RISKS AND OPPORTUNITIES IN EXPANDING MORTGAGE CREDIT AVAILABILITY THROUGH NEW CREDIT SCORES

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EXECUTIVE SUMMARY

Economic recovery following the 2008 credit crisis has stabilized consumer credit markets and led to a rebound of credit availability for consumers. Underwriting standards have returned to a more normal range. Nonetheless, questions arise concerning whether some consumers are being left behind and locked out of homeownership due to their lack of access to traditional credit or having lost access to credit during the economic downturn.

This question has caught the attention of both regulators and Congress. The Federal Housing Finance Administration (FHFA) is in the process of evaluating the costs and benefits of using updated FICO Scores as well as considering VantageScore, owned by the three credit bureaus (Equifax, Experian and TransUnion, known as the CRAs), for GSE purchased mortgages.

Analysis of these two approaches resulted in three primary findings:

Credit Access: VantageScore's approach of lower scoring standards (by scoring very thin and very stale credit files as described below) falls short of the promise of increasing access to homeownership for millions of Americans. We estimate less than 50,000 new purchase mortgages would result from VantageScore's expansion of the credit universe. Even if that estimate is off by a factor of two, it is still a very small fraction of the millions of new consumers that VantageScore touts. We also must not lose sight of the fact that every one of these consumers is newly scored simply because VantageScore implemented very loose guidelines that deteriorated the explanatory power of their model. We cannot be confident that these consumers will perform similarly to more established consumers will similar scores.

Consequences of Lower Standards: VantageScore's approach to lower scoring standards increases the risk exposure of anyone lending based on the scores, meaning a 620 VantageScore does not equal a 620 FICO Score. FICO requires at least one credit trade line open for six months or more and at least one trade line updated within the last six months. VantageScore eliminates these requirements entirely, thus adding very thin and very stale credit files to their scored population. When a lender receives a VantageScore for a particular consumer, they cannot tell if the consumer had a very thin or very old credit record without actually looking into the full credit bureau file. Loosening information requirements increases the risk exposure of anyone lending based on these scores because the model has a looser fit.

Competition: The ownership structure of VantageScore under the three CRAs creates significant barriers to true competition in the conforming mortgage space. While we might normally expect competition to increase innovation, while reducing prices, the structure of the credit scoring industry is anything but normal. VantageScore is owned and controlled by the three credit bureaus, who each, individually, have power to control access to and pricing

of their data. As this data is an absolutely critical input to credit scoring models, the ownership structure of VantageScore could result in either limited or very expensive access to the data for competing firms such as FICO. Thus, increasing the use of VantageScore, particularly through a GSE mandate, could dangerously obstruct true competition.

In particular, score competition could push score providers to loosen standards under pressure from lenders and realtors looking to increase loan volume. This could start a race to the bottom similar to what we observed among bond rating agencies during the housing bubble. For example, in the years immediately preceding the crisis, getting a AAA rating on subprime mortgage bonds was essential for marketability; when deal arrangers could not convince one rating agency to issue a AAA, they simply went to the next agency.

This "rating shopping" became the norm so quickly that all of the major rating agencies quickly lost sight of the true risk of the bonds as they became caught up in the race for revenues. The same could happen very easily with an uncontrolled move towards multiple credit scores, particularly when the score is selected by an entity that doesn't assume the risk of the mortgage.

Credit scoring practices affect the capital markets as well as consumers. Private capital is finally slowly returning to the market for mortgage credit risk. Any confusion created by new or untested scoring practices could sideline that capital and increase the cost of credit.

The consumer credit scoring industry has a unique structure with the three credit bureaus dominating the collection and sale of credit data while FICO provides the scoring engines that drive the vast majority of consumer credit decisions. The three credit bureaus' joint ownership of VantageScore raises conflict of interest and fair competition issues that must be resolved to allow for true competition in credit scoring.

Finally, policymakers must remember that a credit score is but one input into the underwriting decision. While lack of score can be a barrier to entry, we must not overestimate the access to affordable credit that the mere presence of a score would generate. Most of the newly scored would be rejected for credit based on prudent underwriting practices. While expanding the availability of credit to those who can handle it is good, burdening people with credit they cannot handle is counterproductive for both consumers and investors.

INTRODUCTION

Economic recovery following the 2008 credit crisis has stabilized the consumer credit markets and led to a rebound of credit availability for consumers. Overly strict underwriting standards have loosened to a more normal range. However, questions arise concerning whether significant groups of consumers are being left behind due to their lack of access to reasonably affordable credit.

Nearly 45 million consumers are unscorable by today's most widely used credit scoring models that use traditional credit bureau data. This gap, as well as the current practices of using credit scores, has caught the attention of both regulators and Congress. The Federal Housing Finance Administration (FHFA), in its role as conservator of Fannie Mae (FNMA) and Freddie Mac (FHLMC), the government sponsored enterprises (GSEs or Agency), is evaluating the costs and benefits of using scores other than FICO® Scores for GSE purchased mortgages. Legislation has also been introduced to encourage expansion in credit scoring.

As new scoring providers and techniques emerge, we face not only the prospect of models being tweaked to include more people but also the risk that score providers will lower scoring standards under pressure from lenders and realtors looking to increase loan volume. This could start a race to the bottom similar to what we observed among bond rating agencies during the housing bubble. We must ensure that otherwise useful innovation does not lead us down that path again.

REGULATORY ENVIRONMENT
United States Senator Tim Scott (R–South Carolina) and Representative Edward Royce (R-California), along with bipartisan co-sponsors in both chambers,

introduced the Credit Score Competition Act of 2017 (Act) earlier this year. While the bill aims to expand competition in the use of credit scores by Fannie Mae and Freddie Mac, the actual wording of the bill does not mandate the use of any particular credit score by the GSEs. It simply establishes a procedure by which the GSEs can use commercial credit scores and evaluate different models and vendors.

Currently, both GSEs have FICO® Score guidelines for loans submitted through their automated underwriting systems. However, Fannie Mae does not actually use the score in their underwriting process. Rather, they use internally developed underwriting models that take into account a large number of factors from the applicant's credit report as well as information on income, assets and property values. Fannie Mae also has a program for loans without FICO® Scores[1] but for pricing purposes, they assign those loans to the lowest FICO® Score pricing bucket. Freddie Mac uses FICO® Scores directly along with other underwriting information. They also have a program for mortgages without FICO® Scores.[2]

Of more immediate interest is the position of FHFA on alternative models. In early August, FHFA Director Mel Watt previewed his plans during a speech before

the National Association of Real Estate Brokers when he stated, "FHFA will be issuing a request for input this fall to get additional information about the impact of alternative credit scoring models on access to credit, costs and operational considerations, and including questions around competition and using competing credit scoring models to make mortgage credit decisions."

There are at least two ways to characterize credit score "competition." First, you could have more than one model in use at the same time. We discuss later some of the issues with this approach in terms of a potential "race to the bottom." Second, the GSEs can rigorously test multiple models and choose the one that gives the most consistent and accurate portrayal of relative risk. This second definition is more objective and does not lead to the possibility of lenders gaming the system by choosing the most lenient model for each loan.

Setting aside the broad language in both the proposed Act and Mel Watt's comments, we believe the real issue comes down to two fundamental questions:

1. Does the current scoring system exclude a large number of creditworthy potential homeowners?

2. Could new approaches to consumer risk modeling

not only broaden credit availability but also improve the terms of credit for homeowners currently in the system?

UNSCORABLE CONSUMERS

A 2015 Consumer Financial Protection Bureau (CFPB) study found nearly 45 million American adults do not have a traditional credit score. FICO[3] and VantageScore[4] conducted similar studies with consistent results.

Using census and credit bureau data, the CFPB estimated that 26 million adults had no credit bureau records at all while an additional 19 million had credit records but were still deemed unscorable at that time by FICO. A consumer can have a credit bureau file but be unscorable because the data is stale or there is insufficient data upon which to calculate a score.

In terms of access to mortgage credit, we need to break down the 45 million figure by age to determine how much a lack of score may be impeding mortgage lending. Figure 1 shows the unscorable by age. 48% are either under 24 or over 65. Neither of those groups is likely to have large numbers of people seeking mortgage credit. For the younger group, however, it is important to become visible to the credit system in order to secure future mortgages.

Exhibit 1: Unscoreables by Age Group
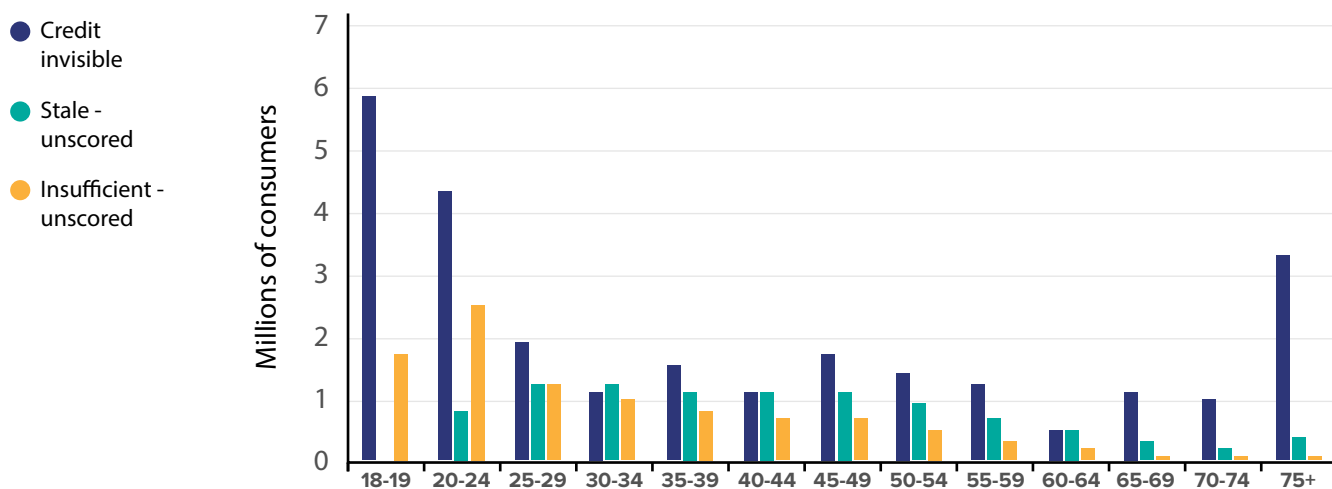
The CFPB study refers to consumers without any credit record as "Invisibles." They have either never used traditional forms of credit or have not used credit for quite some time. Young people who have not yet used credit certainly make up a large share of the group. However, there is also a subgroup of older or wealthier people who no longer need or use credit. There are also people of all ages who may be generally unbanked either because they lack the assets or steady income to participate in mainstream financial services or because they may be recent immigrants just getting established in the U.S. Finally, there are those who may have lost credit access due to defaults or bankruptcies and thus been excluded from the system for a number of years.

