

Building the Future of Housing Finance

October 2022

PREPARED FOR:



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Federal Housing Finance Agency

Office of Financial Technology
400 7th Street SW, 5th Floor
Washington, D.C. 20219

RE: Fintech in Housing Finance – Request for Information

Dear FHFA Team,

Thank you for allowing Liquid Mortgage and the fintech community the opportunity to participate in this Request for Information. It is important to maintain an open dialogue between regulators and fintech firms to encourage responsible innovation while moving the housing finance ecosystem forward. As you are aware, technology and infrastructure in housing finance has greatly lagged general technology developments over the past several decades. Those of us innovating in this space encourage conversation so we can build products for the future while enhancing current processes and procedures.

In the following response, we outline the current environment while providing suggestions to build a more efficient and transparent infrastructure which will lower costs for borrowers and industry participants and expand mortgage credit. Given our concentration on post-origination infrastructure, our response is primarily focused on this segment of housing finance as this technology significantly lags pre-close solutions.

We look forward to continuing the conversation and working with FHFA to bring responsible innovation to market. Please let us know if you have questions and we hope to connect again soon.

Best Regards,

Liquid Mortgage Team

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Executive Summary

The housing finance ecosystem has been slow to adopt innovation and new technologies for several reasons. Throughout this Request for Information response, the Liquid Mortgage team presents current barriers to innovation while providing solutions to advance responsible innovation, housing inclusion, and the expansion of mortgage credit.

Given the complexity of housing finance, from origination to securitization, most industry participants focus on creating efficiencies within current processes and existing infrastructure. True innovation is stifled due to the complexity, entrenched intermediaries, legacy systems, and lack of standardization. Fintech firms have an opportunity to be the provider of innovation by working with regulators and ecosystem partners directly to build, test, and implement new technologies. Regulatory and compliance considerations are not a barrier to innovation if new regulations and changes are transparently communicated, allowing fintech firms to innovate with a regulatory-forward approach.

Many fintech companies choose to focus on the borrower and lender experience during loan origination. While there are significant opportunities to streamline processes, rarely do companies focus on post-origination infrastructure. Secondary market technology involving data, documents, trading, and securitization are considerably out of date. Given the importance of secondary markets to mortgage credit creation, a better post-origination infrastructure promotes the expansion of mortgage credit while also creating new opportunities for underserved borrowers.

A new post-close infrastructure built on blockchain technology will assist in creating efficiencies, increasing transparency, and lowering costs throughout the ecosystem. By creating loan-backed digital assets as a replica of an actual loan, data, documents, and payment history can be permanently tracked for additions and changes over the life of the loan. All information is instantly verifiable to assist in shortening timelines for diligence, trading, securitization, and servicing transfers while reducing the need for constant reverification. The audit history provided by blockchain technology and innovative solutions built on top of blockchain protocols lead to better regulatory and compliance solutions for the market, thereby increasing trust. Additionally, building new underlying technology in parallel with replica assets allows for future innovation where digital assets may be traded, aggregated, and securitized on a blockchain.

As with any new technology or innovation, having an outlet to communicate, educate, and partner with industry participants is important. FHFA is in a unique position to coordinate interaction between fintech firms and other financial institutions, while encouraging responsible innovation. There are two important ways in which FHFA can promote a regulatory-forward approach to innovation. The first is to establish high-level guidelines and best practices for responsible innovation within the housing finance ecosystem, according to FHFA. Second, FHFA could provide a Fintech Sandbox environment where fintech firms, financial institutions, and regulatory bodies may partner to bring innovative solutions to market faster by piloting, testing, and implementing solutions which move the ecosystem forward in a regulatory-first manner.

The housing finance system is in desperate need of innovation and the best way to design and develop products is to work together throughout the ecosystem. A regulatory-forward approach to innovation should result in increased trust, faster time to market, and creating solutions which increase transparency, efficiency, and reduces costs for all.

Fintech & Innovation



FHFA
Fintech RFI

A.1 How do primary and secondary mortgage market participants define fintech in the housing finance sector? What key factors should be considered?

Generally, fintech, or financial technology, refers to technology built for the financial services industry to create new products or processes, enhance existing products or processes, and/or introduce new technologies. Housing-related fintech firms generally fall into categories related to origination, borrower, property, trade and settlement, servicing, data providers, and life-of-loan solutions.

