BITS, BRIEFS AND APPLICATIONS

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Credit Scoring and Its Effects on the Availability and Affordability of Credit

The Fair and Accurate Credit Transaction Act of 2003 (the FACT Act) directed several federal agencies to conduct studies related to the credit reporting industry. A primary concern was the accuracy and fairness of the credit reporting and scoring systems. In this article, Federal Reserve System Board economists report on a study in which they examined various issues related to credit scoring, including how credit scoring has affected the availability and affordability of credit. In a responding commentary, Calvin Bradford notes flaws and deficiencies in the Federal Reserve System study.

In recent decades, consumer credit markets in the United States have become increasingly national in scope and credit has been extended to a broader spectrum of consumers. The development and use of credit scores has greatly facilitated these trends. Credit scoring is a statistical technology that quantifies the credit risk posed by a prospective or current borrower. Credit scores seek to rank order individuals by their credit risk so that those with poorer scores are expected to perform worse on their credit obligations than those with better scores.

Credit scoring is widely used to evaluate applications for credit, identify prospective borrowers and manage existing credit accounts. It is also used to facilitate decision making in other areas, including insurance, housing, and employment. The large savings in cost and time that have

accompanied the use of credit scoring are believed to have increased access to credit, promoted competition and improved market efficiency.

In response to Section 215 of the Fair and Accurate Credit Transaction Act of 2003 (the FACT Act),[1] the Federal Reserve prepared a study on how credit scoring has affected the availability and affordability of credit, the relationship between credit scores and loan performance and how these relationships vary for the population groups protected under the Equal Credit Opportunity Act (ECOA). The study also addressed the extent to which the consideration of certain factors included in credit scoring models might have a negative or differential effect on populations protected under the ECOA and the extent to which alternative factors could be used in credit scoring to achieve comparable results with a less negative effect on protected populations. This article presents a summary of the study.

BACKGROUND OF THE STUDY

Largely because of a lack of data linking credit scores to race, ethnicity and other pertinent demographic information about individuals, little research has been conducted on the potential effects of credit scoring on minorities or other demographic groups. With the exception of dates of birth, the credit records maintained by consumer-reporting agencies, which serve as the basis for most credit scoring models, do not include any personal demographic information.[2] Moreover, federal law generally prohibits the collection of such data on applications for nonmortgage credit. Even in the context of mortgage credit, for which some creditors are required to collect information on race, ethnicity and sex, little information is publicly available about how these personal demographics relate to credit scores.

The Board's study was prepared using two types of information. The first type was gathered from public comments submitted for the study and from a review of previous research, studies and surveys. The second type was collected from the unique research conducted by the staff of the Federal Reserve Board specifically for this study.

Regarding the second approach, the Board's staff created a database that, for the first time, combined information about personal demographics collected by the Social Security Administration (SSA) with a large,

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1. The Fact Act, Public Law 108-159, enacted December 4, 2003.
2. The three national consumer-reporting agencies are Equifax, Experian and TransUnion LLC.

nationally representative sample of individuals' credit records. The sample comprised the full credit records of more than 300,000 anonymous individuals drawn in June 2003 and updated in December 2004 by Trans-Union LLC (TransUnion), one of the three national credit reporting agencies.[3]

Because the dataset consisted of the credit records of the same individuals for 2003 and 2004, Federal Reserve staff was able to construct measures of loan performance, credit availability and credit affordability and to create its own credit scoring model (the Federal Reserve Board [FRB] base model) and credit scores (FRB scores).[4]

In addition to the FRB scores created for this study, the data supplied by TransUnion for each individual in the sample included two commercially generated credit scores—the TransRisk Account Management Score (from TransUnion) and the VantageScore (from VantageScore Solutions LLC).[5] The design of the FRB base model followed general industry practice to the extent possible.[6] The three credit scores, together with the unique combination of credit and demographic information in the dataset created for this purpose, allowed the Federal Reserve to address the issues raised in the FACT Act.

FINDINGS OF THE STUDY

The findings of the study focus on: (1) the effects of credit scoring on access to credit in general; (2) differences in credit scores, loan performance and credit availability and affordability across different populations; and (3) the extent to which individual credit characteristics included in scoring models may have a negative or differential effect on specific demographic populations.

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3. Personal identifying information of the individuals in the sample, such as names and Social Security numbers, was not made available to the Federal Reserve.

4. For the study, staff developed five distinct measures of performance that relate to payments on new or existing accounts and collection actions and derogatory public records. The study focused on credit history scores, that is, scores calculated exclusively on the basis of individuals' credit records as assembled by the three national consumer-reporting agencies. Other kinds of credit scores were not studied here.

5. TransRisk Account Management Score is a registered trademark of TransUnion LLC, and VantageScore is a service mark of VantageScore Solutions LLC.

6. The details of the estimation process and the credit characteristics and their associated weights are provided in the study.

Access to Credit

The evidence from public comments received for this study, from our review of previous research and from an assessment of data from the Federal Reserve's Survey of Consumer Finances, suggests that credit scoring has increased the availability and affordability of credit. The basic reason is that credit scoring allows creditors to quickly and inexpensively evaluate credit risk and to more readily solicit the business of their competitors' customers regardless of location.

Credit scoring likely increases the consistency and objectivity of credit evaluation and thus may help diminish the possibility that credit decisions will be influenced by personal characteristics or other factors prohibited by law, including race or ethnicity.