The "Stale" subgroup contains people who have data in their credit files but no recently reported activity. The "Insufficient" subgroup contains people who have active accounts and recent data but not enough of either to be scored by conventional models.

SCORING THE TRADITIONALLY UNSCORABLE

VantageScore and FICO studies also identified unscorable populations. VantageScore estimated there were 30-35 million[5] consumers as of 2010 who had credit files at one or more of the CRAs but were considered unscorable by traditional models. A FICO study estimated there are approximately 25 million consumers who are traditionally unscorable due to having no records at the CRAs.[6] The two credit scoring companies have taken quite different approaches to expanding the scorable population. FICO uses additional data from outside the CRAs while VantageScore lowers the data requirements necessary for a CRA based score.

FICO APPROACH TO EXPANDING THE SCORABLE UNIVERSE

After intensively studying the traditionally unscorable population, FICO concluded that their existing algorithms already capture all of the relevant

information from the CRAs. Additionally, FICO determined that any loosening of their standards for creating a credit score (Exhibit 2) resulted in unacceptable model fits. As the FICO® Score is used in over 90% of consumer credit decisions[7] in the U.S., FICO is understandably strict in protecting the integrity of the FICO® Score. Lowering the standards would have resulted in less reliable rank ordering of creditworthiness.

Exhibit 2

The general criteria for being able to calculate a FICO® Score are:

1. Data exists at a credit bureau

2. At least one trade line is six or more months old

3. At least one trade line has had activity reported within the past six months

4. No indication that the borrower is deceased

Conversely, any of the following criteria render a consumer unscoreable by traditional FICO scoring:

1. No data exists at any credit bureau

2. All trade lines are less than six months old

3. There are no trade lines reported within six months

4. The only data on file are collections or public records

As part of their research into expanding the scorable universe, FICO found that responsibly using new, alternative data, data from outside of the credit bureau files at the CRAs, produced reliable scores for certain types of lending. Based on these findings, FICO developed FICO® Score XD, a score created by FICO

focused solely on consumers who are not scorable by traditional FICO® Scores. FICO® Score XD has been validated and only made available for use in credit card lending. FICO does not supply FICO® Score XD for use in mortgage lending decisions. They believe that the score accurately rank orders credit behavior for lending such as credit cards.

With FCRA-compliant alternative data, FICO has successfully scored over 50% of the people previously considered unscorable. Importantly, this group contains millions of people with no credit bureau record at all – the truly invisible.

VANTAGESCORE APPROACH TO EXPANDING THE SCORABLE UNIVERSE[8]

VantageScore takes a very different approach than FICO to expanding the scorable population. Rather than looking outside of the credit bureau files, they have lowered the thresholds at which they are willing to create a VantageScore for a consumer. As a joint venture of Experian, Equifax and TransUnion, VantageScore understandably has great incentive to leverage the data available to it from the credit bureau files.

In order to score more consumers, VantageScore uses far less stringent requirements than FICO. FICO requires at least one credit trade line open for six months or more and activity on at least one trade line within the last six months. VantageScore eliminates these requirements entirely, thus adding very thin and very stale credit files to their scored population. As an example, VantageScore could score for a consumer with no open accounts and for whom the most recent activity is more than 24 months old. VantageScore does require that a credit bureau file exist for the consumer because they do not use information outside of the CRA files.

VantageScore creates four categories of consumers who are excluded by FICO® Score 9 (but not

necessarily FICO® Score XD) and then evaluates the credit file data for these consumers.

1. *New to market:* All trade accounts are less than six months old

2. *Infrequent user:* No trade has been updated within a six month window

3. *Rare credit user:* No activity on the file in the last 24 months

4. *No trades:* A subprime population with only closed trades, public records and collections information available

Unlike FICO® Score XD, VantageScore does not separate these consumers from their traditionally scored population. When a lender receives a VantageScore for a particular consumer, they cannot tell if the consumer had a very thin or very old credit record without actually looking into the full credit bureau file.

While these additional scorecards expand the VantageScore universe, the scores actually calculated on the newly scorable consumers tend to be quite low with only 25%-30% of the newly scored consumers having a VantageScore above 620. Furthermore, VantageScore reports that only 7% of the newly scored consumers with VantageScore less than 620 improved to above 620 in the 2012-2014 observation period.[9] This indicates continued poor performance by these consumers and likely limited access to credit in the future. While scoring these groups gives them visibility within the system, VantageScore's own evidence suggests that this is not good for many of the newly scorable. Acquiring credit before someone has demonstrated the ability and willingness to responsibly service their obligations can trap them in a cycle of increasingly onerous payments and penalties. It is far better to simply wait until the consumer is able and willing to make timely payments on a consistent basis.

Even for these modest gains in the scorable universe, we find several weakness in VantageScore's approach:

1. VantageScore is scoring more consumers simply by decreasing the information requirements. This is quite simply a loosening of standards. In their publication "Maximizing the Credit Universe" they conclude "leveraging the mathematical innovation in VantageScore 3.0 not only maximizes the lending universe, but it also does so without increasing risk exposure." In fact, loosening information requirements is not a mathematical innovation and actually increases the risk exposure of anyone lending based on these scores because the model has a looser fit. This means that the lenders cannot have the same confidence in the model results. Greater uncertainty is clearly a risk factor.

2. In several publications, VantageScore touts the consistency of VantageScore across the three CRAs. They accomplish this through "characteristic leveling," a process that essentially forces disparate sources of data into agreement for the purpose of producing consistent scores. However, VantageScore then admits that more information is critical when assessing default behavior. In discussing ways to expand the scorable universe, VantageScore states: "A review of the default rate profiles … shows that consumers with two or more credit scores have lower actual default rates across the credit score spectrum."[10] This finding does not surprise us. When considering very thin or very old credit files, there is simply not enough information to produce stable, reliable scores. "Characteristic leveling" in no way solves that problem. On the contrary, it can produce a score based on inadequate data from one CRA and then make it appear that the score is supported by data at the other two CRAs when, in fact, such data may not exist. When only one CRA has data on a consumer, it is almost certainly the case that the consumer simply does not have enough active, current information on which to base a reliable score.

3. VantageScore published a Gini coefficient of 54.78% on the newly scored population that compares rather unfavorably to their overall VantageScore 3.0 Gini of 73.47%-79.49%.[11,12] The gap in goodness of fit is actually larger than difference between the newly scored and total population Gini coefficients because the total population includes the relatively poorly fit newly scored consumers. This fit degradation is not surprising given the sparse information available to fit the newly scored consumers but it does clearly point out the new combined model is less robust than the original.

In many articles, VantageScore references a score of 620 as a threshold for standard qualification for a mortgage by the GSEs.[13] This is simply misleading. The GSEs do have a threshold of **620 for the FICO® Score** but that is not comparable to a VantageScore of 620. While VantageScore now uses the same 300 to 850 score range as the FICO® Score, that in no way means that the scores represent the same odd ratios. If the GSEs considered accepting VantageScore as a risk indicator, they would have to rigorously test the score and determine its odds ratio.

RECENT CHANGES TO SCORING

In addition to their efforts to include more people, both FICO and VantageScore have recently made several adjustments in their scoring algorithms (FICO® Score 9 and VantageScore 3.0) to more accurately, and in many cases more positively, score people.

Of all collection accounts, up to 60% are for medical expenses. Recent research indicates that people with medical collections have better credit behavior, all else held constant, than those with non-medical collection accounts. Several possibilities explain this difference. People may not even be aware that late medical

payments can impact their credit score and thus pay less immediate attention to those bills. Also, since large medical expenses are unusual events, late payments on those accounts may not reflect the consumers' general capacity and willingness to pay their credit obligations. Regardless of the reason, FICO found that the presence of medical collections, while still indicating poorer than average credit behavior, was not associated with the same degree of future delinquencies as non-medical collection accounts. Bad rates for consumers with non-medical collection accounts were as much as seven points higher than otherwise similar consumers who had only medical collections.[14] FICO now differentiates between medical and non-medical collection accounts when scoring consumers.

Another collection account related change involves obligations that have been paid in full. FICO found that including these accounts did not offer predictive power, in part because much of the derogatory information that led to the collection activity was already in their algorithms. Another complicating factor in collection accounts is the "pay for delete" practice that some collection agencies have, whereby they remove derogatory information if a consumer pays the collection in full. One of the problems with this practice is that the population of people who have had collection accounts is altered by the consumer – but only sometimes.

PREVIOUSLY UNSCORABLE PERFORMANCE

In order to see the impact of credit availability on non-traditionally scorable consumers, we must look at the performance of these groups once they obtain credit. Using FICO's approach as an example, we see that the newly scored are predominately at the lower end of the credit spectrum.

