all things considered. LTV in this case would be an example of a compensating risk factor.   Therefore, if lenders are considering which credit score to use, having an analytical view of the loan's expected default rate considering credit scores and other credit risk attributes known to explain mortgage default would provide a more comprehensive view of the loan's risk consistent with how credit investors also assess that risk. For this analysis, mortgage default is defined as a loan that has ever become 90 days delinquent or worse in its life. A prepaid loan is defined as any type of mortgage refinance or early payoff undertaken by the borrower in the loan's life.

Each model was trained on a large publicly available loan level GSE dataset (approximately 200,000 loans purchased by both GSEs between 2013 and 2014).[16] The performance window was from the time of origination for these loans through the end of 2019 so as to avoid any potential influence of the Covid-19 period that was marked by extranormal SDQ rates (about 4 times Q325 SDQ rates for the GSEs) as well as significant loss mitigation efforts in place at that time.[17] Each loan had at least 5-6 years' worth of seasoning.

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[15] Default and prepayment emulators of GSE loan performance are a commonly used practice leveraging the publicly available GSE credit performance data.
[16] Data was obtained from Fannie Mae's Single-Family Loan Performance data, Freddie Mac's Single-Family Loan-Level Dataset, and Fannie Mae and Freddie Mac Historical Credit Score Files. A random sample of loans was taken from both GSEs' credit performance datasets and merged with the historical credit score files by loan id to provide both Classic FICO and VantageScore 4.0 for each sampled loan.
[17] Mortgage Bankers Association, Mortgage Delinquencies Increase in the Third Quarter of 2025.

All default and prepayment models were estimated using logistic regression, a well-established statistical methodology for credit scoring due to the binary nature of the event types of interest (Default/No Default, Prepayment/No Prepayment). Lenders understand both GSEs use similar techniques in developing their AUS scorecards and so to more accurately reflect the risk of each loan, a similar approach is applied in this analysis. The models incorporated a number of risk factors commonly associated with mortgage default and prepayment. A list of these variables is presented in Table 1 of the Technical Appendix.

To gain a better perspective on the differences in actual default performance from models with FICO and VantageScore 4.0, Figure 1 presents actual default rates by estimated default rate decile for each of the models. Both default scoring models show a nearly complete overlap in terms of actual D90+ rates, and monotonically increasing D90+ rates, illustrative of their relatively high discriminatory power and rank ordering of default risk. Despite the high degree of discriminatory power of the models there may be substantial differences in how credit score selection impacts the level of credit risk.

Figure 1: Actual D90+ Rates by Default Score Decile
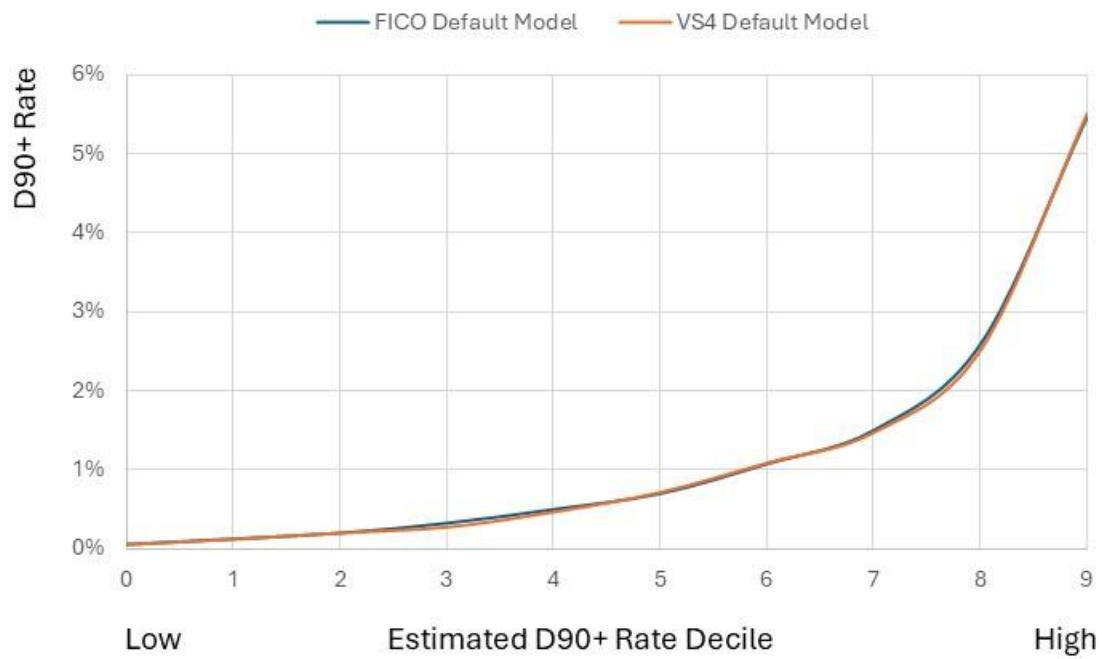
Once these models were estimated and validated, an estimate of each loan's expected default rate (EDR) and prepayment rate was computed, i.e., two EDR rates and two prepayment rates for each