Credit scoring also increases the efficiency of consumer credit markets by helping creditors establish prices that are more consistent with the risks and costs inherent in extending credit. By providing a low-cost, accurate and standardized metric of credit risk for a pool of loans, credit scoring has both broadened creditors' access to capital markets and strengthened public and private scrutiny of lending activities.

Credit Scores and Loan Performance, Availability, and Affordability across Populations

The data assembled for the study were used to investigate several relationships. These included the variation in credit scores across populations and the relationship between credit scores and loan performance and the availability and affordability of credit across populations.

Because the three credit scores used in the study had different ranges in values, the different credit scores were normalized to range from 1 to 100, with higher scores representing lower credit risk. For reference purposes, an individual with a credit score in the range of about 1–20 represented an individual whose credit score would likely place him or her in the subprime portion of the credit market while a score above 27 was roughly a prime quality borrower. In the marketplace, the precise cutoff points vary across credit products and lenders. In the material that follows, all of the results are robust across each of the three credit scores used in the study. The relevant tables and charts presented here use the TransRisk score but results for the VantageScore and the FRB score were very similar.

Credit Scores Differ across Groups

Credit scores differed among subpopulations: blacks, Hispanics, single individuals, those younger than age 30 and the individuals residing in low-income or predominately minority census tracts had lower credit scores on average than other subpopulations defined by race or ethnicity, marital status, age or location (Table 1). For example, the mean TransRisk credit score for blacks of 25.6 was well below the mean score of 54.0 for non-Hispanic whites; the mean credit score of those younger than 30, at 34.3, was much lower than the mean score of 68.1 for those aged 62 or more. Differences across groups in average credit scores were narrowed, but not always eliminated, when differences in other personal demographic characteristics, in residential location or in a census-tract-based estimate of an individual's income were taken into account.

Score Differences Reflect Differences in the Content of Credit Records

Because individuals with identical items in their credit records perforce must receive the same credit score, population differences in scores must stem from average differences in the information in their credit records. Groups with lower average scores tended to experience a higher incidence of payment problems on credit obligations, collection actions and public record items such as garnishment and bankruptcy (Table 2). For example, 36% of blacks had experienced a serious delinquency on one or more of their credit accounts compared to 13.9% of non-Hispanic whites and 12% of Asians. Other factors, such as the degree to which available credit is used and the length of credit history, also were reflected in the differences in credit scores.

Credit Scores Predict the Risk of Default

For each of the five different performance measures evaluated, and for every population group considered, credit scores consistently rank ordered the credit risk of individuals. That is, over any credit score range, the higher (better) the credit score, the lower the observed incidence of future default. This was true for the population as a whole and within all major demographic groups. Figures 1 through 4 show the "bad" rate at different credit score levels for any account held by the individuals.

TABLE 1
Credit Score Statistics and Distribution of Sample Population by TransRisk Score Decile, by Selected Characteristics of Sample Population

Characteristic	Mean Score	Sample population, grouped by characteristic and distributed by score decile (percent)									
		1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
Race or ethnicity[a]											
Non-Hispanic white	54.0	7.8	8.5	8.7	9.9	10.1	10.0	9.7	10.6	12.7	12.0
Black	25.6	30.1	22.5	15.6	10.1	4.6	4.6	3.2	2.7	2.4	1.7
Hispanic	38.2	15.1	15.0	14.9	13.3	9.5	9.5	6.8	5.6	5.0	4.0
Asian	54.8	5.7	6.6	7.3	10.6	14.0	14.0	12.4	11.1	10.6	9.8
American Indian	57.6	5.6	8.5	7.7	9.2	9.1	9.1	8.6	11.8	14.7	15.1
National origin											
Foreign-born	48.8	8.3	9.2	10.4	12.6	12.4	12.2	10.3	8.8	8.2	7.8
Recent immigrant	45.5	7.6	7.3	10.4	14.6	15.1	18.5	13.4	8.4	3.6	1.4
Sex											
Male	48.8	10.6	10.7	10.3	10.8	10.2	9.8	8.8	9.2	10.4	9.1
Female	50.4	10.8	10.2	9.5	9.8	9.8	9.3	8.9	9.5	11.2	11.1
Unknown	53.8	5.1	6.8	9.3	8.2	10.7	12.8	19.9	14.9	6.2	6.4
Marital Status											
Married male	55.7	6.5	7.8	8.0	9.8	10.3	10.4	10.0	11.3	13.9	12.0
Single male	43.4	14.1	12.7	11.8	11.7	10.4	9.5	7.7	7.7	7.6	6.9
Married female	57.5	6.5	7.3	7.4	9.1	9.7	9.6	10.0	11.3	14.5	14.5
Single female	44.8	14.6	12.4	11.0	10.7	9.9	8.6	7.7	8.0	8.7	8.5
Unknown	44.4	12.4	12.1	12.0	10.1	10.1	10.6	12.5	9.7	5.6	5.1
Age (years)											
Younger than 30	34.3	16.9	14.8	14.6	13.9	12.5	13.6	8.7	3.9	1.1	0.2
30 to 39	39.8	16.9	13.9	12.1	11.4	9.5	9.7	9.1	7.7	6.9	2.8
40 to 49	46.9	11.7	11.8	10.6	10.8	10.2	9.4	8.9	8.9	10.6	7.1
50 to 61	54.5	7.3	8.8	8.6	9.9	10.7	9.2	9.0	10.4	14.3	11.9

