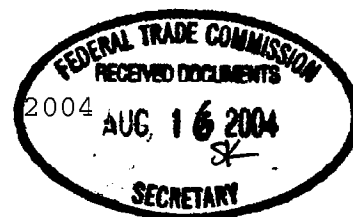




**Mortgage  
Insurance  
Companies  
of America**

Suzanne C. Hutchinson  
Executive Vice President

August 16, 2004



Federal Trade Commission/Office of the  
Secretary  
Room H-159 (Annex N)  
600 Pennsylvania Avenue, NW  
Washington D.C. 20580  
FACTAscoringstudy@ftcgov.

RE: FACT Act Scores Study, Matter No. P044804

Dear Sirs:

The Mortgage Insurance Companies of America (MICA) is pleased to comment on the methodology and research design for conducting a study of credit scores and credit based insurance on the availability and affordability of financial products. MICA is the trade association of the private mortgage insurance (MI) industry<sup>1</sup>. Private mortgage insurance, also known as mortgage guaranty insurance, protects a mortgage lender if a homeowner defaults on a loan. Our industry has more than 50 years experience in assessing credit risk associated with mortgage borrowers.

**Responses to Questions Raised**

**Question 1: General Guidance on Preparing a Study**

It is critical that the effects of credit scoring and credit pricing be studied for each product category and in some cases within categories. For example, credit card issuance should be studied separately from mortgage origination. The scoring methodologies and processes can be quite different. Also, the real estate collateral underlying mortgage

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<sup>1</sup>Six private mortgage insurers comprise MICA's membership: GE Mortgage Insurance, Mortgage Guaranty Insurance Corporation, PMI Mortgage Insurance Co., Republic Mortgage Insurance Company., Triad Guaranty Insurance Corporation and United Guaranty Corporation.

lending results in a significantly different credit analysis than scoring applied in the absence of collateral. Additionally, mortgage lending is very different from other forms of credit-related lending in that neither the mortgage interest rate nor the mortgage insurance premium can be raised in the event the borrower's proven credit performance weakens in the months or years following the loan origination.

It is important that the study assess the exact role the credit scoring system performs in the credit decision making process and in the credit cost decision process. Is the underwriting acceptance based exclusively on the scoring system or does the scoring system act to supplement a more complex rules-based or judgments-based decision process? Are there hard guideline/eligibility/pricing cutoffs and parameters in the program based on output from the scoring system? Are there allowances for exceptions to any score cutoffs or eligibility minimums? How often is the scoring system overridden or bypassed, particularly for ECOA-focused market segments?

Many lenders and insurers have special channels and programs directed at ECOA-focused market segments that allow for the approval of those borrowers who may not be approved using the traditional channel. The effects of these programs should be included in the study. We note that on July 27, 2004, Fair Isaac announced a FICO expansion score which is specifically targeted to help lenders extend credit to consumers in new markets. It is based on non-traditional credit data and can help lenders effectively predict risk for consumers with non-existent or thin credit histories. The new score may help consumers gain access faster to traditional credit products like credit cards, car loans, or home loans by evaluating financial relationships that are absent in credit bureau reports. The planned FTC study should evaluate the impact of the increasing usage of scoring systems like this

to help communities that include ECOA-focused market segments.

When analyzing mortgage origination, different categories of mortgages - e.g., FHA-insured, subprime and nonconforming loans -- should be segmented and studied separately from conventional conforming loan channels for the reasons that origination practices and distribution channels differ substantially across these market segments. Analyzing aggregated data from these different segments will lead to incorrect generalizations about market practices. It is very unlikely that rules abolishing or significantly revising credit scoring practices would change the distributions of ECOA prohibited factors (race, color, religion, national origin, sex or marital status, and age) between these segments, so these differentials need to be noted and measured separately from the demographic effects of scoring systems.

Similarly, for products such as homeowners and auto insurance, creditworthiness is an indirect proxy for a much more difficult-to-measure characteristic, propensity to file claims. Because this relationship of low claims to creditworthiness is much more indirect than say for credit card issuance or mortgage originations, these products should be analyzed separately.