Primary market fintech firms are focused on closing execution between the borrower and lender, often related to enhancing the borrower experience, data collection, fraud detection, risk pricing, and other process flows aimed at reducing closing timelines and lowering costs.

While numerous fintech firms focus on primary market technology, secondary market technology has lagged due largely to the significant barriers to entry and interaction with legacy systems. Most secondary market technology firms are focused on loan data management (servicing, performance, loan management, etc.) with the primary goal of creating better data, reporting, and compliance tools for loan and securitization investors. The key factors for housing finance fintech firms are:

New Revenue Opportunities and/or Cost Savings

To drive adoption and convince different parts of the mortgage ecosystem to use new technology or processes, fintech firms typically need to provide some financial benefit to its clients. This may be accomplished through new revenue opportunities for clients, or significant cost savings over the current methods.

Regulatory and Compliance Focus

Legal, Regulatory, and Compliance processes in the mortgage industry have become even more important since the Great Financial Crisis. Any fintech firm in the housing finance ecosystem must demonstrate the ability to uphold the highest standards with respect to regulatory and compliance standards. Fintech firms focused on increasing transparency for auditors, regulators, and other counterparties will be the most effective.

Reduced Timelines

As most in the industry would say, time is money, but it also leads to better user experiences, more efficient processes, and cost reductions. In the primary market, fintech firms are looking to reduce time-to-close by creating easier access to information (borrower, property, etc.). In the secondary market, technology can be used to shorten loan trading and securitization timelines, which have the direct effect of increasing available capital for lending. Timelines can be shortened by creating more transparent data, easier validation of data and documentation, and addressing settlement timelines.



A.2 How could FHFA facilitate adoption of “responsible innovation”?

Housing finance fintech companies, particularly in early stages, are often looking to solve problems or create solutions currently unavailable to the market. As such, there may be few, or no, guidelines for best practices in the industry to support these companies. Responsible fintech companies seek to build within the proper regulatory framework from the beginning, particularly because clients are often government agencies, banks, and other large financial institutions.

The FHFA could provide its **high-level guidance on best practices** as it relates to:

- Risk Management
- Corporate Governance
- Data Security Standards
- Regulatory Reporting

A framework could be provided in a similar fashion to a typical vendor management process, where minimum and suggested requirements may be used by companies to build conservatively from the beginning. Technology companies would be able to provide a faster, compliant, product to market for the benefit of clients and regulators.

Additionally, the largest risk to fintech firms is from a regulatory and compliance perspective. FHFA could create a **Fintech Sandbox** (similar to some states) to be able to test functionality specific to the housing finance system. The successful completion of a pilot in this sandbox could help fintech firms launch products faster while promoting responsible innovation by the FHFA. This sandbox would allow technology firms and financial institutions to work directly for more regulatory-forward solutions. FHFA would also benefit from knowing about relevant projects throughout the ecosystem before they are launched.

A.3 What factors currently inhibit the adoption of fintech and innovation in the primary and secondary housing finance sector? Are there specific challenges related to privacy laws, industry standards, or current practices?

There are numerous reasons for lack of innovation in the housing finance ecosystem. Some barriers are addressable while others are difficult to overcome without proper partnerships between fintech companies and large financial institutions.

Ecosystem Complexity

The mortgage ecosystem is not known for its simplicity, and most firms trying to build solutions for the industry will find it extremely difficult without proper knowledge of ecosystem participants, products, and processes. The complexity causes most innovators to focus on specific solutions without understanding their impacts upstream or downstream. Additionally, most innovations in housing finance take significant time to gain traction and implement, which limits capital available to fintech startups and stifles innovation in housing finance. Venture Capital and other investors prefer to see traction, which can take years, even if the company has significant industry experience. Meanwhile talent chooses to focus on industries with faster innovation and adoption curves. A Fintech Sandbox would be a significant step forward for innovation in the space.



Entrenched Intermediaries

While fintech companies and startups can generally innovate, develop, and release products much more quickly than large housing finance institutions, fintech adoption is difficult without partnering with these large companies because they control the underlying infrastructure and processes. Convincing large firms to change processes or adopt new technology is difficult for any size of institution. Additionally, the vendor management process for these institutions is a significant expenditure for smaller firms, from both a time and expense perspective. These factors reduce, and slow innovation throughout housing finance.

