CFSi Center for Financial Services Innovation

March 1, 2018

Director Melvin Watt
Federal Housing Finance Agency (FHFA)
Office of Housing and Regulatory Policy
400 7th Street, SW, 9th Floor
Washington, DC 20219

Re: Request for Information on Credit Scoring

Dear Director Watt,

The Center for Financial Services Innovation (CFSI) is submitting this letter in response to your request for input, issued on December 20, 2017, regarding new credit scoring models in mortgage underwriting. Like you, we believe that the adoption of new underwriting standards by Fannie Mae and Freddie Mac (the Enterprises) carries both benefits and risks for consumers in mortgage markets. We welcome this opportunity to share our perspective on how the Federal Housing Finance Agency (FHFA) can ensure that the Enterprises' standards and processes can help consumers improve and maintain their financial health.

As the national authority on financial health, CFSI believes that finance can be a force for good in people's lives and that responsibly meeting consumers' needs ultimately leads to better outcomes for both consumers and providers. Through our consulting work, our Financial Capability Innovation Funds, our Test & Learn initiatives, and our Financial Solutions Lab, we have fostered innovative products and technologies that improve the financial health of consumers and nurture small businesses. Our vision is to see a robust and competitive financial services marketplace, where the diversity of consumer transaction, savings, and credit needs are met by a range of providers offering clear, transparent, and high-quality products and services at reasonable prices.

We operate a network of financial services innovators—banks, the fintech community, processors, servicers, non-profits, and community-based organizations—all committed to building higher quality products and services. CFSI sees opportunities and pitfalls from the viewpoints of both industry players and consumers. We inform, advise, and lead our network to seed innovation that will transform the financial services landscape.

Mortgage Markets and Financial Health

CFSI's mission is to improve the financial health of Americans, especially the underserved, by shaping a robust and innovative financial services marketplace with increased access to higher quality products and practices. Financial health comes about when a consumer's day-to-day

cfsinnovation.com
Tel: 312.881.5856
Chicago
135 S. LaSalle, Suite 2125
Chicago, IL 60603
New York
50 Broad St., Suite 703
New York, NY 10004
San Franciso
575 Market St., Suite 600
San Francisco, CA 94105
Washington DC
2300 N St. NW, Suite 700,
Washington DC 20037

financial systems enable them to build resilience and pursue opportunities. CFSI measures a consumer's financial health with eight behavioral indicators:[1]

1. Spending less than income
2. Paying bills on time and in full
3. Having sufficient living expenses in liquid savings
4. Having sufficient long-term savings or assets
5. Keeping a sustainable debt load
6. Having a prime credit score
7. Maintaining appropriate insurance
8. Planning ahead for expenses

As the largest debt obligation for U.S. households, mortgages can have an outsize influence on nearly all of these indicators.[2] A high-quality mortgage loan can turn into a considerable asset on a household balance sheet and improve credit scores, while an improperly issued loan product can lead to unsustainable debt burdens, an inability to pay bills on time or in full, and difficulties with spending less than income. The FHFA's designs for the Enterprises' underwriting guidelines, consequently, have far-reaching impact on consumer financial health in the United States.

Toward Principles-Based Underwriting Regulation

CFSI applauds the FHFA's ongoing efforts to expand credit access and maintain high underwriting standards.The Enterprises' own research, however, "reveal[s] only marginal benefits to requiring a different credit score" and "suggest[s] that, regardless of the credit score used in the underwriting process, each Enterprise's automated underwriting systems more precisely predicted mortgage defaults than third-party credit scores alone."[3] Existing and emerging technology has greater potential to maximize quality mortgage credit while maintaining high standards for both risk management and fair lending. To safely expand access, the FHFA must look beyond incremental improvements to its credit scoring requirements and develop a principles-based strategy to foster inclusive, responsible, and sustainable innovation in mortgage underwriting more broadly.

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[1] Sarah Parker et al., Eight Ways to Measure Financial Health, Center for Financial Services Innovation (May 2016), *available at* https://s3.amazonaws.com/cfsi-innovation-files/wp-content/uploads/2017/01/19202805/FinHealth-Metrics-FINAL_May.pdf.