A proper study will be based on the following general points:

- A. Development of sound definitions of the effects to be measured, and the factors which influence them starting with operational definitions of product, price, and availability, and including operational definitions of all the factors of interest. (The results of the study will depend significantly on the quality of these definitions, see for example

<http://www.qualityadvisor.com/sqc/od-what.htm> )

- B. The selection of the data to be studied should be agreed upon so as to minimize potential issues of data bias and sample selection. An issue may arise with the lack of historical observations of credit scores for some products.
- C. Appropriate classification of the financial products whose price and availability are to be assessed into relatively homogeneous groups, based on a thorough review of the historical and technical literature developed by the industries and regulatory entities associated with these products and any other knowledge bases that are thought likely to give insight into the economic, social, and legal/regulatory environment in which the marketing of these products occurs.
- D. Identification of the risk and expense factors within each product category which are known or believed to influence the cost of providing the products in that group (e.g., loss frequency, loss severity, revenue persistence, loss recovery time lags, acquisition and maintenance service, cost of capital, investment earnings from reserve funds).
- E. Identification, within each product category, of observable characteristics of customer, product type, transaction type, collateral securing the transaction (if any), and other environmental variables which are known or believed to impact the risk and expense associated with each product (e.g., variation in time lags associated with operation of legal

recovery processes in different jurisdictions),

F. Acquisition of historical experience datasets for each homogeneous product group that capture as much detail as possible concerning the product characteristics at time of issue, and performance of the transaction associated with the product over the duration of the transaction (from application information collection to final date of exposure to loss). As regards these historical datasets the following also should be noted:

(1.) For addressing the impact of credit assessment on availability, the historical experience database should include file records for all applications for products, scored or un-scored, whether accompanied by a product sale, an underwriting rejection, or a closed file without decision. Where possible, records of the reasons for underwriting rejection and other unclosed transaction files should be included in the database.

(2.) With respect to the credit score/credit rating measures accompanying the historical experience, the scoring date, version of score or other scale being used, and as much detail as possible concerning the input information used to determine the credit measure at time of scoring should be collected and accurately associated with each transaction history.

G. Statistical hypothesis testing can be applied to measure the sensitivity of credit scores to the availability and pricing of financial products. The actual specification and hypothesis test will depend not only on the functional form of the underlying model, but also the point estimate and standard error of the estimate. One fundamental hypothesis is to test whether the sensitivity of pricing/availability to credit scores is statistically equivalent to zero. Various procedures exist for performing statistical hypothesis testing with different power.<sup>2</sup>

Conclusions drawn from statistical inferences should be interpreted using well defined assumptions. Moreover, the implications of using one particular statistical test as opposed to another test should be communicated since some tests may yield opposite conclusions. These results should be communicated and choice of a particular statistical test should be validated.

H. The study must also seek to assess whether scoring systems change consumer behavior, both those in and out of the ECOA prohibited segments. Questions to address should include whether the use of credit scoring systems help consumers, including low income individuals, to learn and practice good credit management and whether these systems encourage better consumer credit behavior and thus reducing costs to society overall of defaults, claims and charge-offs.

The proliferation of credit counseling and credit rehabilitation programs is probably an indication of the

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<sup>2</sup> These tests include generalized likelihood ratio test, Lagrange multiplier test, two sample T-test, and nonparametric methods such as Mann-Whitney, ranking approaches, etc.

need to help low income and many other demographic market segments to better manage credit risk and problems. In the past problems may have been caused by credit opportunities made available to individuals who may not have fully understood the contractual obligations of obtaining credit. This should not be a reason to restrict credit, but does point to the continued need for better credit education and training, particularly among some ECOA groups.

If credit scoring systems do favorably impact consumer behavior, fewer defaults and foreclosures ultimately benefit society and ultimately benefit all consumers by lowering credit issuance costs and fees over time. If formerly high risk consumers change behavior, improve their credit management, improve their credit scores and become lower risk, then there clearly are benefits through increased availability and affordability of many financial services products. Failure of the study to evaluate this effect might raise questions as to the validity of its general conclusions.

I. The study should take into consideration the feedback effects of credit scores into the pricing of products to the consumer. To the extent credit scores better allow for the measurement of expected losses, better pricing of products are possible in a competitive market. To the extent credit scores allow for the measurement of volatility of losses, companies in a competitive market may be able to lower the price to the borrower. Less information regarding the potential borrower and the performance of similar past borrowers adds to uncertainty for the company offering the credit-related product and this, in turn, may result in higher prices for the consumer than would otherwise be the case.