Exhibit 3: Distribution of FICO 9 and FICO XD
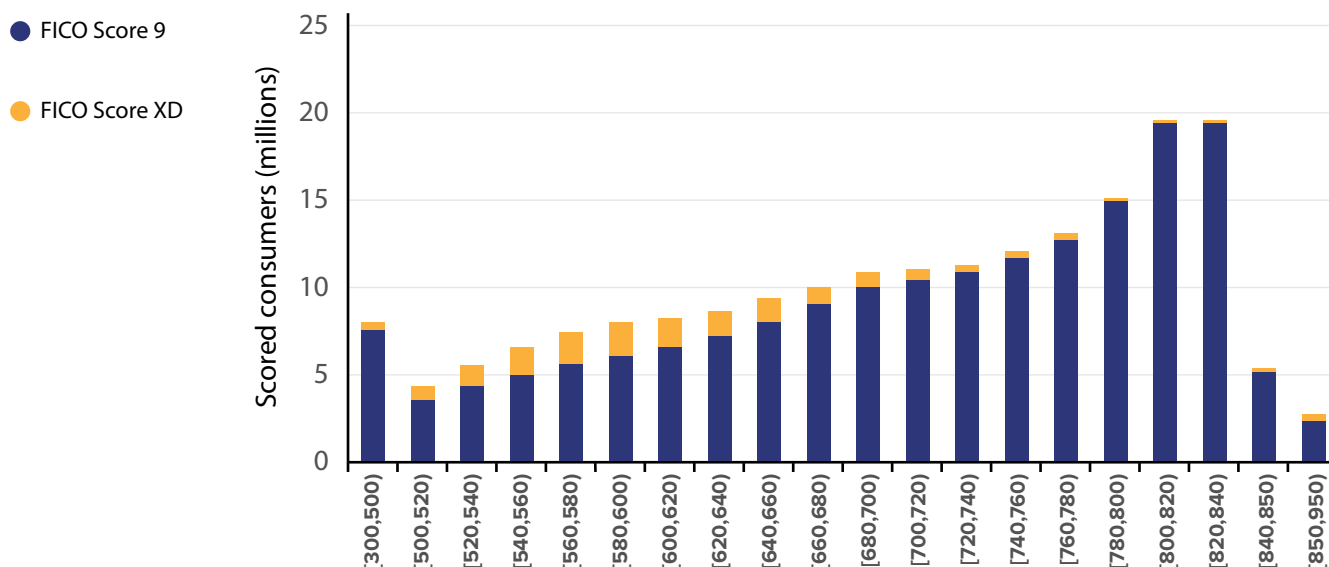
FICO classifies the newly scorable into Credit Retired, New to Credit and Lost Access to Credit. As Exhibit 4 shows, for many of those previously unscorable who go on to obtain credit, near term performance is not good. As expected, the Credit Retired segment performs better than the broad traditional population as this cohort is largely composed of people who do not need and are not seeking credit as they tend to be older and wealthier than the general population. The New to Credit group, however, has more than twice the bad rate of the general population. This group, generally younger and less financially flexible, is just beginning to develop credit habits. The Lost Access to Credit group has previously shown their inability to handle credit.
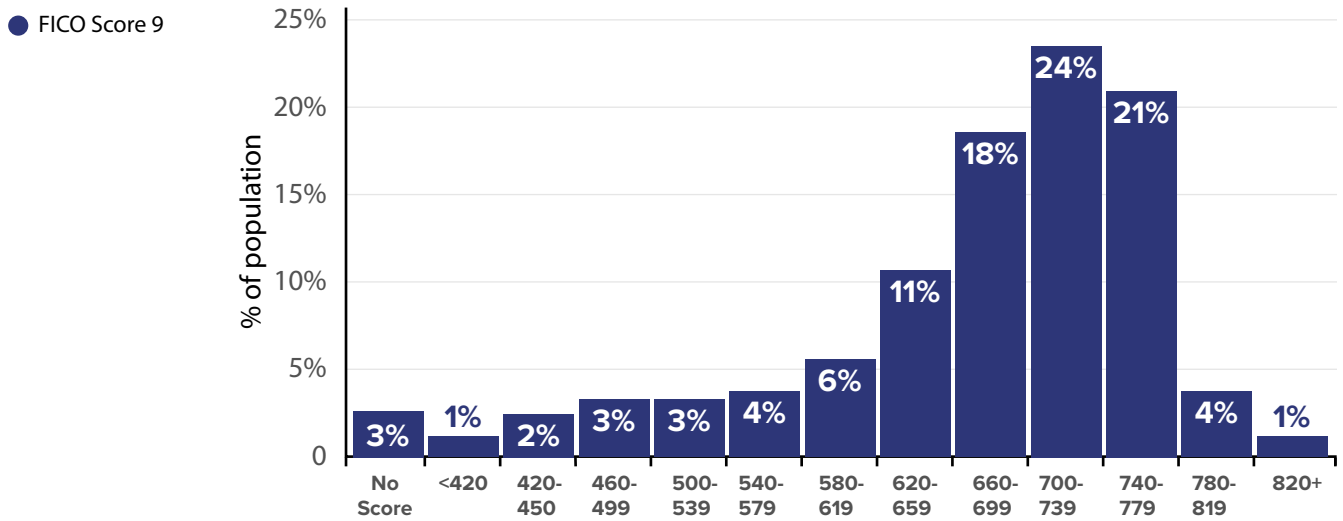
Exhibit 4:

Category	Bad Rate in Next 24 Months	Percent of Segment Scorable
Traditional Scorable	7.2%	100%
Credit Retired	6.20%	43%
New to Credit	18.40%	76%
Lost Access to Credit	34.20%	47%

Translating these numbers into a credit score on the usual FICO® Score scale of 300-850, approximately two thirds of the newly scorable have scores below 620 so they will tend to have problems securing affordable credit even with a score in hand. As mentioned previously, FICO® Score XD is only used for decisions on credit card accounts.[15] A score, even if it is low, can offer young or immigrant populations who are new to credit a way to establish a pattern of consistent payments. In fact, as shown in Exhibit 5, FICO found that of all the previously unscorable who scored 620 or higher and obtained credit, 78% remained above 620 two years later and 67% had a score of 660 or higher after two years. Note, however, that the group who obtained credit are likely skewed towards the higher end of the new scores to begin with.

Exhibit 5: FICO® Score Distribution Two Years after Obtaining Credit For Consumers with a FICO® Score XD >= 620 at Time of Application

For consumers who opened a mortgage, the results are even better. Exhibit 6 shows the movement in score by FICO® Score bucket over a one year period following a new mortgage. 64% of borrowers in the 350-599 bucket showed improved scores with an additional 13% maintaining their score (+/- 9 points). This is remarkable given that borrowers in this score range had persistent, serious credit problems prior to opening the mortgage. The next higher bucket, 600-699, shows 74% maintaining or increasing their score.[16]

Exhibit 6:Change in FICO 5 Score 1 Year After Mortgage Opening
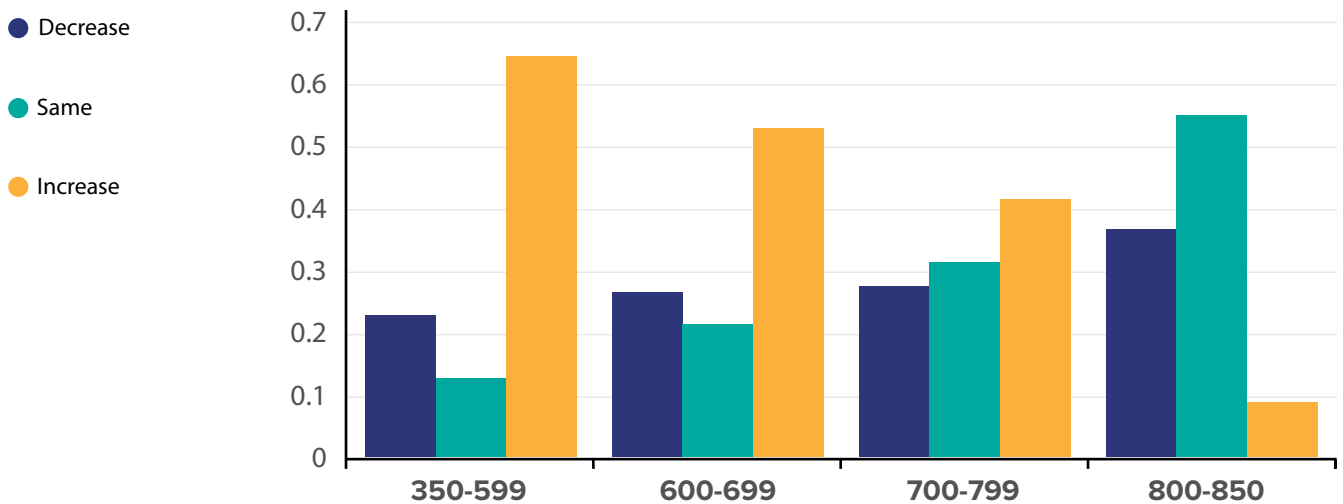
Scores for mortgage customers improve even more as time passes. Exhibit 7 shows the score progression for one, two and three year time periods. The largest movement occurs for the lowest scoring cohorts as they reestablish good payment patterns. Note that the scores in the super prime segment drop slightly but not because of poor payment history. Missed payments would have dropped their scores significantly more.