Legacy Systems

Integration between new and legacy technologies creates a barrier for fintech firms. As an example, several data files are still created and transmitted in XML format within legacy systems. Newer technologies use JSON formatting, which is much faster and lighter than XML. Similarly, programs, reporting, and other processes are built with legacy technology and integration pipelines must be created by newer fintech firms. Another simple example is document storage. Larger institutions may still have internal server-backed systems while most fintech providers will start initial development in the cloud. The sharing of documents, therefore, is much more difficult than sending links and providing authorized access to cloud storage. Integrating new technology with legacy systems is a pain point for both larger financial institutions and smaller fintech firms, reducing the speed of innovation across the housing finance ecosystem.

Data Privacy

Regulatory and compliance costs around data privacy directly impact smaller fintech companies as legal expense transfers resources from innovation to legal and regulatory budgets. Any firm building in the housing finance ecosystem understands these costs and plans accordingly, however, the cost of a single error could result in the end of the company. As such, some firms choose to bypass any personally identifiable information or other private data, which limits the ability to create new, innovative solutions. There are some new technologies, blockchain for example, which could anonymize specific data while creating a verifiable solution.

Data and Document Standards

One of the largest pain points for the housing finance industry in general is a lack of standardization for data and documentation. Some organizations, MISMO for example, have built data standards for the housing finance industry but firms generally use the standards as a guideline if they choose to implement. With a lack of standardization, firms trying to innovate are required to create their own data models to aggregate and combine multiple data sources from Origination through Servicing. This process alone stifles innovation by creating longer timelines to build new processes and products. Additionally, new technologies such as Artificial Intelligence and Machine Learning are difficult to implement with non-standardized data.



Identifying Fintech Opportunities in Housing Finance

B.1 What kind of fintech activities have the greatest potential to positively impact the housing finance sector? Describe several situations in which a product or service has been or could be used, the factors considered in determining importance, and associated impacts.

To build fintech products and services for housing finance, the most effective approach for companies will include:

- 1) Teams with deep housing finance and technical knowledge
- 2) Actionable solutions with the ability to integrate into the current ecosystem
- 3) Compliance-forward solutions to make processes more efficient, reduce risk, and lower costs

Most participants with experience in housing finance realize one firm cannot change the entire industry. Likewise, the industry cannot be recreated more efficiently overnight. Legal and regulatory concerns guarantee these points are true, for the stability of the entire ecosystem. The most feasible solution is to incrementally improve the ecosystem by bringing in partners and with a regulatory and compliance-forward approach.

Liquid Mortgage has taken an actionable approach to create a more efficient and transparent housing finance ecosystem by using blockchain technology to enhance current processes. Our belief is:

Loan-Backed Digital Assets Can Record Information, Verify Ownership, Reduce Timelines, and Create a More Efficient and Transparent Ecosystem

Given our knowledge of the ecosystem and technology, we built a parallel process to create anonymized digital assets (loan replicas) on a blockchain to attach information and data directly to the unique assets. We started with a view towards making securitization market data more transparent. By providing securitization investors with daily, loan level performance information, we add value by significantly reducing data timelines for investors while posting permanent data to a blockchain attached to each asset. All loan-level data and transactions are anonymized while fully verifiable.

In our second incremental step, we create a loan-level Liquid Archive of data and documents from all contributors over the loan lifecycle. Contributors include originators, due diligence firms, servicers, investors, and other service providers. Once data or documents are added to the archive, we attach the archive directly to digital asset on the blockchain for full change-log history and verification purposes. All additions, updates, or deletions are not only captured within the archive itself, but also on the blockchain for full transparency.

Finally, with Liquid Verify, we continuously verify all archives for a given portfolio. This includes verifying existence of documents as well as notifying loan holders of changes to specific documents throughout the life of the loan.

The products mentioned are compliance-focused tools to faster verify existence of data, documentation, and payment history. Contributors of information have a record of all activity for a specific loan while loan holders may shorten timelines for verifying information and completeness of a loan file. All information is



attached to unique digital assets to validate change logs, entire archives, and set the stage for future innovation.