J. Finally, the study should quantify the lower costs to borrowers resulting from the impact of credit scoring systems on reducing levels of uncertainty and increasing liquidity in credit markets. The advent of scoring systems has greatly reduced the uncertainty of credit quality in portfolios of consumer loans and mortgages, allowing these to be sold, traded and securitized much more efficiently than has ever been possible in the past. The rating agencies now use credit scores to determine levels of subordination in securities and rated structured transactions and overall, levels of subordination have been declining for many classes of credit risk, perhaps as a result of declining uncertainty over the volatility of and distribution of credit quality among the assets backing the securities. This is probably a measurable factor. Undoubtedly, it has reduced the overall cost of funding new issuance of credit and the insurance of that credit for consumer-related credit products.

**Question 2: Alternative Risk Classification Schemes.**

To evaluate scoring systems, the study must compare credit scoring systems against a proposed alternative, counterfactual method of pricing or of risk selection. Yet devising an unbiased alternative methodology is clearly a challenge.

Uniform pricing and "take-all-applicants" risk selection are both alternatives that have been proven to be ineffective in real markets and have led to negative results in financial services industries due to adverse selection



effects.<sup>3</sup> A modified version of uniform pricing or "take-all-applicants" risk selection would be a pricing or risk selection system that looks at all other factors other than credit scoring systems. This might be feasible for products where the risk is indirectly related to credit quality.<sup>4</sup> However, for financial products directly linked to creditworthiness, such as mortgage lending, neutralizing for credit is for all practical purposes identical to uniform pricing or "take-all-applicants" risk selection.

The most important outcome of the selection of the counterfactual is to make sure that the overall pricing level, or in the case of risk selection, the overall approval/reject percentages are balanced with those of the credit scoring system being evaluated. This allows the most objective analysis of the swap sets, those borrowers rejected (or charged higher rates) under one system, but approved (or charged lower rates) under the other. An accurate study will examine both statistics for their relative impact on the consumer segments being studied.

Whichever counterfactual is selected, the study should analyze the effects on affordability of the alternative versus a credit scoring system. There is likely to be some association between some ECOA-prohibited factors, such as race, with adverse credit scores. However, an association (or correlation) does not mean that the majority of individuals in that class have adverse credit scores. For example, it could mean that poor credit scores are 15% of the general population, while they are 20% of the ECOA protected class, which implies that as much as 80% of the ECOA protected class actually has

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<sup>3</sup> Attempts by state insurance departments to impose uniform pricing or "take-all-applicants" methodologies in auto and homeowners insurance programs may well have created market dislocations and availability issues in many states during the 1970s and 1980s.

<sup>4</sup> This may be the case with homeowners and automobile insurance.

favorable credit scores and may benefit from a credit scoring system. (This is not to suggest that any of these hypothetical percentages reflects the actual situation, only that the actual percentages need to be measured and evaluated in the study.)

Even if an association is found to exist, the study must examine the very large population of high credit quality individuals among ECOA protected classes and the effects of credit scoring systems on these individuals. If elimination or alteration of credit scoring systems adversely affects these individuals -- who may comprise a large share of the ECOA protected class -- this in itself could result in a faulty analysis.

In fact, it is likely that a plurality of individuals in every demographic segment (e.g., race, sex, marital status, income, etc.) is of reasonably high credit quality. Thus the possible adverse effects (affordability or availability) of any counterfactual system upon these individuals must be assessed in order for the study to be valid.

It is the very strong belief of many in the financial services industry that credit scoring systems have allowed financial institutions to do a far better job of reaching high credit quality individuals in the ECOA-focused market segments and bringing them more affordable products than was the case in the 1970s and 1980s. A study that ignored the positive effect of credit scoring systems would, of course, call into question any conclusions the study might otherwise reach.

Simply stated, the study should compare the favorable effects of making financial products more affordable and available to high credit quality individuals in the ECOA protected classes versus the unfavorable effects of making financial products less affordable and less available to low credit

quality individuals in the ECOA protected classes.

### **Question 3: Means for Controlling for Prohibited Factors**

The generalized linear model (GLM) framework (McCullagh & Nelder, 1989) represents a flexible and well suited statistical methodology that is applicable to multivariate analysis. Alternative methods exist which include Analysis of Variance (ANOVA) as well as the One-Way Layout and Two-Way Layout contingency table analysis. ANOVA of performance measures over cells defined by cross-tabulations of all factor levels, testing for the likelihood that cells defined by Protected Class factors have mean performance levels significantly different from the levels observed in cells with all Protected (and "Un-protected") Class distinctions ignored. Nonparametric techniques may be applied which relaxes the underlying assumptions on distributions, but lower the power of the statistical test. In all cases, the error-term structure of needs to be estimated using the appropriate estimation techniques.