[2] According to the Federal Reserve Bank of New York, mortgage credit represents the largest share of outstanding household debt. *See* Michael Corkery and Stacy Cowley, Household Debt Makes a Comeback in the U.S., New York Times (May 2017), *available at* https://www.nytimes.com/2017/05/17/business/dealbook/household-debt-united-states.html.

[3] Credit Score Request for Input, Federal Housing Finance Agency (December 20, 2017), at 3, *available at* https://www.fhfa.gov/Media/PublicAffairs/PublicAffairsDocuments/CreditScore_RFI-2017.pdf.

Such an approach to regulation is essential in the 21st century. The rate of change in both technology and the services and products these technologies enable make "bright line" legislating and rulemaking an anachronism. Consumer protection is still necessary, and policymakers need to identify the right tools to reshape the regulation of financial services to fit the innovations in the 21st century. It is not a question of whether, but how. Moving away from prescriptive rules to principles-based rules will enable both regulators and industry participants to remain nimble and relevant as products and services grow and evolve over time. The FHFA should not replace one outmoded standard with another that will quickly become outdated.

At CFSI, we have developed four core principles (called the "Compass Principles") to guide high-quality, consumer-oriented innovation. We believe that providers of financial products and services—including the lenders who work with the Enterprises—should:

- Embrace inclusion by responsibly expanding access.
- Build trust by developing mutually beneficial products that deliver clear and consistent value.
- Promote success by driving positive consumer behavior.
- Create opportunity by providing options for upward mobility.[4]

In our work supporting the Compass Principles, we enumerate several best practices related to loan origination and servicing in order to assist financial institutions and fintechs who hope to create consumer-oriented products. Of these, mortgage underwriting can benefit most from:

- Safely incorporating data not captured by traditional credit reporting.
- Using the most precise underwriting models available.
- Pricing to support borrower success.[5]

These three practices reinforce one another. A wider spectrum of reliable data can improve the precision of underwriting techniques, and more precise underwriting leads to improved pricing and risk mitigation.

As the FHFA builds a strategy for technology and innovation in its underwriting guidelines, the agency should weave these principles and practices into its vision for a reliable, stable, and liquid

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[4] All of our research related to the Compass Principles can be found at the following web page: Compass Principles: A Framework for Quality, CFSI, https://cfsinnovation.org/research/compass-principles/.

[5] The Compass Guide to Small Dollar Credit, Center for Financial Services Innovation (2014), *available at* http://cfsinnovation.s3.amazonaws.com/CompassGuideToSDC.pdf. While these practices were developed in the context of small-dollar lending, they have broad applicability to credit products of varying magnitudes.

housing finance system. Our comments focus on the benefits of adopting these practices and the technologies and best practices that will allow the agency to do so responsibly.

Incorporating Non-Traditional Data

According to the Consumer Financial Protection Bureau (CFPB), 19.4 million Americans have credit records that cannot be scored using traditional methods, while an additional 26 million have no credit record at all.[6] For these consumers, the Enterprises' current credit scoring standards—which require a tri-merge credit report for most borrowers—can present a barrier to accessing high quality mortgage credit.[7]

The original purpose of the tri-merge credit report was to ensure that lenders had access to all the available credit bureau data for an individual consumer. But the universe of data available within the credit bureaus has expanded. Partnerships with data aggregators, like Experian's relationship with Finicity, might permit the Enterprises to incorporate user-permissioned bank account data into models based on historical income and expense patterns.[8] Acquisition of alternative data assets, such as TransUnion's purchase of alternative data provider FactorTrust could render timelier credit information based on a wider range of consumers' payments.[9] And the NCTUE Plus database established by Equifax and the National Consumer Telecom and Utilities Exchange in 2009 would allow consumers' history of utility bill payment to bear on their creditworthiness as well.[10]

CFSI has long studied the use of alternative data to improve underwriting precision and grow access to credit. As early as 2006, our research found strong evidence in favor of the predictive power of rental payments, utility payments, and other forms of alternative credit information.[11] In 2009, we partnered with the Brookings Institution, the Policy and Economic Research Council (PERC), two credit bureaus and two utility industry groups on a study of the impact of reporting

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[6] Ken Brevoort et al., Data Point: Credit Invisibles, CFPB Office of Research (May 2015), *available at* https://files.consumerfinance.gov/f/201505_cfpb_data-point-credit-invisibles.pdf.