Future incremental changes will allow these digital assets to be tradeable and shrink timelines to securitization. The result of faster timelines and reduced costs throughout the housing finance ecosystem should lead to increased available credit and lower costs for borrowers, which is the end goal for Liquid Mortgage.

B.2 What are the typical time requirements of each process within the mortgage lifecycle? What are the “critical path” activities that drive the mortgage timeline and borrower expense? How could fintech be applied to improve efficiency, reduce costs, reduce time requirements, or facilitate equitable outcomes for borrowers?

Given the Liquid Mortgage focus on post-origination processes, activities related to Servicing, Trading, and Securitization are discussed below.

Initial Servicer Onboarding

During initial onboarding, verifying data and accuracy of documents as they pass between originators, interim servicers, investors, regulators, and others is time consuming and error prone. The onboarding cycle can take days or weeks until the borrower has full access to online systems, data, and documents. Innovative technology solutions can help in the verification of documents and data, while creating faster timelines for borrower onboarding. The Liquid Mortgage Archive product collects documents from the originator, interim servicer, and other counterparties in one location to streamline the verification of information for servicer onboarding.

Ongoing Servicing

Servicing for performing loans involves providing borrowers with monthly statements, access to loan and balance information, and providing the borrower an outlet to communicate directly with the servicer to have questions answered. Non-performing loans require significant servicer interaction with the borrower to bring the loan to performing status, which may take weeks or months. These conversations may include deferred payments, modifications, or other workout solutions. For both performing and non-performing loans, it is imperative servicers retain all communication with a borrower for regulatory and compliance purposes, including servicer notes, copies of letters, statements, recorded phone calls, and other documentation. All servicer data and documentation can be easily added to the servicer section in a Liquid Archive for future reference and verification.

Another important aspect of ongoing servicing is providing borrower payment data to investors so they can analyze performance over time. Liquid Mortgage tracks payment information directly on the blockchain, attached to each underlying loan, for full payment history transparency. Future capabilities include processing borrower payments directly on the blockchain more efficiently with significantly lower costs to servicers and borrowers.



Loan Trading

The current process for trading loans is archaic with lengthy timelines. Sellers pass data and documents to buyers, then buyers hire a due diligence firm to reverify and confirm data. Throughout the process there may be missing data or documents, and any errors require resolution prior to the loan trade. Funding of the loan and registering the transaction require numerous counterparties and extended timelines. Using blockchain technology, a number of these pain points are resolved.

For example, data and documents stored in a Liquid Archive allow investors to pass the Archive from buyer to seller instantly. The buyer can see all original documents and test for both existence and originality. Diligence providers may use the same Archive for analysis, then post diligence results in the Archive for future verification purposes. Finally, in the future, a loan-backed digital asset will be fully tradeable on the blockchain, capturing trading history, ownership, and the ability to fund and trade loans instantaneously.

Servicing Transfers

When a servicing transfer occurs, data and documentation on the loan, borrower, and property are passed from one party to another. Often during this process certain information may be omitted or lost, causing for lengthy timelines to complete the transfer. This process can be painful and time consuming for both the servicer and investor, but the borrower also has confusion as he or she is required to redirect payments to the new servicer. This process may take months for the borrower to correctly redirect payments, forcing the original servicer to remit funds to the new servicer over time.

Liquid Mortgage technology alleviates servicing transfer pain points by collecting all data and documents in one location over the life of the loan. Similar to a loan trade, the original servicer may deliver the new servicer an Archive for immediate verification of data and documents. Timelines are drastically reduced and servicers can now focus on borrower communication during this period of transition. In the future, a borrower payment rails solution built on blockchain will eliminate the need for a borrower to remit payments to the new servicer. Payments may be automatically remitted to the correct servicer with full transparency.

Securitization

The securitization market is relatively efficient in creating and distributing mortgage credit to investors. One pain point for loan aggregators and securities issuers is the timeline from loan purchase, warehousing, diligence, ratings, and other required processes prior to a completed securitization. Often, these processes require reverification and validation of information across counterparties, leading to extended timelines and slower mortgage credit creation.

As mentioned, blockchain technology can provide benefits to shorten these timelines by expediting verification of information, confirming diligence and ratings, and providing full regulatory and compliance transparency throughout. Additionally, not only may loan-backed digital assets exist, but the bonds within a securitization may as well. Bond-backed digital assets allow for efficient payment waterfalls, shorter timelines for investors to receive funds, and more transparent reporting.