TABLE 1
Continued

Characteristic	Mean Score	Sample population, grouped by characteristic and distributed by score decile (percent)									
		1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
62 or older	68.1	2.9	4.3	4.9	6.5	7.6	6.8	8.6	14.4	18.5	25.6
Unknown	53.8	5.1	6.8	9.3	8.2	10.7	12.8	19.9	14.9	6.1	6.4
Census tract characteristics											
Income ratio[b]											
Low	32.5	22.8	18.2	15.0	10.6	8.4	7.6	6.3	5.4	2.9	2.8
Moderate	40.7	16.1	14.2	13.0	11.0	9.6	8.6	8.1	7.2	6.3	6.0
Middle	50.4	9.7	10.0	9.9	10.1	10.1	9.9	10.1	10.1	10.5	9.7
High	57.9	5.4	6.5	6.9	9.2	10.5	11.0	11.8	12.2	13.7	13.0
Unknown	46.4	6.5	10.2	12.8	13.6	14.5	10.4	12.4	8.0	7.8	3.9
Minority Population (percent)[c]											
Less than 10	55.7	6.8	7.7	8.1	9.1	10.0	10.5	11.1	11.7	12.9	12.2
10–49	49.6	10.2	10.1	9.9	10.4	10.3	9.9	10.2	9.8	10.0	9.2
50–79	40.6	16.2	14.1	12.6	11.6	10.0	8.8	7.8	7.0	6.0	5.9
80 or more	34.6	20.2	17.2	14.9	11.2	9.3	8.0	6.6	5.3	3.8	3.4
All	50.1	10.1	10.1	9.8	10.1	10.1	9.9	10.0	10.0	10.3	9.7

Note: Scores are normalized to a scale of 0–100.
[a]"Asian" is Asian, Asian American and Pacific Islander; "Native American" is North American Indian and Alaskan Native.
[b]Median income of tract as a percentage of median income of tract's Metropolitan Statistical Area or, if a rural tract, of state's rural areas. Low, less than 50%; moderate, 50–79%; middle, 80–119%; high, 120% or more.
[c]Minority refers to other than non-Hispanic white.

TABLE 2
Selected Credit Record Items and Their Proportion in the Records of Individuals, by
Selected Characteristics of Sample Population

| Characteristic	Public Record	Medical Collection	Other Collection	Delinquency[a]
Race or ethnicity				
Non-Hispanic white	12.9	14.7	14.5	14.6
Black	27.1	35.4	47.9	34.9
Hispanic	14.9	21.5	28.9	22.8
Asian	9.1	7.5	11.6	12.5
American Indian	12.4	12.3	11.6	13.5
National origin				
Foreign-born	11.7	12.1	17.0	16.3
Recent immigrant	5.5	9.1	13.8	12.7
Sex				
Male	15.5	16.8	19.7	16.9
Female	13.4	17.4	18.6	18.0
Unknown	6.5	8.9	12.5	9.4
Marital Status				
Married male	13.0	13.0	12.3	13.8
Single male	17.7	19.0	25.6	19.6
Married female	11.2	12.5	11.0	14.4
Single female	15.4	20.9	24.8	21.7
Unknown	13.2	18.6	23.9	16.7
Age (years)				
Younger than 30	9.1	21.9	29.9	21.1
30–39	19.8	24.1	29.0	24.3
40–49	19.1	19.7	20.5	19.7
50–61	15.4	14.0	13.6	15.7
62 or older	7.5	7.4	6.2	7.7
Unknown	6.5	8.9	12.5	9.4
Census tract *characteristics*				
Income ratio				
Low	19.7	25.3	39.6	25.2
Moderate	17.4	22.7	28.3	21.7
Middle	13.8	16.6	17.5	16.6
High	9.8	10.0	11.1	11.9
Unknown	4.3	6.6	13.4	19.9
Minority Population (percent)				
Less than 10	11.7	13.8	12.7	13.3
10–49	13.8	16.3	18.6	16.6
50–79	16.8	21.7	28.4	22.1
80 or more	18.3	22.2	35.7	26.2
All	13.5	16.2	18.4	16.6

[a] At least 90 days, any account.
Also, refer to notes to Table 1.

FIGURE 1

TransRisk Score: Any-Account Performance (Percent Bad), by Race or Ethnicity

Race or ethnicity
(SSA data)

Percent bad

Non−Hispanic white
Black
Hispanic
Asian
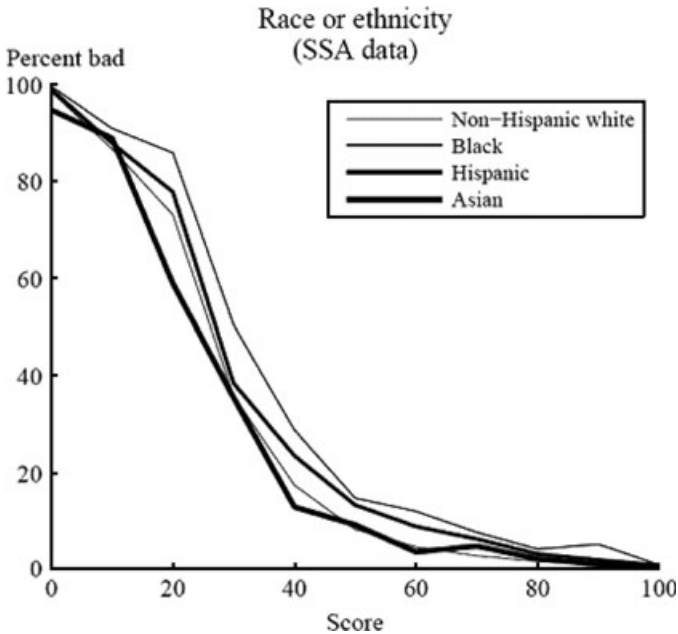
Score