[7] FICO finds that credit risk varies considerably among traditionally unscoreable populations, and that many unscoreable consumers actually represent a low credit risk. Can Alternative Data Expand Credit Access? FICO Insights White Paper No. 90 (2015), *available at* http://subscribe.fico.com/can-alternative-data-expand-credit-access.

[8] Ben Lane, Experian Partners with Finicity to Digitize Mortgage Underwriting, HousingWire (March 20, 2017), *available at* https://www.housingwire.com/articles/39627-experian-partners-with-finicity-to-digitize-mortgage-underwriting.

[9] TransUnion Acquires One of Georgia's Fastest Growing Companies, Atlanta Business Chronicle (November 2017) *available at* https://www.bizjournals.com/atlanta/news/2017/11/29/transunion-acquires-one-of-georgias-fastest.html.

[10] History of NCTUE, NCTUE, https://www.nctue.com/history.

[11] Rachel Scheider and Arjan Schütte, The Predictive Value of Alternative Data Sources, CFSI (2006), *available at* https://s3.amazonaws.com/cfsi-innovation-files/wp-content/uploads/2017/02/05053225/The-Predictive-Value-of-Alternative-Credit-Scores.pdf. This report evaluated the ability alternative data models to rank order risk, evaluate applicants for credit and design offers of credit, and increase approval rates while controlling for acceptable levels of risk.

utility payments.[12] This work also documented positive impacts of alternative data reporting. In 2015 and 2016, we published forward-looking reports on the use of big data in lending and created principles for consumer data sharing, respectively.[13, 14]

Research from other organizations also documents the potential for alternative data to support more inclusive underwriting while managing risk. One pilot by the Credit Builders Alliance and others found that reporting rental payments boosted credit scores for 80% of participating consumers. A subsequent case study found that such reporting increased scores by an average of 57 points. Additional research from PERC found that utility and phone reporting could increase the number of scoreable borrowers among thin-file consumers by over 60%.[15]

The FHFA has expressed reluctance to consider a credit score based on alternative data sources, noting that such data sources may not be appropriate for the mortgage context.[16] But as the above research indicates, such data do predict consumers' ability to repay loans, and the potential improvements they bring warrant further study by the agency and the Enterprises. By focusing only on credit scores based on traditional information in the tri-merge report, the agency and the Enterprises miss these new sources of underwriting data. In doing so, they dampen innovation that could both increase access and significantly improve measurement of credit risk.

Using the Most Precise Underwriting Techniques

New sources of data are not the only potential improvements in underwriting. Innovations in predictive analytics and process automation allow companies to better assess credit risk and avoid errors in underwriting. Upstart, an online lender that recently received a no-action letter from the CFPB, uses artificial intelligence (AI) to issue unsecured loans of up to $50,000, and reports considerably lower default rates than traditional credit scores would predict.[17] Credit card provider Petal combines machine learning (an approach to achieving AI that uses algorithms to

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[12] Turner et al., Credit Reporting Customer Payment Data: Impact on Customer Payment Behavior and Furnisher Costs and Benefits, PERC (March 2009), *available at* http://www.perc.net/wp-content/uploads/2013/09/bizcase_0.pdf. A case study from one utility in this report saw the number of scoreable customers at the utility increase by 6.2 percentage points.

[13] Eva Wolkowitz and Sarah Parker, Big Data, Big Potential: Harnessing Data Technology for the Underserved Market, CFSI (2015), *available at* https://s3.amazonaws.com/cfsi-innovation-files/wp-content/uploads/2017/02/13062352/Big-Data-Big-Potential-Harnessing-Data-Technology-for-the-Underserved-Market.pdf.

[14] CFSI's research on consumer data sharing can be found at the following web page: Consumer Data Sharing, CFSI, https://cfsinnovation.org/research/consumer-data-sharing/.