B. 3 What are the typical drivers of repetitive requests to borrowers or reevaluation of underwriting information by the lender in the mortgage process, and what opportunities exist to automate processes?

Repetitive requests are generally caused by a **lack of trust** throughout the housing finance ecosystem.

From the borrower's perspective, he or she may shop around to try to find the lowest rate and/or terms. In doing so, the borrower may be required to submit the same information several times to multiple companies, which can cause borrowers to stop searching for the lowest rate or best lender given the time commitment. Depending on borrower access to technology, or having a bias towards advertised loan rates, borrowers may be directed into a loan which is not the best option.

On the origination side the underwriter is attempting to ensure borrower information and documentation are accurate, recent, and display the appropriate risk level prior to funding the loan. This process typically results in borrowers submitting an initial set of documents, then receiving requests for multiple additional sets of documents to confirm data and documentation. One small inconsistency in borrower data may result in significantly more documentation requests. The document and data validation process continues until the underwriter is comfortable making a "yes" or "no" decision.

Similarly, every time a loan trades post-close, underwriting data and information is confirmed by the new buyer of the loan. This process typically involves a third-party review firm (or diligence firm) or internal underwriting team to comb through data and documents to confirm specific data points which fit the loan buyer's criteria. Initial document and data requests often result in multiple other requests for supporting documents to validate data. Additionally, this process often requires information from mortgage servicers regarding payment histories, borrower interactions, and other data related to the performance of the loan post-close. This data is also confirmed by the third-party review firm. Over the life of a single loan, this information may be reviewed and confirmed multiple times.

The processes mentioned exist because counterparties inherently do not trust one another. There exists an opportunity to use new technology to solve a number of these issues. Using blockchain technology, the confirmation and reconfirmation of data and documents can be streamlined (or automated) because we have a fully transparent history of data and documents attached to a digital asset. This concept was first proposed by the Liquid Mortgage Archive product where data and documents are tracked from origination, diligence, servicing, and other counterparties attached to a single asset. All with a full audit history and log within the Archive.

With the concept of a Borrower Archive, the borrower could submit all information into one place and submit this Archive directly to all potential lenders in return for rates and terms. Shopping around for a loan becomes much easier and ideally would result in the borrower receiving the best terms possible. These documents, and others, could be referenced in the Loan Archive which house all origination documents, data, and analysis. When the loan trades, a diligence firm or other counterparty could pull the Loan Archive (with history fully verified) and use these documents for analysis. Similarly, when the diligence results are completed, they would be added to the Loan Archive for future reference. The same process could be mirrored with other pieces of the process.

The most important part of this process is not one single entity owns all the data. Each contributor retains its own data and documents but could provide access to other counterparties as needed. Even though a counterparty may not have access to a specific document, technology can confirm the document has not changed since posted into the Archive and the blockchain is the record, with a full permanent audit trail.



B.4 What are the existing data challenges that most prevent data-driven decision-making in the mortgage lifecycle?

There are two key challenges related to data in the mortgage lifecycle and both contribute to the lack of trust across the housing finance industry, Data Standardization and Data Accuracy.

Data Standardization

While attempts have been made to standardize data across the mortgage lifecycle, those efforts have largely been unsuccessful in practice. Each software system generally has its own field names, terminology, data types, data structure, and calculated data. Likewise, legacy systems and new technology do not always have compatible formats, making it more difficult to standardize data.

In order to create new, data-driven processes for decision-making and other tasks, data standardization is key. For example, most artificial intelligence (AI) and machine learning (ML) process require standardized data to train models. If a firm wishes to employ this technology, it must first standardize data across many sources which can be a significant time and expense.

Data Accuracy

In addition to lack of data standardization across the ecosystem, reported data is often inaccurate due to human error, integration errors, report generation issues, and sometimes outright fraud. Data accuracy is a key reason for the lack of trust across the mortgage industry and the leading cause of constant verification processes throughout the life of the mortgage. Inaccurate data directly reduces the ability to create data-driven decision-making process and stifles innovation in housing finance.