Exhibit 7: Mean FICO 5 Score Differences for Consumers Who Opened a Mortgage April - July 2013
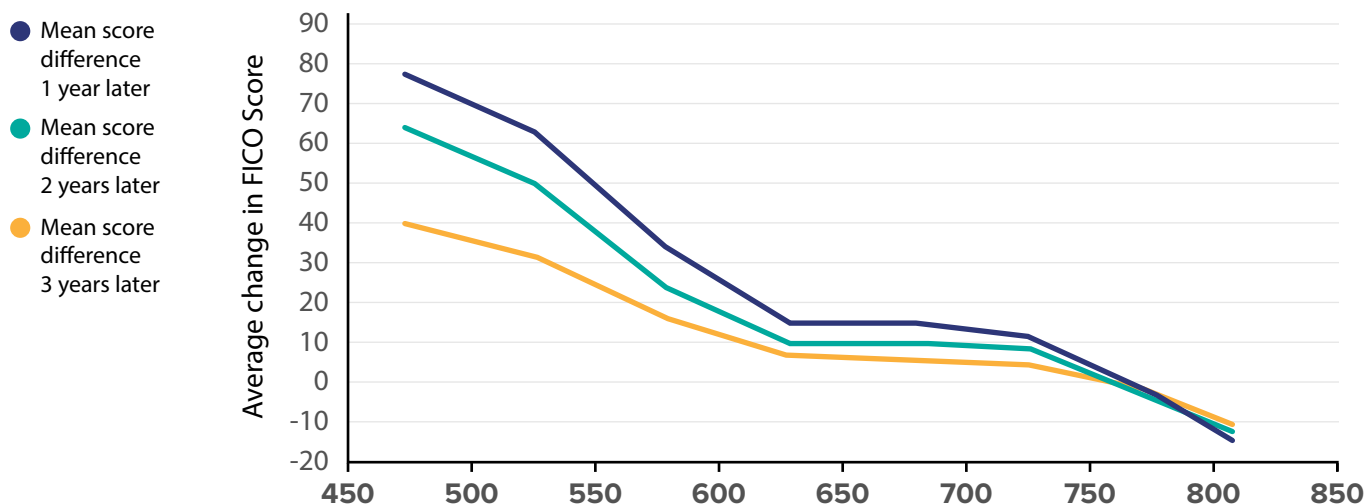
As mentioned earlier, VantageScore's expanded scored population tends to perform rather poorly with only 7% of those initially scoring below VantageScore 620 improving to above VantageScore 620 two years later – and this is by far the largest segment of their newly scored population. How can this be, given the FICO® Score results shown above? There are several possible explanations. First, as mentioned earlier, a VantageScore of 620 represents higher odds of default than a 620 FICO® Score. A careful reading of Exhibit 7 shows that borrowers below 620 do improve their score but in many cases not by enough to get above 620. Second, the FICO® Score data above focuses on mortgage borrowers whereas the VantageScore information is for all customers below VantageScore 620. Finally, and most importantly, the FICO® Score and VantageScore models are simply different and drawing direct comparisons without detailed information on the model differences is invalid.

HOW MANY NEW MORTGAGES ARE CREATED BY SCORE EXPANSION?

VantageScore claims that up to 10 million consumers previously unscored would have access to credit if standards for score creation were loosened to include very thin and very stale files. Quantilytic analyzed VantageScore, FICO, HMDA and GSE data to estimate how many new mortgages might be originated out of that population.

VantageScore refers to the group of 10 million consumers with a VantageScore above 600 as "near-prime and prime." In fact, at least 2 million of the consumers are subprime even by VantageScore's definition as they fall under VantageScore 620.

Not every consumer who has a credit score obtains a mortgage every year. Especially in the lower end of the credit score spectrum, many consumers are rejected for loans due to excessive debt to income ratios and other underwriting criteria. The presence of a score above 620 does not guarantee a mortgage approval. Of course, many consumers simply choose not to take out a mortgage because they prefer to rent or already own a home. We estimated likely mortgage origination rates by looking at the proportion of consumers in each FICO® Score bucket who actually obtained mortgages in 2015. We included only purchase loans as refi customers are likely to have credit records and increased refi volume does not constitute expansion of the borrower universe. Applying the appropriate origination percentage in each score

bucket to the number of newly scored consumers under VantageScore's loose requirements resulted in slightly less than 48,000 new mortgages per year.

The 48,000 figure is still almost certainly overestimated. VantageScore does not break down their 10 million number by age or other characteristics but it is reasonable to assume that the newly scored are disproportionately young. That could dramatically reduce origination rates amongst this group. Finally, many of these newly scored consumers may live in a household owned by someone who is already conventionally scored. There is no need to obtain a new mortgage in that case and, in fact, many of these households would be worse off with the new score factoring into a mortgage application because this group is predominately at the lower end of the credit spectrum and their new scores could drag down the credit score on a joint application for a mortgage.

Even if our estimate of 48,000 new purchase mortgages resulting from VantageScore's credit universe expansion is off by a factor of two, it is still a very small fraction of the millions of new consumers that VantageScore touts. We also must not lose sight of the fact that every one of these consumers is newly scored simply because VantageScore implemented very loose, lower guidelines that deteriorated the explanatory power of their model. We cannot be confident that these consumers will perform similarly to more established consumers with similar scores.

Exhibit 8

FICO® Score 9	Consumers	2015 Conventional Purchase Originations	% of Consumers Taking Out Mortgage	Vantage Score Expansion	Estimated Annual New Mortgages
[300,500)	8,071,000	2	0.00%	-	-
[500,520)	3,853,307	2	0.00%	-	-
[520,540)	4,565,970	2	0.00%	-	-
[540,560)	5,362,604	9	0.00%	-	-
[560,580)	5,939,896	30	0.00%	-	-
[580,600)	6,477,399	70	0.00%	-	-
[600,620)	6,902,273	110	0.00%	-	-
[620,640)	7,562,839	14,253	0.19%	2,800,000	5,277
[640,660)	8,409,539	29,182	0.35%	2,000,000	6,940
[660,680)	9,596,552	57,012	0.59%	800,000	4,753
[680,700)	10,603,811	102,079	0.96%	1,200,000	11,552
[700,720)	11,045,816	151,747	1.37%	400,000	5,495
[720,740)	11,473,678	197,558	1.72%	800,000	13,775
[740,760)	12,371,305	276,935	2.24%	-	-
[760,780)	13,425,074	425,906	3.17%	-	-
[780,800)	15,637,536	616,978	3.95%	-	-
[800,820)	20,279,588	453,045	2.23%	-	-
[820,840)	20,334,313	19,594	0.10%	-	-
[840,850)	8,087,499	5	0.00%	-	-
Total	**190,000,000**	**2,344,521**		**8,000,000**	**47,792**

Assumptions

1. Originations were estimated by taking FNMA's 30 year fixed rate distribution of purchase loans by FICO score and then grossing up by the total FNMA and FHLMC purchase originations for 2015

2. VantageScore expanded population was estimated from the U.S. Population Score Distribution chart in the publication "VANTAGESCORE 3.0: Better predictive ability among sought-after borrowers"

3. GSE purchase loan counts sourced from HMDA 2015 Table A1

CAN CREDIT SCORES HURT CONSUMERS?

While obtaining access to credit can lead to better future performance, the mere provision of a credit score is but one factor taken into account in underwriting. Much of the improved performance is likely due to factors uncovered in manual underwriting of low scoring consumers. Thus we are looking at a biased sample of the low credit scores when evaluating performance. An underwriter (or automated underwriting model) has chosen to extend credit to the highest quality of the low scoring cohorts based on factors not included in the CRA files.

Most consumers with FICO® Scores below 620 (or the VantageScore equivalent) will be rejected for long term or high balance credit given their propensity to default. Simply producing a score for a consumer does not make them creditworthy.

In fact, having an inaccurate credit score can hurt consumers in two different ways. First, if a score produced with insufficient information ranks a consumer too high, they may be granted more credit than they can handle and potentially push them into default behavior that will restrict their credit for years to come. On the other hand, a score that overstates the risk of a consumer because it does not have enough information can unfairly restrict their access to credit.

These consumers would have been better off with a manual underwrite and no credit score at all.

Underwriters can take into account information that is not available to the credit scoring models. For instance, one time or temporary events such as the death of a family member, temporary unemployment, illness or even natural disasters are much better evaluated by an underwriter than a model. Of course credit scores provide tremendous insight for an underwriter but only if they are based on sufficient information to accurately score a customer.

We must also accept the conclusion that sometimes the best thing for a consumer in the long run is denial of credit in the short term. Traditionally unscorable consumers do not automatically receive low scores simply because they are new. The low scores reflect characteristics that have generally led to poor performance in similar populations.

HOW MUCH DO SCORES MATTER?

Credit score directly impacts interest rates on mortgages. As the following table demonstrates, the difference in monthly payment for a $300,000 loan with a 30 year fixed mortgage is more than 20% higher for the lowest score group compared to the highest. That's over $100,000 difference in payments over the life of the loan.

Exhibit 9

FICO® Score	APR	Monthly Payment
760-850	3.517%	$1,350
700-759	3.739%	$1,387
680-699	3.916%	$1,418
660-679	4.130%	$1,455
640-659	4.560%	$1,531
620-639	5.106%	$1,630

Source: 9/21/2017 http://www.myfico.com/loan-center/home-mortgage-rate-comparison/

CREDIT SCORE CONFUSION

While competition can drive useful innovation and keep the pressure on traditional score providers to continue improving their models, it can also create confusion. FICO alone has over 25 different scores, including industry-specific scores. They also maintain multiple versions of their base score because some lenders have been slow to update to the latest scoring models. Meanwhile, VantageScore is stated on the same 300-850 scale as the FICO® Score but the odds ratios at each point on the spectrum are different than the FICO® Score, rendering the scores incomparable. Finally, non-affiliated score retailers such as Credit Karma generally provide scores to consumers that may bear only a passing resemblance to the FICO® Scores that lenders overwhelmingly use to make credit decisions.

Even if a consumer is especially careful in obtaining a score, there can still be differences between the credit bureaus. For instance, a FICO® Score used to qualify for a mortgage loan can differ because the three bureaus have different data on each consumer. As an example, if there is a credit inquiry initiated by a lender at one credit bureau when prequalifying a borrower, the other two bureaus are unaware of the inquiry and so do not factor it into their score. As inquiries are generally negative factors with respect to FICO® Scores, the bureau with the inquiry on record may report a lower score. Other differences occur due to data timing issues between the bureaus. These factors, taken together, can result in FICO discrepancies of up to 100 points although, in practice, they are much tighter than that. FICO compensates for differences between the bureaus by using slightly different algorithms for each one. This allows them to maximize the distinct value of data at each CRA.