Some population groups performed worse on their credit accounts, on average, than would be predicted by the performance of individuals in the broader population with similar credit scores. For example, on average, blacks performed worse than other racial and ethnic groups with similar credit scores. Similarly, single individuals and those residing in predominantly black or low-income census tracts performed worse on their loans than their complementary demographic groups with similar credit scores. In contrast, the loan performance of Asians, married individuals, foreign-born individuals (particularly, recent immigrants) and those residing in higher-income census tracts was better than the performance predicted by their credit scores. These results held after controlling for the other personal demographics of the individuals, their location and for an estimate of the individuals' incomes. However, other factors that could be important in explaining group differences in loan performance, such as differences in employment experiences, were not available for the study.

FIGURE 2
TransRisk Score: Any-Account Performance (Percent Bad), by Sex
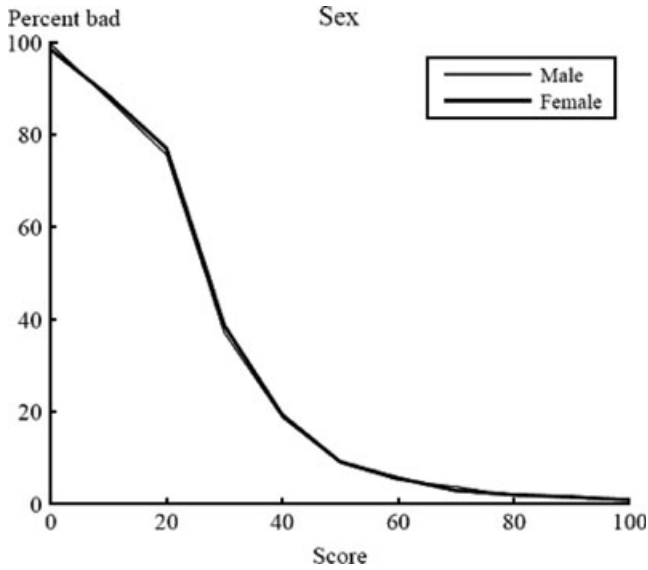

FIGURE 3
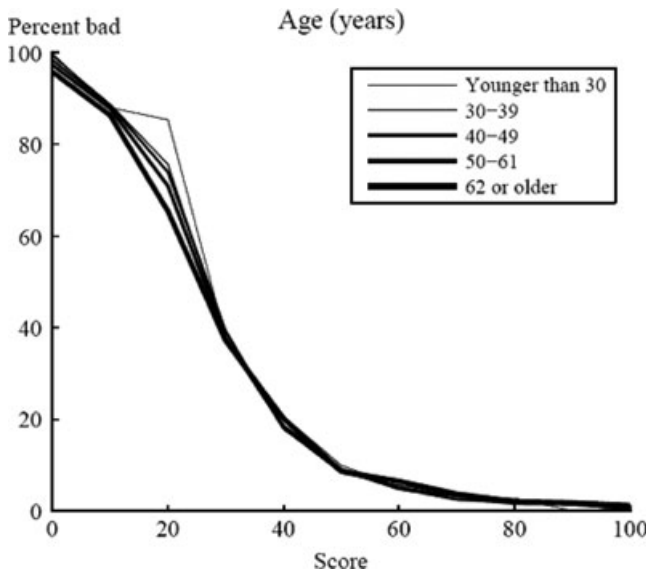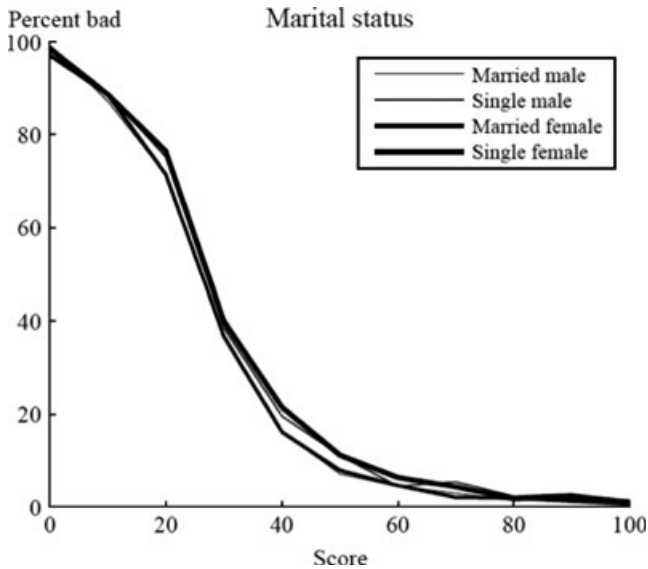*TransRisk Score: Any-Account Performance (Percent Bad), by Age (Years)*

FIGURE 4

TransRisk Score: Any-Account Performance (Percent Bad), by Marital Status

Access to Credit Differs Depending on Credit Score

Regarding access to credit, credit scores were consistently related to measures of "inferred" loan denial and loan pricing.[7] That is, for all populations, interest rates derived from the terms reported in the credit record data for closed-end loans and average inferred denial rates consistently declined as credit scores increased. As was the case for loan performance, some differences were observed across population groups after controlling for credit score. Most notably, younger individuals appeared to experience somewhat higher inferred denial rates than older individuals (Figure 5). Blacks appeared to pay somewhat higher interest rates on automobile and installment loans than non-Hispanic whites; Asians paid interest rates that, on average, were typically lower than, or about the same as, those paid by non-Hispanic whites across all loan categories for which rates could be estimated (Figure 6).