In terms of historical observations, longitudinal data of both cross-sectional and time-series nature should be collected. Credible volumes of risk exposures are necessary with observed performance measures and accurate records from underwriting applications of risk underwriting categories and "Protected Class" categories. Complications may be encountered in that with these observations, the unobservable error component has a variable dispersion measures across observations. This could introduce problems of inefficiency of the estimates. Given trends in public policy and law over the past several decades, the evidence of the systematic collection of ECOA "protected class" data on loan and insurance prospects may well be expected to incur a presumption of discriminatory intent. Given this environment,

the requisite data either may not have been collected at all, or is likely to have been collected in such a way as to make it unavailable for study. Where some data has been collected through legally required reporting (e.g., certain ethnic and gender categories reported by residential mortgage lenders targeted by HMDA legislation), it has been collected in a format and with limited content which makes it unsuitable for use in studies of "disparate impact" that examine variations in product performance outcomes (e.g., default loss and prepayment rates) and their relationship to price and application approval rates.

**Question 4: Appropriate Definition, Model, and Method for assessing "negative or differential treatment"**

While the Act specifies that the FTC is to study the extent to which credit scoring may "result in negative or differential treatment of the protected classes," it is important to distinguish between the legal concepts of disparate treatment and disparate impact. Disparate impact can be measured through statistical testing alone. Disparate treatment, on the other hand, may be suggested by statistical measurement, but there must also be evidence of intent. Often, the party accused of disparate treatment will defend the use of models that exhibit disparate impact on the grounds of legitimate business necessity. It is clear that the Act is driving specifically at these issues.

With regard to testing for disparate treatment, a scoring model must demonstrate the following:

- (1.) Validity - that the model effectively separates good from bad, using measures such as AROC, K-S, relative bad rates, etc.

(2.) Differential Validity - that the model has significant predictive ability for each borrower class.

(3.) No Disparate Impact - that the model exhibits no significant difference in selection rates by class.

(4.) Fairness - that if there is disparate impact, it is fair because, holding constant all important factors (including outcome); there is no significant difference in selection rates by class.

With regard to the effectiveness of the model, the significance of performance and differences must be both statistical and practical. The usual test for practical significance uses an 80/20 rule. For disparate impact, that means finding selection rates that are different by more than 20%.<sup>5</sup>

For mortgage lending especially, it is absolutely crucial to hold geography and time constant when comparing disparate impact. Leaving geography and time out of the model will almost guaranty disparate impact and apparent unfairness.

Critical to the measurement of disparate impact is the cutoff score used in separating accepts from rejects. A model which exhibits significant disparate impact at one cutoff may exhibit none at another cutoff.

The use of credit scores as performance predictors is predicated on the understanding that they are strongly correlated with performance: risk exposures with high credit scores are expected to generate significantly lower loss incidence than risk exposures with

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<sup>5</sup> For testing significance of difference in selection rates, Mantel-Haenszel Chi-Squared statistics may be used. See also work by Bernard Siskin at <http://www.bnabooks.com/ababna/eo/99/eo32.pdf> and <http://www.oalj.dol.gov/public/ofccp/decsn/97ofc06a.htm>.

low credit scores. An appropriate methodology for testing the validity of using credit scores would examine the magnitude and statistical significance of the difference between observed loss rates for sets of risk exposures tabulated by (ECOA x Score-Range) classes and the corresponding loss rates for exposures grouped by Score-Range defined classes alone, including exposures of "unprotected classes":

<u>Score Range</u>	<u>ECOA Class1</u>	<u>ECOA Class2</u>	<u>...</u>	<u>ECOA Class X</u>	<u>all ECOA "Unprotected"</u>	<u>Total Exposures</u>
<u>Very Low</u>	Loss1_VL	Loss2_VL	...	LossX_VL	LossU_VL	Loss_VL
<u>Low</u>	Loss1_L	Loss2_L	...	LossX_L	LossU_L	Loss_L
<u>Average</u>	Loss1_Avg	Loss2_Avg	...	LossX_Avg	LossU_Av	Loss_Avg
<u>High</u>	Loss1_H	Loss2_H	...	LossX_H	LossU_H	Loss_H
<u>Very High</u>	Loss1_VH	Loss2_VH	...	LossX_VH	LossU_VH	Loss_VH

In order to avoid confounding the impact of cross-tabulated categories with the effect of other known factors that influence performance, the analysis of ECOA class - to - Total loss differences would have to control for these factors.