Opportunity

While not a solution to all data standardization and data accuracy issues, blockchain technology provides an opportunity to significantly improve upon the current environment. By nature, any transaction posted onto a blockchain is in a standardized format. In the housing finance ecosystem, this could include borrower payments, loan trades, and proof of ownership (to name a few). Likewise, accuracy of loan data and documents, additions, and changes can be verified over the life of the loan with each action updating the record on the blockchain. Standardization and accuracy are important to improving trust in the ecosystem, which will eventually lead to faster timelines and lower costs.

B.5 What are the existing regulatory and policy barriers to adopting and implementing fintech within the mortgage lifecycle?

The largest barrier for most fintech companies in the mortgage ecosystem is the regulatory and compliance cost to implement new solutions. Fintech firms juggle finding product market fit while considering when in the process to invest in regulatory infrastructure. It can be costly for a firm to add regulatory expense prior to a product being vetted by the market, particularly if the product turns out to be unacceptable to clients. If firms had a Fintech Sandbox environment, products could be developed in a regulatory-forward manner while concurrently collaborating to test product market fit.

Typically for fintech firms in housing finance these costs are related to developing processes, policies, and procedures for data privacy, document storage, personally identifiable information, and associated legal



documentation. Additionally, states may have different regulations creating additional layers of complexity for smaller firms trying to manage compliance.

Finally, the vendor management process for fintech companies attempting to work with banks or large financial institutions creates a barrier for most small firms. While necessary, these processes prevent new products from coming to market and stifles innovation for fintech firms and large institutions alike. This is another good use of the Fintech Sandbox concept for collaboration.

Equitable Access to Mortgage Credit

C.1 What new fintech tools and techniques are emerging that could further equitable access to mortgage credit and sustainable homeownership? Which offer the most promise? What risks do the new technologies present?

Equitable access to mortgage credit is best expanded by overhauling underlying infrastructure in secondary mortgage markets. There are additional methods to expanding access on the pre-close side of the industry, but as secondary markets become more efficient, mortgage credit expands because capital is more efficiently allocated.

Blockchain and distributed ledger technologies are one way to make secondary markets more efficient. By creating a permanent record of all data, documents, payments, and transaction history, loans (digital assets) can be bought and sold at a much faster pace finding their way into long term investors or securitizations. Faster timelines allow investors to create additional loans and therefore expands mortgage credit.

Additionally, loan-backed digital assets built on blockchain technology introduces the concept of fractionalization. While participation notes exist in certain areas of fixed income markets, this new technology allows for extremely efficient creation and management of fractions of loans. This concept may further equitable access to mortgage credit because smaller risk positions may be aggregated into extremely diverse pools of fractions allowing for better pricing of the underlying loans, which could lower rates for borrowers.

Furthermore, homeownership becomes more sustainable through blockchain technology by streamlining all borrower interactions, servicer notes, and other life-of-loan events attached to one digital asset. Servicing transfers are painful for borrowers, loan holders, and servicers alike. By streamlining data, documents, and payment networks, this process becomes more manageable for all counterparties.

The largest risk for any new technology is obsolescence. If blockchain adoption wanes over 20 years and the technology becomes obsolete, this would be an issue for any asset with a longer life. The foundation of blockchain technology mitigates this risk to some extent. Every participant in a blockchain network can create its own record of all historical transactions (and updated transactions if the network is active). If a blockchain were to no longer exist, the data and information can be transferred to a traditional server environment where it may be viewed by all counterparties (similar to today's non-blockchain environments). In other words, blockchain technology has a built-in "off ramp" for its data and transaction history.



C.2 What emerging techniques are available to facilitate or evaluate fintech compliance with fair lending laws? What documentation, archiving, and explainability requirements are needed to monitor compliance and to facilitate understanding of algorithmic decision-making?

The single most effective method of evaluating compliance with fair lending laws is through documentation of underlying models and processes. In order to properly document this information, a vehicle to store this data over the life of the loan is paramount. Liquid Mortgage has created the concept of a contributor-based Archive to retain documents and information over the life of the loan. Any data may be stored in this Archive and attached to a loan-backed digital asset over its life, including compliance data and algorithmic decision-making methods. At any point in the future, these methods may be viewed and confirmed for compliance purposes. Without a vehicle of this type there is a risk fintech compliance becomes more difficult as companies shut their doors or are acquired.