Data limitations prevented a full assessment of the reasons for the remaining differences in credit outcomes. Most importantly, credit

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7. The lending industry uses evidence of inquiries made by creditors about an individual's credit record without the issuance of new credit as an indication of loan denial. The data on inquiries are likewise used in this study to infer whether an individual likely experienced a credit denial.

FIGURE 5
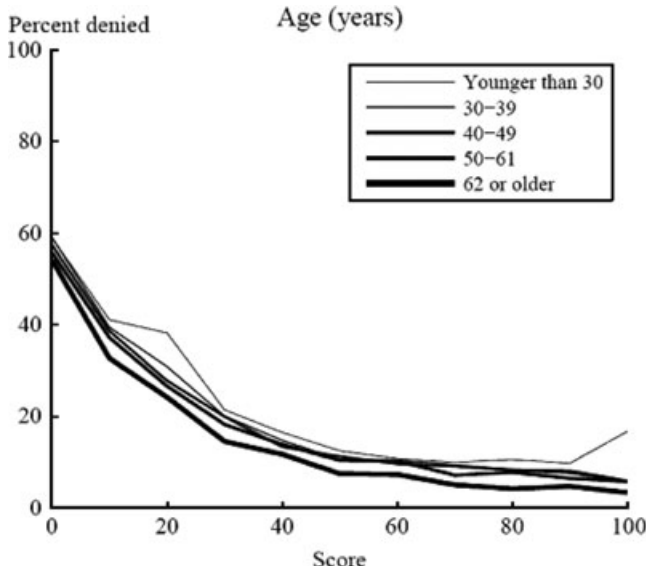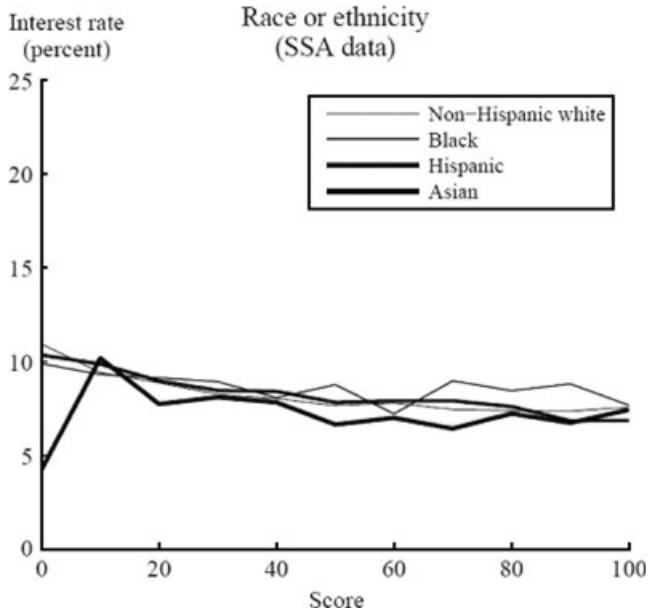*TransRisk Score: Inquiry-Based Proxy for Denials, by Age (Years)*

FIGURE 6
TransRisk Score: Mortgage Interest Rate, by Race or Ethnicity

records do not include information on many of the factors lenders consider in underwriting and pricing credit, including income and assets, size of down payments for home or vehicle purchases and employment experiences.

Individual Credit Characteristics and Their Effects across Populations

The study reviewed the extent to which the consideration or the lack of consideration of certain factors by credit scoring systems could result in a negative or positive differential effect for different populations. By law and regulation, credit-scoring models must exclude an individual's personal characteristics—such as race or ethnicity, national origin, sex and, to a limited extent, age. A concern exists that, despite that prohibition, a credit characteristic may be included in a model not because it helps predict performance but because it is a substitute, or proxy, for a demographic characteristic that is correlated with performance.

Analysis of the data assembled for the study found that few credit characteristics that would be included in scoring models, including those in the FRB base model, were correlated with personal demographics, such as race, ethnicity, sex and age. Therefore, such credit characteristics were unlikely to serve as proxies for demographic characteristics. A primary exception to this lack of correlation was that some credit characteristics were highly correlated with an individual's age.

To examine more closely whether the credit characteristics appearing in the FRB base model served at least in part as proxies for race or age, the model was reestimated in *race-neutral*, *age-neutral and sex-neutral* environments. To do so, the models were estimated with samples limited to a single population for each model; in those models, any credit characteristics serving solely as a proxy for race, age or sex, respectively, should have little weight in the reestimated model. Credit characteristics that have both an independent effect on performance and a correlation with race, age or sex would be expected to have significantly different weights (either larger or smaller) in the reestimated models.