VantageScore, on the other hand, uses the same algorithm with each bureau and reports that this gives them tighter agreement, by definition, in VantageScore across the credit reporting agencies. VantageScore follows this process because it is owned by the CRAs, and wants less visible differentiation in scores even when the data may be remarkably different between the CRAs on any given consumer. Smoothing over these data inconsistencies, through the "characteristic leveling" process described earlier, reduces the statistical differentiation that additional data can provide.

Furthermore, mortgage lenders do not average the scores they receive. For most loans originated for sale to the GSEs, lenders must attempt to obtain FICO® Scores from all three CRAs.[17] The GSEs require the middle score or, if only two were obtained, the lower of the two. Adding even more confusion and surprise to the loan applicant is the fact that joint applications use the score from the lower credit person on the application.

The real problem for consumers is that they think they are getting "the credit score" when in fact they are getting a number that has little meaning without quite a bit of context. This leads to surprises when a lender tells them they have a significantly lower score than they were led to believe.[18]

Adopting a new credit scoring model is a significant undertaking for lenders, investors and others in the market. As an example, the GSEs still use a version of the FICO® Score from 2005. Although significant improvements have been made by FICO since then and the reach of their models is broader than ever and the GSEs have evaluated the new scores several times, various non-score related issues have delayed adoption of the new scores.

While there are certainly systems issues and extensive testing necessary, upgrading a FICO® Score version is simple relative to implementing whole new model frameworks from new vendors, yet nearly a decade has passed without upgrading the model. Validating, testing and implementing a different type of score would take years of work by all parties concerned. Adjusting

systems, policies and practices to accommodate a multi-score paradigm would take even longer.

CREDIT SCORING FUNDAMENTALS

One common misunderstanding about credit scores is that they mean the same thing regardless of the time period or economic environment in which they were calculated. This is simply untrue. In order to understand why, some background on scoring algorithms is helpful. Traditional credit scoring follows a fairly straightforward process but with many nuances that differ between providers and algorithms. We focus on the similarities here.

FICO® Score and VantageScore attempt to predict the relative likelihood of default, defined as a credit obligation 90+ days past due, occurring within two years of the date of the score.

Relative likelihood of default is key to understanding the score. Scores are designed to rank order this relative likelihood, NOT predict the ultimate probability of default. Therefore, when we judge a score's effectiveness at its designed purpose, we are simply looking at how well it rank orders groups of borrowers. Each score represents an odds ratio which tells us how many "goods" versus "bads" are expected in a population segment. A "good" is a person who pays all debts as agreed over the next two years while a "bad" is one who has at least one payment late by at least 90 days. Exhibit 9 presents representative odds ratios and associated probabilities of default for a range of FICO® Scores.
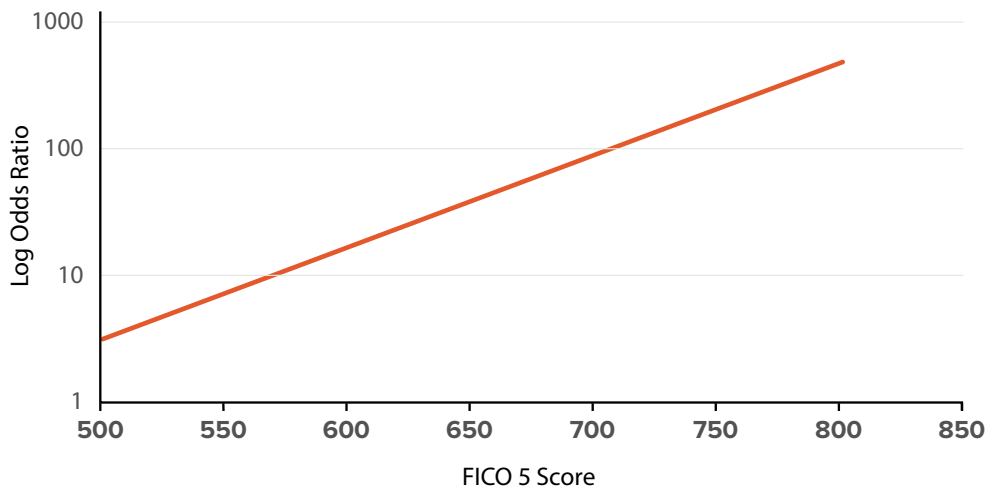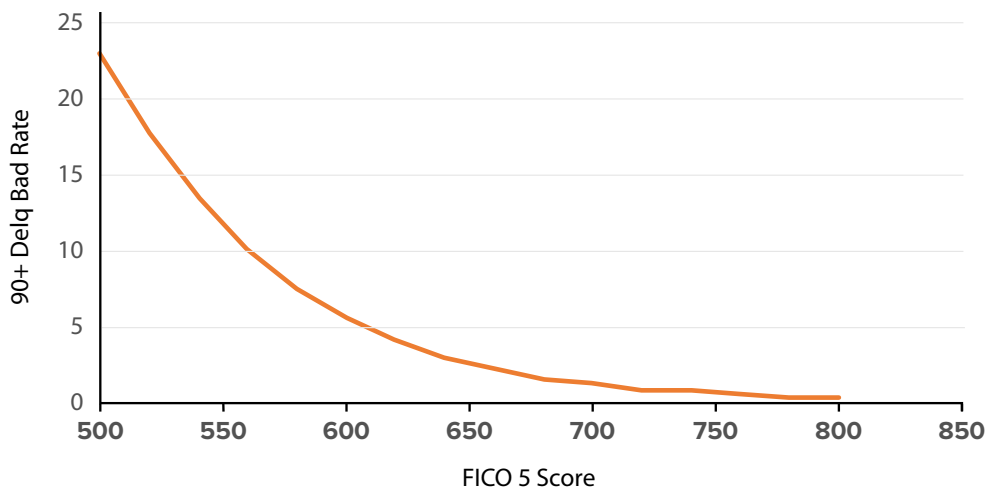
Exhibit 10A

Exhibit 10B

It is important to note that the probability of default (PD) is an estimate expected to hold only in a "normal" environment. Under economic distress, the PD is expected to increase for all score levels and in a period of robust economic expansion, PDs are expected to be lower across the spectrum than those implied by the odds ratios. What does not change, regardless of environment, is the rank ordering of default rates by score level. Exhibit 10a shows that the rank ordering was maintained throughout the period from 2005 to 2016.
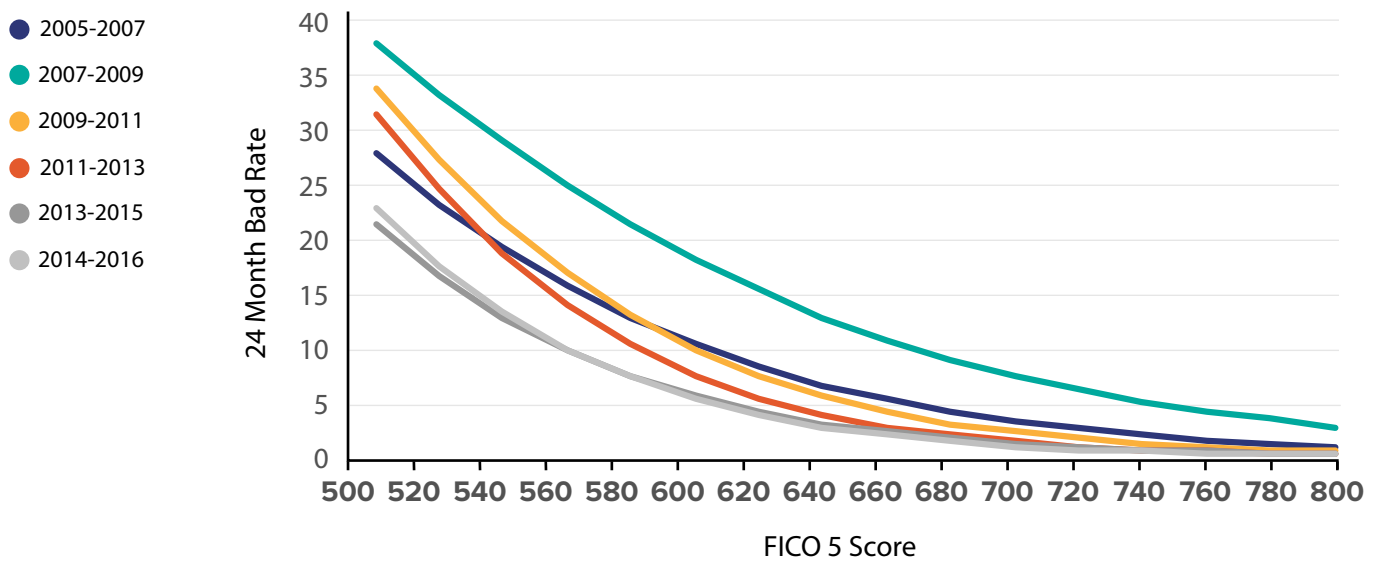
Exhibit 11a: FICO® 5 Bad Rates Over Time

Exhibit 10b takes a closer look at how environment and other factors such as underwriting affect default levels along the score spectrum. In the 24 month period starting in 2007, consumers scored as 640 FICO® Score had a 24 month bad rate of 12.8%. Two years earlier, the same default level was seen by consumers with a 580 FICO® Score. In the 2005-2007 period, economic distress had not yet developed broadly.

By 2014, with recovery in full swing and far better underwriting practices, scores around 540 were experiencing defaults similar to the 640 cohort from 2007. This variance of default rates due to a changing economic environment and underwriting practices highlights the critical need for lenders to validate how credit scores map to their customers' behavior in the current environment.