of the credit scores.[18] These estimated default and prepayment rates were used to assess the impact of 4 adverse selection scenarios compared to a baseline scenario of random EDR and credit score selection. Specific descriptions of these scenarios are as follows:

- Baseline – 100% random selection of EDR and hence selection between Classic FICO and VantageScore 4.0
- Scenario 1 (100% Adverse Selection) – Lenders always select credit score generating the lowest EDR (higher of the two credit scores)
- Scenario 2 (75% Adverse Selection) – 75% of lenders select lowest EDR (higher of the two credit scores)/25% random EDR and score selection
- Scenario 3 (50% Adverse Selection) – 50% of lenders select lowest EDR (higher of the two credit scores)/50% random EDR and score selection
- Scenario 4 (25% Adverse Selection) – 25% of lenders select lowest EDR (higher of the two credit scores)/75% random EDR and score selection

EDRs for each loan in the sample were generated from both models and the credit scores selected according to the baseline and adverse selection scenarios noted above. To assess differences in credit risk between an adverse selection scenario and the baseline random selection scenario, actual D90+ rates for current LLPA credit score categories were compared. Credit losses were then calculated for adverse and random selection scenarios based on historical D90+, severity and lifetime transition rates from D90+ to default events.

Scenario Analysis

It remains unknown the degree to which lenders would engage in adverse selection under the "lender choice" policy. The expectation as mentioned earlier is that the policy promotes adverse selection and the uncertainty around how the policy will be implemented by lenders leads to misalignment of underwriting and pricing models that could undermine safety and soundness, at least in the short run. To frame the scenario analysis, the actual 90DPD+ rates for each "lender choice" scenario by credit score category are shown in Figure 2.

What immediately stands out is the worst case, 100% adverse selection scenario yields actual 90DPD+ rates that are significantly higher than the baseline random selection scenario across all credit score categories.   The table inset of Figure 2 confirms the percentage change in D90+ rates between the two scenarios. Both GSEs would be assumed over some time period to implement changes in their screening controls in their AUS, however, as mentioned earlier lenders will continue to assess how changes in credit scores interact with other risk factors that would allow

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[18] It should be noted that the estimated default and prepayment rates are not lifetime rates but rates comparable to the seasoning period in aggregate for the loans as described above.

them to sell loans that give them the best chance of loan acceptance by the GSEs when in fact the loans pose a greater credit risk to the GSEs.

Figure 2: Actual 90+ Rates Across Lender Choice Scenarios by Credit Score Category

Credit Score Category	%Δ Adverse & Random Selection
300-640	31.9%
640-660	56.6%
660-680	29.6%
680-700	42.9%
700-720	42.7%
720-740	41.5%
740-760	23.0%
760-780	36.4%
780-850	11.4%

To gain a better sense of the potential impact the 100 percent adverse selection scenario might have on the GSEs, a sensitivity analysis was conducted to translate these results into incremental loss rates from the "lender choice" strategy. On a weighted average basis of loans across all credit score categories for the 2013-14 sample, the 100% adverse selection scenario would raise D90+ rates by .44% over the random score selection scenario (Figure 3). Relative to the average cumulative D90+ rate on Fannie Mae 2013-14 vintages of 2.5%, the 100% adverse selection scenario could raise D90+ rates by about 18%.[19]

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[19] Fannie Mae Data Dynamics, Performance Curves.