Reestimating the FRB base model in a race-neutral or sex-neutral environment had virtually no effect on average group credit scores. The result suggests that none of the credit characteristics included in the model served, to any substantive degree, as proxies for race, ethnicity or sex. However, when the FRB base model was reestimated in an age-neutral environment, credit scores changed somewhat. Scores for recent immigrants and younger individuals fell, and scores for older individuals rose. These results were traced to the inclusion of a specific credit

characteristic, namely, that which specifies the length of an individual's credit history. Further analysis showed that this credit characteristic served in part as a proxy for age. However, because the characteristic also had significant predictive power in an age-neutral environment, the effect could not be mitigated simply by excluding the credit characteristic from the FRB base model. Beyond reducing the overall predictiveness of the model, excluding credit characteristics related to the length of credit history would have a severe disparate effect by inappropriately lowering the scores of older individuals and raising the scores of younger individuals.

In addition, recent immigrants had somewhat lower credit scores than would be implied by their performance. This effect does not owe to disparate effect; rather, it is due to the fact that the credit history profiles of recent immigrants resembled those of younger individuals, whose credit performance tends to be poor relative to the rest of the population.

Addressing this concern by removing credit characteristics related to the length of credit history would create significant other problems of differential effect and loss of model predictiveness. An alternative approach to address this concern would be to expand the information supplied to credit-reporting agencies to include rent, other recurring bill payments, nontraditional uses of credit and the credit histories of the foreign-born in their countries of origin to provide a broader picture of the credit or bill-paying experiences of recent immigrants and other individuals.

CONCLUSIONS

Access to credit is critical to a well-functioning modern economy. Virtually all consumers rely on credit at some point in their lives whether to finance an education, buy an automobile or home or serve as a short-term bridge between when bills must be paid and income is received. In most circumstances, the terms and conditions a lender sets on a loan are based in large part on their review of an individual's payment history, often summarized by his or her credit score.

The available evidence indicates credit scores are predictive of future credit payment performance both for the population as a whole and for individual populations. However, substantial differences existed in the score distributions across groups; blacks, Hispanic whites and younger individuals in particular had relatively lower scores on average. A review of individuals' credit records found that differences in scores appeared to be driven by substantial differences in past loan payment performance,

incidents of collection items and adverse public records. The study also found no evidence that blacks, Hispanic whites or younger individuals performed better than those with similar scores. Indeed, the evidence is that such groups performed worse than their scores would predict. Moreover, there was no evidence that the construction of the scores themselves embodied any credit characteristics that had an inappropriate adverse effect on any of the groups with low average credit scores.

Ultimately, score differences among groups can only be narrowed if individuals in low-scoring groups improve their credit circumstances by managing their finances and timely repayment of bills. The fact that younger individuals tend to have lower credit scores, regardless of race or ethnicity, points to the need for increased financial literacy and education particularly as individuals first begin to use credit. More vigilant monitoring of one's own credit records can also be an important part of this process. Monitoring not only helps one catch and correct errors but also helps individuals to more clearly appreciate the breadth and nature of the information in credit reports and to see the consequences of poor payment performance.

Responding Commentary: Unresolved Issues in the Use of Credit Scores to Underwrite or Price Financial Products and Services, by Calvin Bradford

Before making specific comments on the findings of the article by Avery, Brevoort and Canner, it is important to put the Federal Reserve study upon which it is based in perspective.[1] As the article indicates, the study was in response to requirements of the FACT Act of 2003. The Act required studies to assess whether credit scores (and credit-based insurance scores) had a *disparate impact* on various protected classes and

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1. References to the "study" are to the *Report to the Congress on Credit Scoring and Its Effects on the Availability and Affordability of Credit* (Board of Governors of the Federal Reserve System, August 2007) while references to the "article" are to the summary in this issue of the *Journal of Consumer Affairs*.

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different income groups, most particularly the classes the Equal Credit Opportunity Act protects. Moreover, the Act required the studies to assess "the extent to which, if any, the use of underwriting systems relying on these models could achieve comparable results through the use of factors with less negative impacts" [Section 215(a) (3)]. In addition, the FACT Act required studies to assess "the effects of the use of credit scores and credit-based insurance scores on the availability and affordability of financial products and services, *including credit cards, mortgages, auto loans*, and property and casualty insurance" [Section 215(a) (1), emphasis added].

The purpose of the studies was to provide reports to Congress that included recommendations for policy and legislative actions. This places the studies, including the Federal Reserve study, clearly in the context of the fair lending laws. This was emphasized by the requirement that the agencies doing the studies consult with the Fair Housing and Equal Opportunity Office in the U.S. Department of Housing and Urban Development (HUD).

As noted above, the FACT Act required a disparate impact analysis. In a legal context, disparate impact analysis has a very specific meaning quite different from a purely empirical study or a summary of literature in a field. In a disparate impact analysis, the first step is simply to assess whether a policy, procedure or practice (in this case, the credit scoring system) adversely impacts protected classes, most notably in this case, race and ethnicity. If there is a disproportional adverse impact on a protected class, the next step is to assess whether there is a business necessity for the use of the procedure. Finding a business necessity requires a justification supported by sound evidence. Even then, the final step is to ask whether there is a less discriminatory alternative that can achieve much the same business need. As indicated in the Act, the less discriminatory alternatives are not limited to the internal factors that could be included or excluded from the credit score itself, but these alternatives are related to the changes that could be made in the entire underwriting system for a particular type of loan product.