[15] The research cited in this paragraph is summarized in David Newville and Anju Chopra, Alternative Data Helps Families Build Credit and Wealth, Prosperity Now (September 2017), https://prosperitynow.org/files/resources/Alternative%20Data%20Fact%20File_September%202017.pdf.

[16] Credit Score Request for Input, Federal Housing Finance Agency (December 20, 2017), at 11, *available at* https://www.fhfa.gov/Media/PublicAffairs/PublicAffairsDocuments/CreditScore_RFI-2017.pdf.

[17] Upstart Network, Results to Date, https://www.upstart.com/about#result-to-date.

parse data, learn from it, and make a determination or prediction) with transactional data to underwrite a credit card product for those without credit scores.[18]

The Enterprises' own automated underwriting systems are good examples of how to use burgeoning computing power to inform credit decisions, but the present RFI only proposes moving from Classic FICO to some combination of FICO 9 and VantageScore 3.0, when VantageScore 4.0 has already been released and a new FICO model is likely in production. The rapid adoption of new technologies in risk modelling means that the FHFA runs the risk of ossifying the Enterprises' underwriting if it merely replaces one outmoded standard with another.

Pricing to Support Consumer Success

The Enterprises' credit scoring practices have a strong impact on financial health even for consumers who do receive mortgages. Under current underwriting standards, for example, loan pricing depends heavily on credit score. For a 30-year fixed rate loan with an 80% loan-to-value ratio, a borrower with a credit score between 720 and 740 faces an automatic price adjustment of 75 basis points. The adjustment grows at an increasing rate as credit scores decrease, such that a 21-point credit score shift has the potential to change a loan's interest rate by 150 basis points.[19] On a $200,000 loan, such a swing can change payments in either direction by 19%, or $182 per month.[20] New evidence from a J.P. Morgan Chase Institute study of GSE loans shows that lowering monthly payments improves loan performance for borrowers who have struggled with repayment, suggesting that these borrowers' loans were not priced to support their success.[21]

Appropriate risk-based loan pricing requires precision to function on behalf of consumers. Reliance on outdated models and data produces noisier estimates, increasing the likelihood of both over- and underpriced credit.[22] Borrowers whose credit scores overstate their risk will face

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[18] John Adams, Could Machine Learning Replace the Credit Score?, PaymentsSource (January 10, 2018), *available at* https://www.paymentssource.com/news/could-machine-learning-replace-the-credit-score.

[19] *See* Loan-Level Price Adjustment (LLPA) Matrix, Fannie Mae (July 25, 2017), *available at* https://www.fanniemae.com/content/pricing/llpa-matrix.pdf. A swing from a score of 700 to 679 could produce a price change of this magnitude. Loan files without credit scores are placed in the lowest score bucket.

[20] The Urban Institute estimates the average interest rate for a Fannie Mae loan in 2017 at 4.1%. A $200,000 30-year fixed-rate loan made with this interest rate implies a monthly payment of $966. Adding 150 basis points yields an interest rate of 5.6% and implies a monthly payment of $1,148. *See* Housing Finance at a Glance: A Monthly Chartbook, The Urban Institute (December 2017), *available at* https://www.urban.org/sites/default/files/publication/95436/housing-finance-at-a-glance-a-monthly-chartbook-december-2017_0.pdf.

[21] Farrell et al., Mortgage Modifications after the Great Recession: New Evidence and Implications for Policy, J.P. Morgan Chase Institute (December 2017), *available at* https://www.jpmorganchase.com/content/dam/jpmorganchase/en/legacy/corporate/institute/document/institute-mortgage-debt-reduction.pdf.

[22] FICO 4 is a set of three different scores estimated on data from throughout the late 1990s. Predictive models based on older data necessarily produce noisier estimates because the underlying circumstances that produced those data have changed. Further, the Enterprises' practice of selecting a "representative" credit score for each loan file subjects consumers to variance between the two or three scores provided. *See* Laurie Goodman, In Need of an

inflated interest rates, which threatens the sustainability of their debt burden and their ability to build savings. Further, the consumers who outperform their scores subsidize the losses incurred among borrowers who underperform relative to their scores. Better data and more precise modelling alleviate these concerns and improve the quality of price signals, allowing consumers to better understand when they can afford a loan and when they cannot.