Figure 3: 2013-14 Originations D90+ Rates (%) – Random vs. Adverse Selection
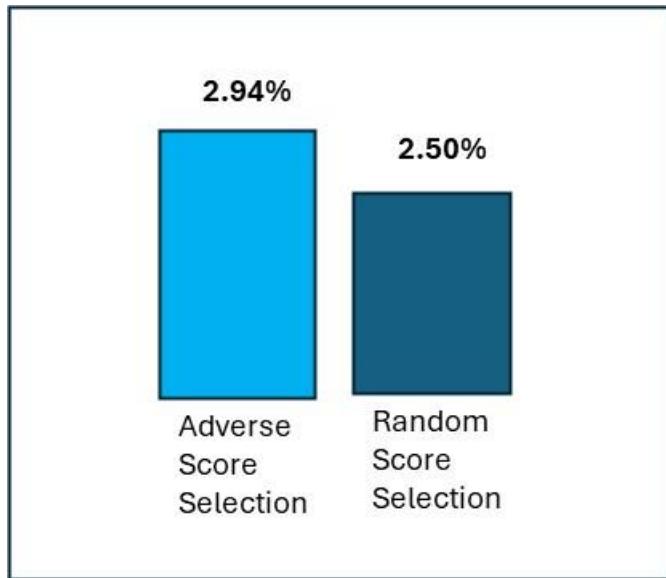
To understand potential impacts on loss rates, that incremental D90+ rate was applied to different loss severity and D90+ to default transition rates.[20] Data from Fannie Mae's Data Dynamics tool was used to establish 3 severity and 3 transition rates. For this analysis severity rates of 15% (comparable to the 17% historical severity rates on defaulted 2013-14 vintages, 25% (the average severity rate across 2004-2020 vintages) and 50% (slightly higher than the highest vintage severity rate of 2006) to provide a reasonable range of severities reflecting different economic environments. Transition rates of 5% (comparable to the average transition rate for 2013-14 vintages of 6.4%, 20% (close to the average transition rate over the 2004-2020 vintages) and 55% (reflecting the peak transition rate (2006) across 2004-2020 vintages were selected.

Table 1 displays the range of potential incremental loss rates attributed to the 100% adverse selection scenario.

Table 1: 100% Adverse Selection Scenario Incremental Loss Rate Sensitivity Analysis

	Loss Severity Rate		
D90+ to Default Transition Rate	15%	25%	50%
5%	.0033%	.0055%	.0110%
20%	.0132%	.0219%	.0439%
55%	.0362%	.0604%	.1207%

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[20] Not all D90+ loans will ultimately transition to default in their lives as some loans will cure, hence the need to apply a transition rate to the D90+ rate to approximate the eventual default rate.

For an average scenario (20% transition/25% loss severity), incremental credit losses could be .02% higher under the 100% adverse selection scenario over random selection. Keep in mind that the average loss rate for the 2013-14 vintages for Fannie Mae was .0293%, a period of strong underwriting and performance. The impact would likely be higher under circumstances where credit policy was more relaxed. Another way to look at the impacts of the 100% adverse selection scenario on credit risk is by estimating the incremental credit losses in dollar terms relative to a more recent book of business. For example, 2024 total Single-Family loan acquisitions were $650 billion.[21] Applying the range of transition and loss severity rates in Table 1 to the incremental D90+ rate of 44bps under the 100% adverse selection scenario results in the values shown in Table 2. For example, for the average loss scenario referenced above, incremental losses for a portfolio as large as 2024 could result in losses of about $140 million.

Table 2: Estimated Incremental Credit Losses on 2024 Single-Family Acquisitions

		Loss Severity Rate	
D90+ to Default Transition Rate	15%	25%	50%
5%	$21,397,102	$35,661,836	$71,323,673
20%	$85,588,407	$142,647,345	$285,294,691
55%	$235,368,120	$392,280,200	$784,560,399

Alternatively, Table 3 presents incremental losses from the 100% adverse selection scenario relative to an actual average loss rate of .0293% for the 2013-14 vintages. Once again, under an average transition and loss severity scenario, incremental losses under the 100% adverse selection vs the random selection scenario would be about 75% higher than 2013-14 vintage losses.

Table 3: 100% Adverse Selection Scenario Incremental Losses as a percentage of 2013-14 Average Losses

		Loss Severity Rate	
D90+ to Default Transition Rate	15%	25%	50%
5%	11.2%	18.7%	37.5%
20%	44.9%	74.9%	149.8%
55%	123.6%	205.0%	412.0%

A primary takeaway from these results is that it provides empirical confirmation that a worst-case adverse selection strategy would pose significant losses on the GSEs without a screening

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[21] FHFA Fannie Mae and Freddie Mac Single-Family Guarantee Fees in 2024, December 2025.

mechanism in place to control this risk. And while such controls would eventually mitigate these losses, the above results strongly suggest that the FHFA suspend the "lender choice" policy and reevaluate the elimination of the minimum FICO requirement until a comprehensive analysis of potential adverse impacts from these policies is fully understood.