A LIMITED AND MISDIRECTED RESPONSE

First, and fundamentally, the legal structure of a disparate impact analysis should define the structure and approach to the research on credit scoring. In fact, while the Federal Reserve study discussed the differences

in empirical research and disparate impact analysis in detail, it specifically chose to avoid conducting a disparate impact analysis.[2]

Second, the Federal Reserve study did not assess the impacts of credit scoring on different types of loans (credit cards, automobile loans, mortgage loans, etc.). The credit scoring model developed for the Federal Reserve study assessed only generic default rates—its main measure being a payment past due more than 90 days on any type of credit. The models developed for the study were generic and not related to any specific type of loan.

Third, the Federal Reserve study made only passing comments on how credit was used in the financial markets and did not systematically assess the impacts of credit scoring for different types of financial products. Yet, depending upon the type of credit product, credit scoring plays vastly different roles. Credit scoring has historically been the main driver in providing access to and pricing for credit cards. On the other hand, in the mortgage lending process, some automated underwriting systems (Freddie Mac's Loan Prospector, for example) use selected individual credit items but do not use actual credit scores themselves. On the pricing side, even where credit scores may have little impact on the underwriting of some loans, credit scores may be used to set pricing in either the primary or secondary markets.

Fourth, the Federal Reserve study made no systematic effort to assess whether credit scoring increases either access to credit or the affordability of financial products. Indeed, it simply assumed that the increased use of credit scoring and the increased level of debt in consumer markets had some type of cause and effect relationship without considering changes in interest rates, rising home values, the increased use of equity loans as a source of cash, the increased use of technology to market loans or any other market conditions or forces.

The study presented no data at all to indicate that the use of credit scoring has made loans more affordable. In order to assess affordability, one would have to examine both the costs of credit and debt burdens. Moreover, the data that are presented in some tables, as we shall note below, raise questions about both affordability and discrimination.

Overall, the Federal Reserve study was very limited in scope and was not structured in a way to respond to the legal and market questions that were required to be addressed in the reports to Congress. There are also internal issues with the study.

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2. See the Federal Reserve study at pp. O-6 to O-9 and pp. 51–56.

Basic Limitations in the Scope of the Federal Reserve Study

The set of data used for the Federal Reserve study gives rise to some fundamental limitations. Rather than seek out a set of data structured to respond to the requirements of the FACT Act, the Federal Reserve researchers chose to use an existing sample of data they had used before to make some assessments of credit scoring patterns and issues. Although the article reports that this sample included 300,000 persons, after screening for various data issues, the net sample size was in fact 200,437. Moreover, this usable sample included just 18,274 African Americans and 14,702 Hispanics. In additional, the sample had a higher percentage of whites and a lower percentage of African Americans and Hispanics than the general population. The sample was skewed toward older persons, higher-income census tracts and white census tracts.[3]

Even within the different credit scoring models created by the Federal Reserve, there were often large percentages of important data missing. In one model, the number of months since the most recent delinquency was missing 71.4 percent of the time. In another model, the ratio of the remaining balance to the maximum credit (a variable designed to measure the use of credit lines) was missing 83.2 percent of the time. In a third model, a similar use of credit factor was missing 45.3 percent of the time.[4] Therefore, given these limitations on sample size and data quality, one must view the study findings with some reservations.

One reason why the Federal Reserve study developed only a generic model based on all forms of credit is that the sample was too small for the assessment of individual forms of credit. For example, there were only 3,911 African Americans in the sample with mortgage loans and only 4,249 Hispanics in the sample with mortgage loans.

A Lack of Attention to Racial Disparities

Although there are many protected classes and income groups that are of concern for the FACT Act studies, the issues of possible racial and ethnic discrimination are clearly at the core of the Act study requirements. Having dismissed the methodology and format of a disparate impact analysis, the Federal Reserve study tended to skip over the data that indicated racial and ethnic disparities. The initial finding was clear that there are large racial disparities in credit scores. The study found that the

3. See the Federal Reserve study, Table 9 at pp. 142–143 and Table 11 at p. 145.
4. See the Federal Reserve study, Table 27 at p. 186.

mean TransRisk credit score for African Americans was 25.6 compared with the mean credit score of 54.0 for whites. For Hispanics, the mean credit score was 38.2. Therefore, for the racial and ethnic populations as a whole, the study indicated very large disparate impacts.

Consequently, the real questions are whether there is a business necessity for the use of credit scores that cannot be achieved by a less discriminatory means. This is not, as the Federal Reserve study seems to assume, simply a question of whether the predictive powers of credit scores work the same for whites, African Americans and Hispanics, nor is it simply a question of whether some manipulation of the factors within the credit score itself can produce a less discriminatory outcome.

Even if we accept the results of the modeling in the Federal Reserve study that show that the delinquency patterns and predictors of delinquency are very similar for each racial and ethnic group, this is not a satisfactory answer to the question of possible discrimination. These models showed that, for the sample used, persons with similar past credit profiles (blemished credit, use of credit, etc.) tended to perform similarly in the future—and that these patterns were roughly the same for each racial group. However, the data also revealed that the past credit histories showed a much higher level of serious delinquencies, public record actions and collections for African Americans than for whites. Part of the question is what caused this higher level of past performance problems in the first place. Is it related to factors such as personal behavior or lack of education about credit markets—or does past discrimination in the marketplace disproportionately contribute to higher debts and higher-cost loans for African Americans and Hispanics than for whites?