**Question 5: Appropriate methodology to determine whether specific factors result in ``negative or differential treatment'' of ECOA protected classes**

The analysis would be similar to the preceding (question 4 above); except the analysis would require cross-classification of performance measure differences by ranges of the "specific factors" rather than credit or insurance score ranges. Credit scores would have to be decomposed into their components and then component-wise analysis is applicable.

**Question 6: Appropriate methodology to determine whether there are factors that are not considered by credit scores that result in ``negative or differential treatment '' of ECOA protected classes.**

The methodology would be the same as the preceding analysis, with cross-classification based on the purported "unconsidered factors." Historical observations on variables should be compiled and agreed upon that in addition to credit scores determine the price and availability of financial products. Again a multivariate analysis may be devised such that the statistical significance or negative treatment is estimated.

**Question 7: Supplemental Data Sources**

Data on an individual level may well not be available. While geographic information is obtainable from the personal address this may, to a certain extent, be correlated to the list of variables noted earlier. Limited mortgage data collected through the Home Mortgage Disclosure Act (HMDA) is a potential source of mortgage-related data; however, any attempt to generate meaningful statistics from summarized geographic data such as HMDA is questionable because of the implied assumptions about the distribution of mortgage applicants/borrowers within the geographic region.

**Question 8: Proxies for Unavailable Supplemental Data Sources**

Theoretically, potential proxies for ECOA-protected classes might include the following: length of payment history, attained educational level and co-borrower status. Payment history might be used to identify a lower bound on age, while attained educational level might provide information on age and income. The co-borrower status may be an indicator of marital status in that co-borrowers for certain financial

products may be legal spouses. Geography might be a proxy for ethnicity and/or religious affiliation if such relationships could be determined from a study and comparison of census data.

While the above proxies may be valid, there is a fundamental concern underlying the approach indicated in this question that lies at the heart of how this study could ultimately fail to deliver upon its mandate. It is possible that in the past, geography, income, ethnicity, race, color, religion, national origin, age, sex, marital status, or creed might have been used as proxies for perceived creditworthiness and not the other way around, at least for some financial products. These past perceptions and any direct or indirect use of those factors as proxies were incorrect and socially undesirable. An assumption that credit scoring systems are somehow designed to perpetuate these perceptions is a potential bias that could invalidate the study.

Our industry has found that credit scoring systems have been one tool to help eliminate such undesirable proxies and more objectively evaluate creditworthiness. At this time they may be less than perfect in their ability to evaluate creditworthiness, but we have found that they do so far better than alternatives such as uniform pricing and "take-all-comers" risk selection and far better than any proxies that may have been used in the past.

Unless the study is designed to test this alternative possibility - that credit scoring systems might actually improve availability and affordability among creditworthy borrowers which comprise the majority of ECOA-prohibited factor segments (in addition to the proxy approach noted in question 8) -- then the study will not achieve its intended goal.

**Question 9: Analysis to Allow Inferences from Proxy Factors**



ANOVA analysis based on assumed relationships between proxy measures and the factors of interest can be used to generate inferences in essentially the same manner as ANOVA analysis based on direct observations of the factors of interest. The validity of such inferences, however, is no sounder than the accuracy of the assumed relationships. By the very nature of the circumstances which require use of proxies, verification of the assumed relationships is not possible.

As regards the limitations to the inferences that can be drawn using proxies in place of data on individual characteristics, it must be recognized that a strong association does not imply causality. Only exploratory indications can validly be inferred from proxy variable studies. That is, the only conclusions that can be drawn would be along the lines of "some significant differences by categories of interest might be occurring here, provided the assumed relationships between proxy factors and factors of interest hold for the population from which the observation sample was drawn." Inferences from group averages over groups defined by proxies to individuals are blind to the within-group variations from the averages.

#### **Question 10: Census Data as a Proxy Factor for Individual Characteristics**

The response to the question 9 above applies here, with the additional factor that the proxy measure is not even made on individual cases, but based on an individual's membership in a geographically defined population, whose summary measures constitute the proxy. While analysis of variance and correlations can be estimated to determine the degree of association between a proxy such as geographic location and specific characteristics, the limitation is that association does not imply causality. The

existence of confounding factors could well lead to contradictory results.

MICA hopes that the FTC finds these comments to be useful and we would be happy to discuss any questions FTC staff may have regarding the structuring of an effective model regarding mortgage credit risk and the use of credit scoring techniques.

Sincerely,

A handwritten signature in cursive script that reads "Suzanne Hutchinson". The signature is written in black ink and is positioned above the printed name.

Suzanne Hutchinson