A few additional considerations from this analysis are worth pointing out the conservative nature of the loss estimates presented in this analysis. First, the loss estimates are not reflective of lifetime credit losses. As a result, the estimated losses are likely to be underestimated. Also, the analysis does not account for the impact of elimination of the minimum FICO score requirement which could further amplify credit losses from potential underwriting model errors. Finally, the underlying sample drawn from 2013-14 originations represents a period of strong underwriting and loan performance.

Another factor to consider is that removal of the minimum FICO requirement and implementation of the "lender choice" policy together could introduce important changes in borrower behavior that may not be fully understood from models developed from the historical data where FICO floors and a FICO only credit scoring policy were in place. Specifically, with limited performance experience on borrowers with credit scores below 620 and exacerbated by even greater limitations on how borrowers with VantageScores below 620 perform on GSE loans, the FHFA is placing a risky bet that the GSE AUS systems will be able to effectively screen against potential adverse selection and borrowers with credit scores below levels historically considered to be unacceptable risks to the GSEs. The point from the above discussion is that adverse selection poses significant risk to credit investors and the lack of information about the impact of lender responses to both credit policy changes on credit investor risk exposure merits focused attention by the FHFA.

To this point the focus has been on the impact to the GSEs from potentially higher credit losses under the "lender choice" policy. The other area of investigation of this analysis was to understand what the policy may imply for MBS investors by way of changes in prepayment rates. The estimated prepayment rates for each score decile were applied in the baseline and 100 percent adverse selection scenario to generate the dollar amount of prepayments for each score decile. Those results are depicted in Figure 4. The principal takeaway from Figure 4 is that there does not seem to be an appreciable difference across score deciles in terms of the impact from a 100 percent adverse selection scenario as shown by the incremental prepayments between the scenarios. In other words, at least for voluntary prepayments a worst-case "lender choice" scenario would have negligible impact on MBS pricing. However, the full picture changes when taking into account both voluntary and involuntary (defaulted loans) prepayments.

Figure 4: Estimated Prepayments ($) Between the Baseline and 100% Adverse Selection Scenario
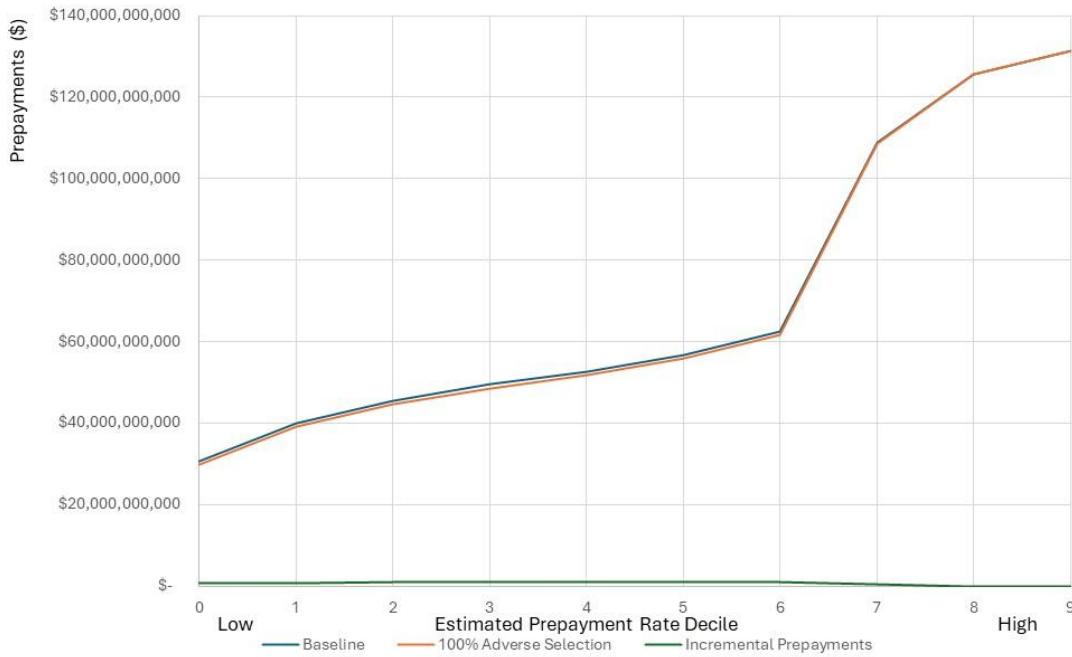
Based on the previous default analysis, the worst-case adverse selection scenario would be expected to result in higher credit risk than a random score selection scenario over time. That would otherwise suggest faster prepayment even assuming negligible difference between scenarios for voluntary prepayments due to the higher level of involuntary prepayments. The uncertainty among MBS investors as to the degree of adverse selection could affect mortgage pricing by building in a prepayment add-on in their option-adjusted spread (OAS) analysis that could lead to higher yields and lower MBS prices, again absent GSE actions to mitigate potential adverse selection effects.