Responsibly Supporting Innovation

The FHFA should adopt regular review processes to assess the merits of new underwriting data and methods, guarantee consumer protection, and ensure that the Enterprises' policies comport with the Fair Credit Reporting Act (FCRA), the Equal Credit Opportunity Act (ECOA), and other relevant laws. Given its status as a prudential regulator and its access to vast amounts of historical lending data, the agency is well-positioned to balance innovations that can improve Americans' financial health with its duty to guard against systematic risks.

Consumer Risk in Alternative Data

As we noted in separate comments before the CFPB, the adoption of alternative data sources and new technologies does not come without risks.[23] Certain data may not be FCRA compliant. Consumers may be unaware of the effects that some types of payment history data or other predictive variables have on the outcome of their loan applications. A broader palette of available data increases the likelihood of erroneous information being used in credit decisions.

As the universe of available consumer data expands, regulators like the FHFA must remain aware of how alternative data can cause consumer harm and create principles and processes for data adoption. In recent years, CFSI has worked to develop standards for using consumer data to support financial health and minimize consumer harm.[24] We believe that the data most appropriate for incorporation into mortgage credit must meet the following standards:

- Availability: Consumers must have the ability to view their financial information within the trusted and secure third-party application of their choice.
- Reliability: Consumer financial data must be timely, consistent, accurate and complete.

Update: Credit Scoring in the Mortgage Market, Urban Institute (July 2017), *available at* https://www.urban.org/sites/default/files/publication/92301/in-need-of-an-update-credit-scoring-in-the-mortgage-market_2.pdf.

[23] Jeanne Hogarth and Eva Wolkowitz, CFSI Comment Letter to the CFPB's Request for Information Regarding Use of Alternative Data and Modeling Techniques in the Credit Process, CFSI (Mary 19, 2017) *available at* https://cfsinnovation.org/research/cfsi-comment-letter-to-the-cfpbs-request-for-information-regarding-use-of-alternative-data-and-modeling-techniques-in-the-credit-process/.

[24] Kaitlin Asrow and Beth Brockland, CFSI's Consumer Data Sharing Principles, CFSI (October 2016), *available at* https://s3.amazonaws.com/cfsi-innovation-files/wp-content/uploads/2017/01/19192549/2016-Consumer-Data-Sharing-CDAWG-white-paper-Final.pdf.

- Consent: Consumers must provide explicit consent for access to and use of their data. Consumers must be able to easily view, modify and revoke consent for data sharing.

- Security: All entities must follow applicable laws and industry best practices with regard to data privacy and security.

- Minimization: Only the minimum amount of data required for functionality should be collected, and the data should be stored for the minimum amount of time needed.

The inclusion of paid collection accounts in current credit score models, for instance, violates the principles of reliability and minimization. As FICO and others have acknowledged, reporting of these accounts harms model accuracy, and therefore cannot be required for the functionality of a credit score product.[25]

Consumer Risk in New Underwriting Technology

New AI-based underwriting processes may pose risks to consumers when not designed to ensure transparency with respect to the impact of particular data inputs and the decisions these systems make.[26] For instance, ECOA stipulates that lenders must provide borrowers with the rationale for any adverse actions that occur. Applicants who understand the reasons they are denied credit can identify and update false information and are better equipped to improve financial behaviors and conditions that bar them from mortgage credit. Increased reliance on algorithms designed to function without human intervention can limit disclosure of such information and leave consumers with little opportunity to challenge incorrect decisions.[27] Further, the FHFA will need to be confident that the Enterprises' reasons for denial or higher rates do not constitute discrimination or create disparate impacts, a determination that can become more difficult as algorithmic complexity increases.[28]

As mortgage underwriting becomes increasingly reliant on AI, the Enterprises will need to build the ability to trace factors that lead to an adverse credit decision into their underwriting processes. Avoiding a "black box" effect is important not only in fair lending and to help applicants understand adverse actions and improve their standing in the future. Lenders who use the Enterprises' data and risk-decision platforms will also need to understand the nature of the credit modeling services they use, and how AI processes impact the provision of mortgage loans.