Exhibit 11b: FICO® 5 Bad Rates Over Time
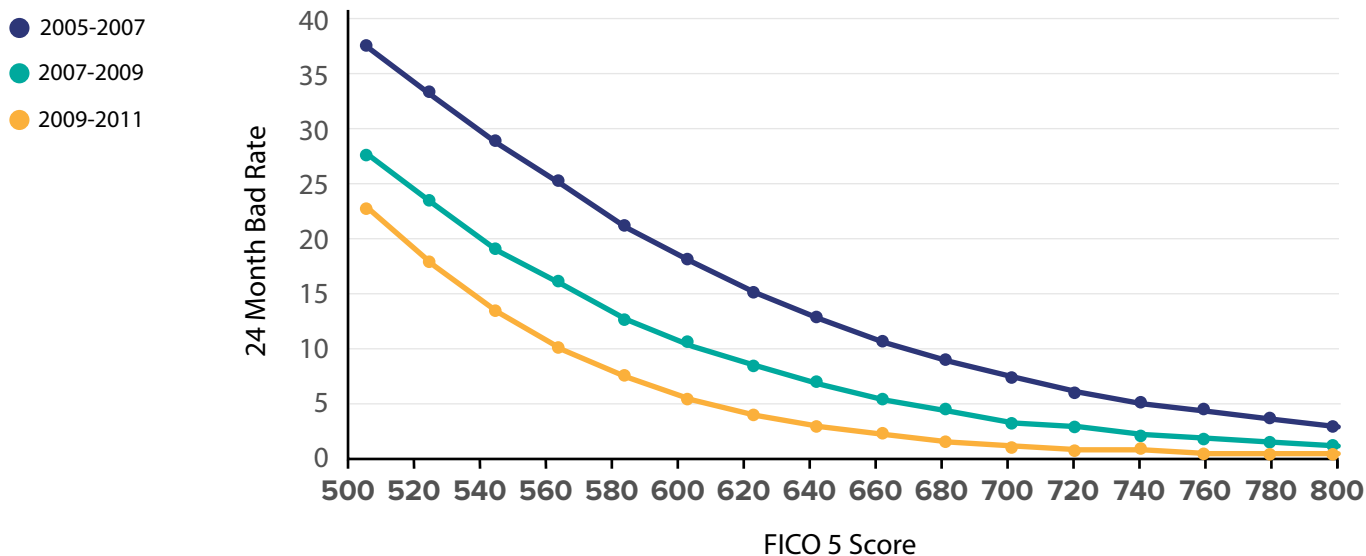
SECONDARY MORTGAGE MARKET ISSUES

We have concentrated so far on scoring issues related to consumers, lenders and the GSEs. We now move on to secondary market investors who use credit scores as a critical input to their risk and portfolio management models.

The secondary mortgage market includes Agency residential mortgage backed securities (RMBS), non-Agency RMBS and credit risk transfer deals in both reinsurance and bond form. Private mortgage insurers are also increasingly involved in the secondary market through reinsurance and cat bond[19] transactions.

The secondary market has recently picked up volume substantially following nearly a decade of stagnant activity after the failure of so many subprime AAA rated deals during the credit crisis. Participants are once again looking to take credit risk but remain appropriately skeptical about the power of ratings to explain all of the risks inherent in credit exposed transactions. Investors have moved towards more detailed in-house analysis of risk. Credit score distributions are a vital input to their models.

Investors have different needs than lenders and consumers. One of the most important is ready access to regularly updated scores on the loans underlying bond pools. While credit scores at origination are useful, an investor must know how that risk has evolved in order to accurately price secondary issues. They also need information on score migration at a granular level so they can match up performance against different drivers at various points in time. Issuers currently provide updated FICO® Score distributions and new scoring firms must be able to offer similar services if they hope to gain acceptance in the market.

Investors have spent tens of millions of dollars modeling FICO® Score behavior and the impact on returns. Many regulated investors such as banks and insurance companies have also subjected their models to rigorous independent validation. This process has taken years

to complete and we expect more years of such vital background work will be necessary before widespread acceptance of any new models occurs. In fact, if acceptance does not follow such a process, we would be very worried that the risks of such new models are poorly understood. Beyond the modeling and validation issues, simply changing risk and portfolio systems to accommodate new scores will be lengthy and costly.

While investors are free to use or discard new scoring approaches as they see fit, policymakers must be keenly aware of the effect that new regulatory mandates in the market could have on access to and the cost of credit. For instance, if FHFA decided that lenders could submit any scores they wanted to GSEs for new loans and not be required to submit standard scores, the GSEs would likely be disappointed in the tepid reaction of the market to any transactions that included loans not scored by traditional credit models. Investors would likely eventually implement models and return to the market but a period of score confusion could be very costly in terms of yield required on non-standard scored loans. To be clear, investors hold the credit risk on the deals they purchase. They do not have the policy objectives that regulators promote. Investors will require excess return in order to bear the risk associated with unproven or poorly fit models and that cost will be passed on to consumers.

Stopping the healthy momentum that has built up in the past three years in the credit risk transfer space could actually serve to restrict credit availability until models and systems are adjusted to accommodate new scores. Likewise, introducing change now just as the GSE single security platform is finally approaching completion could set that program back years.

Investors will happily consume innovative analytics if they contain important new insights, but rolling out mandates of such models is unwise as this could disrupt segments of the market that cover the vast majority of credit risk, and function very effectively at present.

COMPETITION IN THE CREDIT SCORE MARKET

Competition is almost always good for consumers as it tends to bring about better pricing, greater efficiencies and important innovations. In the case of the market for credit scores, the situation is more complex as competition may also have the unintended consequences of market confusion, high implementation costs, delays to wider availability of credit and the potential for a dangerous system-wide race to the bottom in credit scores. How these positives and negatives are balanced will have far reaching effects in the credit markets.

FICO has long lead the market for consumer credit scoring in the U.S. FICO was formed in 1956 and began producing credit scoring services several years later. Acceptance and use of the FICO® Score for mortgages became extremely widespread once the GSEs began using the scores in 1995 following many years of use in non-mortgage credit markets. The first tri bureau score designed to compete with FICO began in 2006 with the creation of VantageScore by the three major credit bureaus. Although VantageScore has made some inroads, FICO remains the only score required by the GSEs.

While we might normally expect competition to increase innovation while reducing prices, the structure of the credit scoring industry is anything but normal. VantageScore is owned by the three credit bureaus who control access to and pricing of their data. As this data is an absolutely critical input to traditional credit scoring models, the ownership structure of VantageScore could result in either limited or very expensive access to the data for competing firms such as FICO. Thus, increasing the use of VantageScore, particularly through a GSE mandate, could dangerously obstruct true competition.

Beyond competitive issues, implementation costs of entirely new credit scoring methods are extraordinarily high in terms of both time and money. The GSEs'

ongoing reliance on prior models provides evidence of that even when FICO has worked hard to ensure seamless compatibility, industry participants find there is still ample model management work to be done in order to adopt the latest models. New models with new sets of inputs, new score ranges and, most importantly, completely different ways of interpreting scores will be far more difficult to adopt on a widespread basis.

RACE TO THE BOTTOM

While all of the issues mentioned above are serious, the most important issue in a multi-score world is the potential for a race to the bottom for credit scores. There is only so much score providers can do in terms of accessing new populations of creditworthy borrowers. Our fear is they will be tempted to adjust their models in ways that make current borrowers look less risky. After all, loan officers and realtors are primarily concerned with closing the deal and looser score criteria helps that happen.

If this race to the bottom scenario seems unreasonable, all we have to do is look back at the pre-crisis days to see ample evidence of risk misrepresentation throughout the mortgage system from realtors to lenders to rating agencies to the GSEs. While everyone was involved in that fiasco, the role of the rating agencies is perhaps the closest parallel to a possible race to the bottom in credit scores. In the years immediately preceding the crisis, getting a AAA rating on subprime mortgage bonds was essential for marketability; when deal arrangers could not convince one rating agency to issue a AAA, they simply went to the next agency. This "rating shopping" became the norm so quickly that all of the major rating agencies quickly lost sight of the true risk of the bonds as they became caught up in the race for revenues. The same could happen very easily with an uncontrolled move towards multiple credit scores when the score is selected by an entity that doesn't necessarily assume the risk of the loan.

Some may argue that a race to the bottom is unlikely in the current environment which is enjoying very low default rates and good property appreciation. However, robust markets are often where such behavior begins because good macroeconomic conditions can temporarily mask the effects of emerging bad practices. We have 2006 in the residential market as a prime example of such behavior, where poor risk management was covered up by increasing property prices. In fact, in 2006 many people were loudly calling for a policy of increasing access to affordable credit – just as they are today.

How can we benefit from valuable innovation with new data sources and analytic techniques and still avoid the drawbacks mentioned above?

First, we must recognize that the vast majority of Americans are very well served by the current credit scoring paradigm. A far greater proportion of people in the U.S. are scored in a fair and compliant manner than anywhere else in the world. This is due to the long term collection of data by the three credit bureaus and the consistent performance of the FICO models through all environments in properly rank ordering default risk. The consumer protections provided throughout the credit ecosystem, while not perfect, are extremely advanced and offer consumers the opportunity to be fairly judged on their performance as credit customers – and to correct errors when they find them.

Second, scores provided as a result of responsibly using new alternative data sources beyond the traditional credit files can help expand the scorable universe through the addition of data not contained in CRA files. However, these scores should be used as on ramps to mainstream credit participation by consumers with thin or stale files. Rather than simply immediately granting mortgage credit to these consumers, we suggest a more measured approach. FICO essentially does this by offering FICO® Score XD for credit in

the credit card industry. This approach is not very burdensome when you consider that a consumer only has to have one trade line open for six months and one trade line reported in the last six months in order to be traditionally scored.

We are not suggesting that FICO should not be subject to competition on credit scoring. However, competition should be fair, transparent and evidence based in order to avoid a race to the bottom. Given FICO's success in consistently rank ordering mortgage borrower performance across all economic cycles, the GSEs must have a truly compelling reason to even consider replacing or supplementing FICO® Scores.

Simply expanding the universe of scorable consumers through the use of less robust models does not justify upsetting a well working market, especially when very few of those additional consumers would qualify for conventional mortgages.

Investors are of course free to choose any tools they find helpful in identifying, pricing and managing risk. However, they should also be acutely aware of just what they are evaluating. Bonds and other investments such as reinsurance deals should continue to receive the consistent reporting of traditional scores as they have for over a decade.