Summary and Key Takeaways

Accurate mortgage credit evaluation has always depended on the integrity of the underlying data and understanding of associated borrower and lender behavior. For decades both GSEs have relied on FICO credit scores as a foundation for evaluating mortgage credit and as a result this score has become engrained in the entire mortgage credit process across the industry. The introduction of the "lender choice" policy has the potential to significantly disrupt the mortgage credit evaluation process in ways that are not well understood. Rolling out a policy that allows lenders to choose which credit score they send to the GSEs invites adverse selection and is compounded by the

elimination of minimum credit scores in AUS underwriting. Dropping the minimum credit score requirement puts increased pressure on GSE AUS systems to accurately evaluate borrowers that have credit histories that were previously considered unacceptable other than as exceptions to policy with appropriate compensating factors. This uncertainty over the extent of adverse selection and the timing and shape of controls to guard against that possibility poses risk to not only the GSEs but also private mortgage insurers and investors in CRTs. Such outcomes could adversely impact MBS and CRT pricing and markets. And those impacts have the potential to ripple across the industry and increase the cost of homeownership to borrowers via higher guarantee fees, MI premiums and mortgage rates.

Given the choice, a rational mortgage lender will select the credit score that has the highest potential for loan acceptance by the GSEs. This analysis provides empirical evidence that such a strategy would in aggregate lead to higher credit losses from loans being sold under the new policy. A worst-case adverse selection scenario was shown to lead to significantly higher expected credit losses than a baseline random score selection scenario. While it would be unlikely to expect such a scenario in the extreme, the negative impact of adverse selection is present at all levels, not just the worst-case scenario. The actual level of credit risk can and will be debated among industry analysts and policymakers, however, the reality is that the "lender choice" policy introduces a set of unknowns into the mix of credit and MBS pricing that warrant further assessment. Maintaining stability of the secondary mortgage market and ensuring the costs of homeownership are kept as low as possible is critical to ensuring the health of the housing finance system. To support that mission, the FHFA should immediately suspend the "lender choice" and reevaluate the elimination of minimum FICO score policies until a comprehensive vetting of potential adverse effects to credit and MBS investors has been conducted.

Technical Appendix

Table 1: Explanatory Variables Used in Default and Prepayment Models

Variable	Variable Inclusion Default	Prepayment	Variable Type	Variable Components	Model Specification
Credit Score (Classic FICO or VantageScore4.0)	X	X	Continuous		Spline
Combined Loan to Value Ratio	X	X	Continuous		Spline
Debt-to-Income Ratio	X	X	Continuous		Linear
Number of Borrowers	X	X	Discrete	1-4	Dummy
Loan Purpose	X	X	Discrete	Purchase, Rate & Term or Cashout Refinance	Dummy
Occupancy Status	X	X	Discrete	Primary, Investor, Second Home	Dummy
Property Type	X	X	Discrete	Single Family, Condo, PUD, Other	Dummy
Original Loan Balance	X	X	Continuous		Log
Channel	X	X	Discrete	Retail, Correspondent, Broker, Other	Dummy
Interest Rate	X		Continuous		Linear
Term	X	X	Discrete	<15, >15-30, Other	Dummy
Servicer		X	Discrete	Large or Small	Dummy
Refinance Incentive		X	Continuous		Linear
First Time Homebuyer		X	Discrete	FTHB/Other	Dummy
State		X	Discrete	California/Other	Dummy

Various specifications of these models were tested. Criteria for inclusion were consistency of signs of estimated coefficients with economic intuition and actual performance, statistical significance of estimated coefficients and overall discriminatory power of the models. Results for the default and prepayment models are shown in Tables 2 and 3. The results indicate that all 4 models are robust, showing significant effects for each of the selected variables and high levels of discriminatory power.