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[25] Ethan Dornheim, The Impact of Medical Debt on FICO Scores, FICO (July 13, 2015), *available at* http://www.fico.com/en/blogs/risk-compliance/impact-medical-debt-fico-scores/.

[26] Penny Crossman, Is AI making credit scores better, or more confusing? American Banker (February 14, 2017), *available at* www.americanbanker.com/news/is-ai-making-credit-scores-better-or-more-confusing.

[27] Penny Crossman, Before AI Runs Amok, Banks Have Some Hard Decisions to Make, American Banker (August 30, 2016), *available at* https://www.americanbanker.com/news/before-ai-runs-amok-banks-have-some-hard-decisions-to-make.

[28] Petrasic et al., Algorithms and Bias: What Lenders Need to Know, White and Case (January 20, 2017), *available at* https://www.whitecase.com/publications/insight/algorithms-and-bias-what-lenders-need-know.

Liquidity/Secondary Market Concerns

The mortgage ecosystem features a vast and well-established securitization market that helps lenders retain liquid capital. These capital markets have a heavier influence on credit access in mortgage markets than in other markets due to the scale of the liquidity requirements for such large loans. Investor reluctance to purchase securities issued by the Enterprises could further tighten credit access, as lenders would need to slow their lending operations to match the stream of incoming capital. A principal component of the FHFA's mission—to "ensure that the housing government sponsored enterprises…serve as a reliable source of liquidity and funding for housing finance"— thus requires the agency to carefully consider how secondary market actors will react to changes in underwriting policies.

The secondary market implications of advanced underwriting and alternative data are likely to be mixed. Investors need to trust the Enterprises' processes and will require verification of changes to underwriting models, which can take a great deal of time. Meanwhile, secondary market actors can be quick to adopt new credit risk evaluation methods for their own purposes. The impact of innovations by the Enterprises' will depend on whether the FHFA and the Enterprises can sufficiently demonstrate their efficacy. High quality innovation will likely increase investors' willingness to supply capital to mortgage lending markets, while uncertain or unexamined technology could limit liquidity.

Leveraging Historical Data to Test New Models and Address Risks

Given risks to both consumers and secondary market actors, the Enterprises and the FHFA will need to rigorously test the impact of new underwriting policies. One fortunate property of alternative data and new credit decision models lies in the ability to examine model efficacy without risk of consumer harm. Many providers already test new underwriting methods using retroactive consumer data to explore the impact of new models and data incorporation. Comparing hypothetical model results with observed borrower outcomes helps identify strengths and weaknesses in logic and impact.

By simulating the impact of a new credit score requirement, the Enterprises have demonstrated their ability to carry out this sort of empirical work, but there is still broader potential for the FHFA to increase the safety, accuracy, and quality of models before they are put into use in the market. We believe the agency should create clear channels and opportunities for mortgage market participants to:

- Test multiple layers of data collection, aggregation, and application in concert.
- Share the experiments' results with financial regulators for iterative feedback and advisement as data incorporation and model strategies are adjusted.
- Alert regulators to types of data or data collection practices that are problematic or would benefit from closer scrutiny or improvement where they fall short.

Conclusion

Nontraditional data and improved underwriting technology present both potential benefits and potential risks to the industry. On one hand, these developments can help creditworthy borrowers access high-quality mortgage loans while avoiding danger to consumers who would not be able to successfully repay their loan. They can also ensure that loan pricing reflects both risk and ability to repay. On the other, they may lead to consumer harm through a lack of data transparency, "black box" decisions, and secondary market liquidity issues.

In its role as an agent of trust and stability in mortgage markets, the FHFA has a duty to bring innovators and innovation into the regulatory process so that the Enterprises' mortgage underwriting supports the financial health of as many Americans as possible. Only by doing so can the agency fully safeguard consumers and carry out its mission.

Sincerely,

Jennifer Tescher
President, Center for Financial Services Innovation