Part of this question is whether past credit history and lower credit scores result in persons receiving credit on more onerous terms, thus contributing to future delinquencies. Although the Federal Reserve considered the issue of high-cost loans potentially impacting future performance, the subsample that they used was too small and the time frame was too short to provide for reliable results. This subsample contained only 124,718 files and only about half of the already small number of African American files and less than 70 percent of the Hispanic files.

The Federal Reserve study included information from the most recent Survey of Consumer Finances available at that time that suggests possible discrimination in the credit markets. These data indicated that in the highest income quartile, African Americans were rejected for loans more than two and one-half times as often as whites even though they had about half the level of bankruptcies, longer job histories, and roughly comparable levels of education. Other data calculated from the study indicated

that African Americans and Hispanics paid higher prices for auto and installment loans than did whites with similar credit score ranges. This was particularly true for African Americans. These differences tended to be particularly clear for loans from banks. More generally, the costs of loans tended to increase as the percentage of minorities in the census tracts increased—especially loans from banks.[5]

During the period covered by the credit scoring data used by the Federal Reserve in its study (2003–2004), subprime lending was disproportionately concentrated in minority markets. The wave of subprime marketing to minority communities began in the middle of 1990s. By 2000, these subprime loans were producing extremely high levels of foreclosure. HUD and the U.S. Treasury issued a series of reports on the racial disparities in lending and foreclosures in these markets (under the common title *Unequal Burden: Income and Racial Disparities in Subprime Lending in America*[6]). These impacts were seen as resulting from predatory lending practices rather than from the innate risk presented by the borrowers.

Given the time frame of the data used by the Federal Reserve, one needs to consider whether the high levels of public records and defaults for African Americans could be related to the impacts of the subprime and predatory lending. This is both a warning about the impacts of possible discrimination in mortgage lending and a warning about market forces that may affect credit scores over a wide range of borrowers.

In seeking information about whether there are less discriminatory alternatives to the present system, one can look in the market for products that are designed to serve populations that frequently have troubled credit histories. One clear example comes from the mortgage lending of NeighborWorks programs across the country that serve lower-income and minority communities. In response to claims that lending to minorities and lower-income persons created the mortgage meltdown, John Dugan, the Comptroller of the Currency, recently cited the performance of these loans. He stated that "foreclosure rates within the NeighborWorks network were just .21 percent in the second quarter of 2008, compared with 4.26 percent for subprime loans and .61 percent for conventional conforming mortgages."[7] In this program, sound counseling and assistance counter characteristics that would normally assign these borrowers to higher-cost subprime markets. Other special loan programs also show

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5. See the Federal Reserve study, Table 26 at p. 185 and Table 20 at pp. 168–173.

6. See http://www.huduser.org/publications/fairhsg/unequal.html.

7. See Office of the Comptroller of the Currency News Release, "Comptroller Dugan Says CRA Not Responsible for Subprime Lending Abuses," November 19, 2008.

extremely low levels of default and foreclosure, suggesting that changes in the lending process itself can overcome indicators of risk, such as low credit scores.

Of course, the current mortgage meltdown provides evidence that credit scores are not necessarily the best predictors of loan losses. Also paralleling the time frame of the Federal Reserve data, the subprime markets were seeking new markets in "Alt-A" lending. These were loans made to persons with relatively high credit scores who were generally outside of minority communities, but who were not required to document their income or whose loans represented high debt ratios or high loan-to-value ratios. Today, the waves of foreclosures are often concentrated in these Alt-A markets, as declining home values and triggers that increased the interest rates are saddling these high credit score markets with excessive debts for homes now worth less than the mortgage loans. The use of credit scores as a primary protection against other exceptionally risky terms in these loans should raise some questions about the pure predictive power of credit scores in relation to other risk factors.

CONCLUSIONS

Surely, we all recognize that there is some general relationship between past performance on credit lines and likely future patterns. It is also generally recognized that, as a group, African Americans and Hispanics have lower credit scores than do non-Hispanic whites. The Federal Reserve study provides some evidence for both of these propositions. Nonetheless, the study is severely limited by the sample size, the focus only on a generic model and the failure to address major requirements of the FACT Act. It is an interesting and provocative study that is not definitive.

In spite of the data limitations, one recommendation that applies to most of the credit market studies done by the Federal Reserve is that they are essentially performed by a small group of researchers on proprietary databases. In the arena of public policy, and in social science research in general, the quality of research improves with the active involvement of researchers from different disciplines and with different perspectives. The base data for both the credit scoring and credit-based insurance scoring research[8] done for the FACT Act should be made public and available to the widest possible range of researchers.

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8. The Federal Trade Commission published *Credit-Based Insurance Scores: Impacts on Consumers of Automobile Insurance* in July 2007; see http://www.ftc.gov/os/2007/07/P044804FACTA_Report_Credit-Based_Insurance_Scores.pdf.

In addition, although it is important to note the failure of the Federal Reserve study to conform to the methods and format of a legal disparate impact analysis in such a clear area of financial civil rights, one must understand the awkward position of the researchers. The Federal Reserve has the responsibility to implement regulations for the Equal Credit Opportunity Act. There must be some hesitation on the part of the Federal Reserve to place conclusions about legal disparate impacts in such a report where it can be cited as the basis for future litigation standards. This is another reason why the data need to be shared with other institutions and researchers who may feel less constraint about reaching both academic and legal conclusions in their work.