To capture inherent nonlinearity between key continuous variables (i.e., credit score and LTV) and event outcomes (i.e., default and prepayment), a commonly used technique, piecewise linear regression (splines) was applied to FICO, VantageScore and the LTV variables. Essentially this technique amounts to establishing splines, or line segments that are connected at specific points (e.g., 800 FICO knot point) for those variables that allow for varying slopes in the splines to reflect differences in how those variables impact default or prepayment. Both the default and prepayment models reflect different knot points for FICO and VantageScore 4.0 variables. For the default model, the knot points are higher for FICO (800) than VantageScore 4.0 (600).[22] These results reflect differences in the two models' assessment of borrower creditworthiness. A similar result for the prepayment models but with different knot points from the default model are found.

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[22] Multiple versions of the models were tested with different knot points as well as other combinations of explanatory variables, however, the models resulting in the best overall fit are reported in Tables 2 and 3.

Table 2: Default Model Results

Parameter	Estimate	Pr > ChiSq	Parameter	Estimate	Pr > ChiSq
Intercept	2.4397	0.0163	Intercept	9.2132	<.0001
VantageScore 4.0	-0.0108	<.0001	FICO	-0.0174	<.0001
VS Spline at 660	-0.00422	0.0090	FICO Spline at 800	0.0325	0.0031
CLTV	0.0104	<.0001	CLTV	0.0146	<.0001
CLTV Spline at 80%	0.0181	0.0001	CLTV Spline at 80%	0.0256	<.0001
DTI	0.0253	<.0001	DTI	0.0265	<.0001
Number of Borrowers	0.8676	<.0001	Number of Borrowers	0.7402	<.0001
Loan Purpose (Cashout/All Others)	0.3828	<.0001	Loan Purpose (Cashout/All Others)	0.402	<.0001
Occupancy Status (Primary/All Others)	0.2319	0.0040	Occupancy Status (Primary/All Others)	0.3041	0.0002
Property Type (Condo or PUD/All Others)	-0.4745	<.0001	Property Type (Condo or PUD/All Others)	-0.4333	<.0001
Unpaid Principal Balance at Default	-0.2525	<.0001	Unpaid Principal Balance at Default	-0.4074	<.0001
Channel (Correspondent/ All Others)	0.1289	0.0025	Channel (Correspondent/ All Others)	0.1578	0.0002
Original Note Rate	0.4512	<.0001	Original Note Rate	0.2638	<.0001
Term (<20 years/All Others)	0.142	0.0721	Term (<20 years/All Others)	-0.2094	0.0092
AUC	0.80			0.81	
KS	0.47			0.47	

Table 3: Prepayment Model Results

Parameter	Estimate	Pr > ChiSq	Parameter	Estimate	Pr > ChiSq
Intercept	-11.2125	<.0001	Intercept	-13.033	<.0001
State (CA/Other)	0.2189	<.0001	State (CA/Other)	0.217	<.0001
Servicer Type (Large/Small)	2.858	<.0001	Servicer Type (Large/Small)	2.863	<.0001
VantageScore 4.0	0.00658	<.0001	FICO	0.00895	<.0001
VS Spline at 660	-0.0072	<.0001	FICO Spline at 700	-0.011	<.0001
CLTV	-0.00601	<.0001	CLTV	-0.0056	<.0001
CLTV Spline at 50%	0.00936	<.0001	CLTV Spline at 50%	0.0084	<.0001
DTI	-0.00157	0.0123	DTI	-0.0019	0.0029
Loan Purpose (Cashout/All Others)	-0.0788	<.0001	Loan Purpose (Cashout/All Others)	-0.0868	<.0001
Occupancy Status (Investor/All Others)	-0.3999	<.0001	Occupancy Status (Investor/All Others)	-0.4213	<.0001
Number of Units (1/Other)	0.6167	<.0001	Number of Units (1/Other)	0.6213	<.0001
Unpaid Principal Balance at Prepayment	0.4552	<.0001	Unpaid Principal Balance at Prepayment	0.4473	<.0001
Channel (Correspondent/ All Others)	0.0995	<.0001	Channel (Correspondent/ All Others)	0.0987	<.0001
Refinance Incentive	2.9841	<.0001	Refinance Incentive	3.0664	<.0001
Term (<20 years/All Others)	0.4392	<.0001	Term (<20 years/All Others)	0.4567	<.0001
FirstTimeHomeBuyer (FTHB/Other)	0.1045	<.0001	FirstTimeHomeBuyer (FTHB/Other)	0.1053	<.0001
AUC	0.815		AUC	0.816	
KS	0.526		KS	0.527	