CONCLUSION

Millions of Americans lack access to valid credit scores. Sitting outside the mainstream credit market can restrict their personal economic growth and potentially lock them into a cycle of borrowing from predatory lenders in order to meet their credit needs.

While some and perhaps most of these credit invisibles may not yet be ready to carry the burden of long term debt, leaving them out of the system will ensure that they never develop that capacity.

Recent data and analytic advances have opened up new possibilities for scoring the previously unscorable and beginning their transition to fully participating in mainstream financial services. However, these innovations come with significant risks. Widespread implementation must be done carefully to avoid the reemergence of systemic risks to the very system that could benefit the currently unscored.

The credit system works well for the vast majority of credit seeking Americans by accurately portraying their propensity to pay their credit obligations. We can

and should expand the universe but not at the cost of harming the hundreds of millions who are well served today.

Policymakers should move cautiously to ensure that the advantages offered by innovation are realized without kicking off a risky race to the bottom in credit scoring as competing firms grab for market share. To the extent it occurs, expansion must be safe, sound and strictly evidence based.

Policymakers also must remember that a credit score is but one input into the underwriting decision. While lack of score can be a barrier to entry, when looking at the unscored population, we must be careful not to overestimate the access to affordable credit that the mere presence of a score would generate. Most of the

newly scored would be rejected for credit based on perfectly legitimate underwriting. While expanding the availability of credit to those who can handle it is good, burdening people with credit they cannot handle is counterproductive for both consumers and investors.

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4. VantageScore Solutions (VantageScore) is jointly owned by the CRAs – Equifax, Experian and TransUnion. We use "Vantage" and "VantageScore" to refer to either the company, VantageScore Solutions, or the credit scores produced by VantageScore.

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6. "Can Alternative Data Expand Credit Access?" FICO Decisions – Insights White Paper No. 90

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8. We focus on VantageScore version 3.

9. "Exclusionary Credit Score Modeling Limits Access to Credit for Millions of Consumers … Even Perhaps Your Next Door Neighbor", VantageScore, November 2016, page 3, https://www.vantagescore.com/resource/144/exclusionary-credit-score-modeling-limits-credit-access

10. "Maximizing the Credit Universe" June 2015, VantageScore, www.VantageScore.com page 4

11. "Better predictive ability among sought-after borrowers", March 2014, https://www.vantagescore.com/images/resources/American%20Banker%20Insert%20-%20March%202014.pdf

12. We give the Gini score as a range because it is unclear whether the quoted newly scored Gini is for originations or account management.

13. "Exclusionary Credit Score Modeling Limits Access to Credit for Millions of Consumers" November 2016

14. http://www.fico.com/en/blogs/risk-compliance/impact-medical-debt-fico-scores/

15. We can see a path for the GSEs to accept a new score to be used as a "waterfall" score in the event a traditional FICO® Score is unavailable, similar to how FICO® Score XD can be used in the credit card market. However, this approach in the credit card market is unique, as the odds ratios for traditional FICO® Scores and FICO® Score XD are designed to be the same. It would not be wise to waterfall to another score with potentially different odds ratios. Furthermore, secondary market investors would have to be informed which loans in a pool were accepted based on a new score so that the investors could perform their own analysis.

16. Note that these are FICO® 5 scores, the score version generally used by the GSEs.

17. Differences in the data held by each CRA can result in scores not being available from all three for a particular consumer. For instance, a potential borrower might have only very recent trade line activity and one CRA may have a timing lag in obtaining and posting that information compared to the other CRAs.

18. Consumers can find out where to get their FICO® Scores on ficoscore.com. This site shows consumers how to get FICO® Scores directly from an authorized FICO® Score retailer to ensure they are actually getting their FICO® Scores — and not any other type of credit score.

19. Private mortgage insurance "cat" or catastrophe bonds are similar to property and casualty catastrophe bonds which investors buy in the hope that actual losses turn out to be less than expected losses. This is a capital markets form of tradeable reinsurance and helps establish a market price of risk.

To begin with, 90 percent of these seemingly eligible consumers (1.8 million) have stale credit files and most of their files are very old; in fact, some 65 percent of these stale file consumers have had no reported trade line activity within the last 4 years. It seems highly unlikely that these consumers would qualify for a mortgage in the absence of additional data; in fact, one can reasonably argue that such consumers would be better off with a manual underwrite. Of the remaining 200 thousand consumers who are new to credit, almost 60 percent have a revolving trade line that is less than $1000. Again, without additional information, it seems unlikely that such consumers would be viewed by the GSEs as either ready or able to handle the responsibilities of a mortgage.

Thus, while the VantageScore could conceivably qualify some additional borrowers by dropping FICO's minimum scoring requirements, the impact would likely be relatively small—certainly well below the numbers that have been cited in the past. FHFA Director Watt has apparently come to the same conclusion, noting that:

> *"we believe that, regardless of the decision we make on credit score models, the short term impact on access to credit will not be nearly as significant as was first imagined or as the public discourse on this issue has suggested. Credit scores are only one factor the Enterprises use to evaluate loan applications and the Enterprises currently use the same or even greater levels of credit data in their underwriting systems as the credit scoring companies use."*[37]

If meaningful progress is to be made, the most promising approach would be to move beyond the data currently available from a consumer's credit file by considering an alternative credit score that incorporates non-bureau data.

4.2 POTENTIAL COSTS

Even assuming that an alternative score expands the number of qualified borrowers, introducing a new risk metric would not be without considerable costs. As noted earlier, the ability to provide a comparable measure of credit risk should be a pre-requisite for the adoption of any new score, whether it is based on traditional or non-traditional data. Otherwise, the resulting degradation in a score's ability to distinguish between good and bad credits would undermine the industry's ability to manage and price its mortgage risk. The net result for consumers would eventually be higher mortgage rates and riskier mortgages.

However, even if predictive power of the score is maintained or even enhanced, there are a number of other factors that need to be considered before adopting an alternative score. FICO® Scores have become the industry standard for assessing and pricing credit risk in both the conforming and the non-conforming mortgage markets. Since such standardization is key to the efficient functioning of the secondary market, any changes should not be taken lightly. As noted earlier, FICO® Scores play a critical role in the TBA market, which enables borrowers to lock-in their mortgage rates before actually closing on the loan. FICO® Scores are also used by MBS investors to estimate pre-payment speeds and the resulting interest rate risk. Finally, FICO® Scores are used in the GSEs' "back-end" credit risk transfers to enable private investors and insurers to assess and price for the underlying risk on a pool of loans.

Introducing a new credit metric as either a substitute or alternative to FICO® Scores will force the GSEs and all of these other entities to re-evaluate and, if necessary adjust their risk assessment and pricing models—and it is by no means certain that investors will

ultimately accept this change.[38] At a minimum, it seems likely that separate pools would have to be formed for loans underwritten with FICO® Scores and Vantage scores, and that VantageScore pools would most likely trade at unfavorable rates until their risks were better understood. In the short term, at least, this would inevitably hurt the liquidity of the secondary market and most likely lead to higher mortgage rates.

Requiring the GSEs to accept a VantageScore as an alternative to FICO® Scores will also require major systems, software and process changes for virtually every mortgage market participant, including loan originators.[39] For example, if the GSEs chose to accept multiple credit scores, they would have to recalibrate their predictive models, reprogram their loan delivery platforms, update their seller servicer guides, train originators on their new policies, and revise their compliance processes. Much the same would be true for loan originators. While these changes might well be justified, past experience suggests that the upfront costs would be significant. For example, the mortgage industry undoubtedly spent billions of dollars to prepare for Y2K. It seems reasonable to expect that the costs of adding an additional credit score would rival, if not greatly surpass, the costs of adding two additional digits to every date

In addition to these upfront costs, accepting an alternative score will require the GSEs and other mortgage investors to continually recalibrate their underwriting models to ensure that the two scores remain equivalent. As noted earlier, despite their common range, the risks associated with seemingly equal Vantage and FICO® Scores may not be the same, especially at the lower end of the credit risk spectrum. While the necessary adjustments could be made when the scores are first introduced, there is no guarantee that any equivalency will hold up over time as both market conditions and populations change.[40] And it is not at all obvious who would pay for the ongoing recalibrations that would be required to ensure that

the scores continue to be interchangeable. Unless such ongoing equivalency is assured, allowing lenders to select an "appropriate" score for a particular borrower raises the risk of adverse selection and potential fair lending concerns.

Unless such ongoing equivalency is assured, allowing lenders to select an "appropriate" score for a particular borrower raises the risk of adverse selection and potential fair lending concerns. As Smith notes:

> *"In a system where different credit scoring systems generate different results, the loan processor could control the outcome of the loan decision by determining which system to use for a particular borrower. Ironically, credit scoring systems were developed to help alleviate the problem of overt discrimination in lending. The addition of an array of credit systems would simply reintroduce the original problem in a different way."*[41]

The acceptance of multiple scores could also lead to a race to the bottom among competing scores as lenders inevitably gravitate to the score that produces the highest number. VantageScore recently suggested that one way to avoid this situation would be to require lenders to pick a score, and then stick with it for a fixed period of time.[42] While such a policy could eliminate continuous shopping for the highest score—at least during the initial adjustment period—it is hard to see how this would prevent lenders from choosing the most generous score to begin with or eliminate such behavior once the adjustment period was over. Moreover, monitoring for lender compliance would be difficult and would undoubtedly require extensive system changes to identify the particular score that was being delivered.

Finally, there are legitimate competitive concerns over the credit bureaus' current joint ownership of the VantageScore and their ability to control access to consumers' credit files. FICO has a licensing agreement with each CRA to produce and distribute FICO® scores, subject to the terms and conditions established

Likewise, it seems unreasonable to expect that scoring the next largest group—the voluntarily inactive—would lead to a significant increase in mortgage demand. As shown in the chart, the median age of these consumers is 71 years and the rate at which they apply for additional credit is extremely low—typically between one and four percent per year. Presumably, many in this group may have chosen to pay off their debts in anticipation of retirement, and many may be homeowners who own their homes free and clear. As a result, although their scores would be relatively high—94 percent would score above 620 and about 52 percent above 680—it seems unlikely that producing a score for this group would have a noticeable impact on mortgage demand.