C.3 Are there effective ways to identify and reduce the risk of discrimination, whether during development, validation, revision, and/or use fintech models or algorithms? Please provide examples if available.

Technology does not currently exist to eliminate the risk of discrimination within fintech models, algorithms, or even outside of a technology environment (appraisals, for example). The best way to reduce risk is by documenting systems and methods for each part of the loan process. Capturing data allows firms and regulators to build retroactive models to test data for certain biases and create an actionable approach to reducing overall discrimination. Recording this data on the loan level, and continuously updating over the life of the loan, is the best way to reduce discrimination and other biases over time.

Identifying and Mitigating Fintech Risk

D.1 What risks do fintech and fintech firms present to the economy and the financial sector? To the housing finance sector? To FHFA-regulated entities? To counterparties of FHFA-regulated entities and other third parties? To mortgage borrowers and consumers?

Fintech firms have comparable risk to traditional financial institutions since they are providing similar services to borrowers, investors, and other ecosystem partners. While similar, they also have specific unique risks given the size and financial resources of smaller firms.

Security and Privacy

A major risk applied to fintech companies is security pertaining to data storage, documents, and protecting personally identifiable information. Without an appropriate infrastructure, firms open themselves to risk of data breaches and the release of personal data. Specifically related to housing finance, this information may include borrower, loan, and/or property information. Once obtained by a bad actor, this information may cause irreparable damage to the borrower. Luckily, there are industry-standard practices, tools, and monitoring readily available for those firms willing to make the investment.



Legal and Regulatory

Another major risk fintech firms present is the potential lack of regulatory concern. A firm may choose to ignore legal and regulatory requirements due to time and cost, which leads to improper licensing, insufficient capital requirements, or other legal issues. Legal and regulatory issues may not only affect the fintech firm itself, but potentially its clients and the housing finance system as a whole. Almost all counterparties in the housing finance system have extensive vendor management processes to prevent these types of issues, yet legal and regulatory concerns remain a key risk to the industry.

Longevity

A final key risk to the financial system is long-term viability. There are several reasons a fintech firm may individually become obsolete, but typically it is due to lack of funding or regulatory issues (as mentioned). Lack of funding may be due to longer timeframes to adoption, high regulatory costs, or general market conditions. Regulatory issues are typically tied to data privacy, security breaches, or compliance issues the fintech firm missed.

Either cause could create a lack of viability for a fintech firm, meaning current clients and solutions may be abandoned and clients would be forced to find other options. Specifically for the housing finance sector, this becomes a significant issue as the legal term for financing agreements could be greater than 30 years. Viability issues become an increasing problem when fintech firms focus on the creation and storage of data, documents, and legal materials necessary over the life of the loan.

However, most forward-thinking fintech firms will develop deliverables to clients which may out-live the company itself. This type of planning is the only safeguard for fintech clients and fintech firms as well. For example, since Liquid Mortgage creates digital assets and attaches information on a blockchain, clients receive a loan-specific data and document archive with a unique asset ticker to verify all historical information. With the tools provided, a client could continue posting information to the asset in the event of obsolescence.

D.2 What risk management practices do industry participants use to address the risks posed by fintech and innovation in housing finance?

Industry participants, particularly large financial institutions, have substantial vendor management and due diligence processes for all vendors, regardless of size. Reviews typically involve an in-depth review of business processes from data management, security, and risk to a general financials, policies, and procedures review.

Once approved, industry participants typically choose to pilot new solutions prior to implementation. This may include running parallel processes to current infrastructure or using example assets to test in a non-production environment. The testing process allows financial institutions to mitigate risk prior to full implementation, but also allows fintech firms to adapt to new environments and adjust integrations accordingly. Rarely are new products or integrations released directly into production to minimize risk for all.

Responsible fintech firms, likewise, attempt to mitigate their own risks by accepting minimal information to test within a new environment. For example, real documents and data with personally identifiable



information are never used for testing environments. Client integrations are always tested in staging and production environments prior to “going live”.

The risk of innovation is not one direction. Banks and large financial institutions have risk implementing new technologies from fintech firms, but one mistake from a fintech firm upon integration is the end of the business. Regulatory-forward sandbox environments are key for all industry participants, regardless of size.

D.3 What particular risks to consumer privacy have been associated with fintech? What practices are being used to manage these risks?

Fintech consumer privacy risk, like any financial institution, are generally related to data or security breaches. Breaches may expose personally identifiable information, documents, passwords, or other information which may tie a borrower to a property, loan, or financial information. Housing finance fintech firms are well aware of these risks and attempt to mitigate risk through the strictest industry best practices.

To mitigate these risks, fintech firms choose to store as little personally identifiable information as possible. Likewise, documents are only stored on an as-needed basis, passwords are encrypted, and data is structured in a complex manner. Most importantly, all databases are secured with industry-standard security, activity is logged, and access is limited to a few administrative users who undergo extensive background checks.

Regtech

E.1 What are the most promising areas for applying technology to regulatory and compliance functions? Please describe opportunities for “regtech” to simplify or improve compliance with FHFA, Enterprise, or FHLBank requirements.

Blockchain technology has the potential to play a significant role in the housing finance system, specifically with respect to regulatory and compliance functions. The technology is inherently built to remove the need to trust other counterparties because any counterparty can validate the occurrence of a transaction or change to an underlying asset. By attaching underlying loan information, documents, and payments to a loan-backed digital asset, an entire history of updates and/or changes to information is tracked in real-time and instantly verifiable.

One example of an application is the Liquid Archive product created by Liquid Mortgage. With this product, all data and documentation are tracked by contributor and attached to each loan digital asset. As loan files are added, updated, or deleted, a complete audit history is recorded in the Archive and updated on the blockchain. Contributors can be any party which interacts with the loan, including, but not limited to: Originators, Servicers, Custodians, Investors, and Due Diligence firms. At any point over the life of the loan, investors, regulators, and other counterparties can pull the Archive and instantly verify existence and originality of documents and data contained within.

Housing finance ecosystem partners, including FHFA, Enterprise, FHLB, and others benefit from this increased transparency in overseeing origination and servicing specifically. For origination, complete loan files and changes to data and documents can easily be verified and tracked. Likewise, servicer notes, borrower interactions, and other information are all retained within the Archive and easily verifiable with



user, timestamps, and other data. Liquid Mortgage believes in a regulatory-forward approach to product development, which is only enhanced by the use of blockchain technology to increase transparency.

Stakeholder Engagement

F.1 What forms of stakeholder engagement are most effective in facilitating open, timely, and continuous discussion on the challenges and opportunities presented by the application of fintech to housing finance?

Open lines of communication are important for all counterparties as fintech and other firms conceptualize and bring to market new products. The following three concepts would be a significant step towards opening the conversation.

Dual-Participation Webinars

It is important for industry participants to understand FHFA's focus from a regulatory and technology perspective. Ongoing webinars discussing important topics and areas of interest to FHFA allow fintech and other firms to build new products or adjust current products based on these informative sessions. Additionally, fintech and other firms could host webinars and teach-ins for FHFA team members. Participation from both sides drives fintech firms to adopt responsible innovation from the beginning and informs the FHFA on new technologies and solutions in the market.

Communication Forum

Other than webinars, a forum for more consistent communication would add value to all participants. This could be in the form of a simple website used for ongoing communication to and from FHFA or even a medium as simple as a Slack channel (or other messaging platform). This would allow the FHFA to communicate directly with certain teams and for fintech firms to ask questions in real-time.

Fintech Sandbox

Finally, a fintech sandbox would allow the FHFA to view products currently in development while allowing fintech firms to collaborate with housing finance participants across the ecosystem. A sandbox would promote a regulatory-forward approach to ensure products being launched are compliant and promote the underlying goals of FHFA and other regulatory bodies. This approach would also allow fintech firms to innovate faster, but also eliminate products sooner in their development lifecycle if they conflict with FHFA or other regulatory goals.



Conclusion

A tremendous opportunity exists to use financial technology to bring the housing finance ecosystem up to date while slowly phasing out current inefficient infrastructure. These changes will not happen overnight, but with collaboration between regulators, fintech firms, and financial institutions, incremental changes can drastically increase efficiency while lowering costs for all. The Liquid Mortgage team looks forward to working with ecosystem participants to further adoption of technology and increase access to mortgage credit in housing finance.

Contact Us

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