Finally, the median age of consumers in the smallest group—those who are new to credit—is only 24 years—considerably below the 32 year median age of first-time homebuyers.[35] For many of these 2.8 million currently unscoreable consumers, the ability to be scored is only a matter of time, i.e., no more than 6 months away.

Although roughly 42 percent of these consumers would have scores above 620 if minimum scoring criteria were dropped and 20 percent would score above 680, the relatively small numbers involved would be unlikely to lead to a significant increase in mortgage demand.

Table 3 presents FICO's estimates of the number of additional consumers who would be potential candidates for a conforming mortgage if its minimum scoring criteria were dropped. It begins with the 7.4 million consumers who would have scores of 620 or higher. It then eliminates consumers who are younger than 25 or older than 65, as well as homeowners and consumers with a 90 day delinquency or foreclosure. After making these adjustments, it finds that roughly 2 million consumers could conceivably be candidates for a mortgage—a conclusion that is roughly the same as VantageScore estimates.[36] However, a closer look at this population suggests that the actual number would most likely be considerably lower.

Table 3: Impact of Eliminating Minimum Scoring Criteria

Begin	7.4 million consumers with 620 or higher	Remaining Count
Exclude	Younger than 25 and Older than 65	3.2 million
Exclude	Any indication of current homeownership	2.05 million
Exclude	Any 90 day delinquency or foreclosure in prior two years	2 million

The remaining 2 million consumers are composed of two groups:

- 1.8 M have stale credit files; 65% of whom have not had an update within the past 48 mos.

- 200 thousand are new to credit; 59% have a revolving credit limit of less than $1000

Source: FICO, op. cit., August 2017

ENDNOTES

1. For example, The Urban Institute found that tight credit standards following the mortgage crisis have disproportionately affected minority borrowers and suggests the use of alternative credit scores as a potential remedy. See https://www.urban.org/urban-wire/increasing-access-mortgages-minorities

2. FICO® Score XD, which was developed FICO, incorporates alternative data generally not available from a consumer's credit file at the CRAs. FICO® Score XD is used in the credit card industry, but is not currently made available for the mortgage industry. See http://www.fico.com/en/products/fico-score-xd

3. The GSEs require that lenders attempt to get FICO® Scores from each of the three credit bureau and then to submit either the middle score or, if only two scores are available, the lower score. They also require a FICO® Score based on a tri-bureau merge. While each credit bureau uses a different version of the FICO® Score, the most recent is FICO® Score 5.

4. Access to a consumer's credit report is governed by the Fair Credit Reporting Act (FCRA), which generally enables both current and potential creditors with "firm" credit offers to purchase these data without the consumer's express permission.

5. August 17, 2017 Coalition letter to FHFA Director Watt.

6. Credit Score Competition Act of 2017. See https://www.congress.gov/bill/115th-congress/house-bill/898/text

7. FICO requires at least one trade line that is at least 6 months old and at least one trade line that has been reported in the last 6 months. Note that these two conditions can be met with a single trade. VantageScore's lower standards require no minimum age of trade line and require that only one trade line that has been reported in the last 24 months.

8. VantageScore, "Exclusionary Credit Score Modeling Limits Access to Credit for Millions of Consumers...Even Perhaps Your Next Door Neighbor", November 2016.

9. For example, see "Big Data: A Tool for Inclusion or Exclusion?", Federal Trade Commission, January 2016

10. See, for example, Robert B. Avery, Raphael W. Bostic, Paul S. Calem, and Glenn B. Canner, "Credit Risk, Credit Scoring, and the Performance of Home Mortgages", Federal Reserve Bulletin July 1996, and John W. Straka, "A Shift in the Mortgage Landscape: The 1990s Move to Automated Credit Evaluations". Journal of Housing Research, Volume 11, Issue 2, 2000.

11. Other key indicators of mortgage risk include the borrower's equity in the home (measured by the loan-to-value ratio) and their total amount of debt in relation to their income (measured by so-called debt-to-income ratio).

12. For example, see Zorn, Gates and Perry, "The Effect of Improved Mortgage Risk Assessment on Under-served Populations" at http://escholarship.org/uc/item/6dm49385

13. See the Consumer Financial Protection Bureau, "Data Point: Credit Invisibles", May 2015. CFPB identified three groups of unscoreable consumers: "credit invisibles" who did not have a credit file (26 million); consumers with "insufficient" (or "sparse") credit files that contained either too few or too new accounts to be scored (9.9 million); and consumers with "stale" credit files that had no recently reported activity (9.6 million). According to the CFPB, Blacks and Hispanics are more likely to be unscoreable compared to Asians and Whites, as were consumers residing in low income neighborhoods.

14. See, for example, Consumer Financial Protection Bureau. 2014. Report on the Use of Remittance Histories in Credit Scoring. http://files.consumerfinance.gov/f/201407_cfpb_report_remittance-history-and-creditscoring.pdf; Experian. 2014. "Let there be Light: The Impact of Positive Energy-Utility Reporting on Consumers," Experian White Paper; Experian RentBureau. 2014. "Credit for Renting: The Impact of Positive Rent Reporting on Subsidized Housing Residents," Experian RentBureau White Paper; Schneider, Rachel and Arjan Schutte. 2007. "The Predictive Value of Alternative Credit Scores," Center for Financial Services Innovation Report, November; Turner, Michael A., Alyssa Stewart Lee, Ann Schnare, Robin Varghese, and Patrick D. Walker. 2006. "Give Credit Where Credit Is Due: Increasing Access to Affordable Mainstream Credit Using Alternative Data," Political and Economic Research Council and the Brookings Institution Urban Markets Initiative Report. While timely utility and rental payments were found to have a positive impact on access to credit, remittance payments were found to have the opposite effect.

15. Utility and telecom payments are included in the FICO® Scores that are being used by the GSEs. However, the inclusion of rental payments, along with other enhancements such as the treatment of medical collections, were not introduced until FICO® Score 9.

16. FICO Decisions, "Truth Blog Series Summary; Setting the Record Straight", 2017.

17. FICO also checks that the consumer is not deceased.

18. FICO Decisions, Insights White Paper no. 90, "Can Alternative Data Expand Credit Access?" 2015.

19. Like FICO®, the VantageScore retains the requirements that the consumer is not deceased and that the file contains more than just inquiries.

20. VantageScore, op. cit.

21. For an analysis of three alternative credit scores, including an early version of FICO®XD, see Rachel Schneider and Arjan Schutte, "The Predictive Value of Alternative Credit Scores", Center for Financial Services Innovation. 2007.

22. See Joseph A. Smith, Jr., "White Paper on the Adoption of New Credit Scoring Models by FHFA."

23. Schneider and Schutte, op cit., p.17

24. See https://www.fanniemae.com/content/guide/selling/b3/5.1/01.html

25. See https://www.fanniemae.com/content/guide/selling/b3/5.1/01.html

26. Freddie Mac also requires that the consumer has at least 3 trade lines. This is an underwriting requirement that is distinct from minimum scoring requirements.

27. https://financialservices.house.gov/calendar/eventsingle.aspx?EventID=402338

28. See, for example, Chris Whalen at www.americanbanker.com/person/chris-whalen

29. FICO Decisions, Insight paper No.90, op. cit.

30. Tom Parrent and George Haman, "Risks and Opportunities in Expanding Mortgage Credit Availability through New Credit Scores", Quantilytic, December 1 2017. P.7

31. As a result, VantageScore's estimates of potential new mortgage demand would appear to be overstated.

32. FICO Decisions, Insight paper No.90, op. cit.

33. See FICO Decisions, Insights White Paper No.90, "Can Alternative Data Expand Credit Access?"

34. Note that FICO's estimate of the "no file" population is similar to the estimate (26 million) produced by the CFPB using an

unidentified "commercially available scoring model". However, CFPB's estimates for the number of consumers with sparse or stale credit files (19.5 million) is considerably lower than FICO estimates for these two groups (28 million), which may reflect the credit bureau that was used to derive the estimates and the process for removing duplicate files. Interestingly, VantageScore's estimate of the number of no file and stale file consumers that could be scored with its methodology (30 to 40 million) exceeds both CFPB and FICO estimates for the total size of these two populations (20 to 28 million). Parrent and Haman (2017, op. cit.) suggest that this might due to the imposition of Freddie Mac's required 3 trade minimum, which is an underwriting not a scoring requirement

35. https://www.nar.realtor/real-estate-story-ideas/median-age-of-home-buyers-trending-upward

36. VantageScore estimates that 2.3 to 2.5 million consumers would be eligible for a conforming mortgage. Its estimate was derived by estimating the number of newly scoreable consumers with VantageScores above 620, and then excluding homeowners, younger (< 25 years) and older (>70 years) adults, and consumers with a previous foreclosure or a serious delinquencies in the past two years. It also factored in the consumer's ability to afford the median priced home in their geographic area.

37. Prepared remarks of Melvin L. Watt, Director of FHFA, at the National Association of Real Estate Brokers, August 1, 2017

38. See Whalen, op. cit.

39. See Smith, op. cit.

40. See FICO Decisions, Truth Squad: Is FICO Score 700 the Same as Vantage Score 700?

41. Smith, op. cit., p.8

42. VantageScore Solutions, "New Credit Scoring Models: A smooth transfer to more transparent mortgage capital markets" October 2017. See www.vantagescore.com/resource/170/new-credit

43. Watt, op. cit.

44. http://creditcardforum.com/blog/vantagescore-vs-fico-score/

45. See Gretchen Morgenson, "Equifax's Grip on Mortgage Data Squeezes Smaller Rivals", New York Times, October 12, 2017