EPIC

Credit-Based Insurance Scores

As Currently Used by Personal Auto and Homeowners Insurers, Insurance Scores Are Actuarially Sound, Lead to More Accurate Risk Assessment, Fairly Discriminate Between Risks, And Work to the Advantage of a Majority of Insureds

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The Use of Credit-Based Insurance Scores
Public Hearing of NAIC Property and Casualty Insurance (C) Committee
and Market Regulation and Consumer Affairs (D) Committee

April 30, 2009

Introduction

My name is Michael J. Miller. I am a Fellow of the Casualty Actuarial Society and a Member of the American Academy of Actuaries. My business address is 21253 N. 825 East Road, Carlock, Illinois.

In order to offer a public actuarial opinion, the actuarial profession requires more of an actuary than professional credentials. An actuary must also be experienced with the specific subject matter and be in compliance with the profession's continuing education requirements. I fully comply with the actuarial profession's experience and continuing education requirements.

I have practiced as a professional actuary for over thirty years with a special emphasis in ratemaking for auto and homeowners insurance. I co-authored in 2003 a major study pertaining to credit-based insurance scores entitled "The Relationship of Credit-Based Insurance Scores to Private Passenger Automobile Insurance Loss Propensity" (i.e., EPIC Study). A more complete summary of my education, training, and experience is set forth in the attached curriculum vitae (Exhibit I).

Overview

Accurate risk assessment and risk differentiation are essential when insurance is being provided by multiple, competing insurers and the insureds are free to choose from among the multiple providers. Reliable studies have consistently shown that credit-based insurance scores enhance the accuracy of the risk assessment process. If the use of credit-based insurance scores were banned the result would be insurance rates that are inadequate for some insureds, excessive for other insureds, and unfairly discriminatory for all.

In July 2007 the Federal Trade Commission released a study of credit-based insurance scores as used for personal automobile insurance (i.e., FTC Study). The FTC study estimated that 59% of the national auto insured households benefit from reduced premiums due to the use of credit-based insurance scores. According to the FTC data, credit-based insurance scores benefit nearly one-half the Hispanic racial group of insureds, approximately two-thirds of the Asian group, and over one-third of the African American group.

Although the percentage of insureds benefiting from the use of credit-based insurance scores is lowest among African Americans, the number of African Americans that do benefit is significant. Whether viewed as individual groups or viewed as a whole, it is clear that a banning of credit-based insurance scores would work to the disadvantage of many minority households throughout this country.

Concerns over the use of credit-based insurance scores arose several years ago before the facts were fully known. We now know with certainty that credit-based insurance scores enhance risk assessment and have a legitimate business purpose. We know that credit-based insurance scores cannot be used to accurately predict an insured's race or income. We know that the use of credit-based insurance scores works to the advantage of a significant number of racial minority households throughout this country.

What is not apparent is why, in the face of these facts, the use of credit-based insurance scores continues to be a political issue.

Ratemaking and Estimating Loss Propensity

The essence of insurance is the transfer of risk. A commercial insurance enterprise does not involve a sharing of losses with other insureds, unless the insurance policy includes a post-assessment provision. An insurance consumer eliminates risk by choosing the certainty of the insurance premium versus the uncertainty of suffering a severe financial loss.

An insurance premium is a combination of the insured's expected loss, a provision for the insurer's expected operational/administrative expenses, and a provision for profit. An insured's expected loss is a function of the probability of a claim occurring (i.e., claim frequency or likelihood) and the average cost of the claim once it occurs (i.e., claim severity). For example, if an insured's likelihood of an auto collision claim is 10% per year and the average cost of a collision claim is expected to be $1,000, the insured's expected loss is $100 per year (i.e., 10% x $1,000). Another insured with a claim likelihood of 12% and an expected claim cost of $1,000 would have an expected loss of $120 per year (i.e., 12% x $1,000). Since the expected loss is part of the calculated rate, the insurance premium charge for this second insured would be higher than the premium charge for the first insured because the expected loss for the second insured is higher.

An insured's expected loss is estimated based on a combination of several risk characteristics, or risk factors. Each risk factor has been found to measure and predict at least a portion of the total risk associated with each insured. For private passenger auto insurance, where the car is garaged and principally operated has been statistically shown to affect both the likelihood of claim occurrence and the cost of claims. Other important risk factors that are statistically correlated to the risk of auto insurance claims include age, gender, marital status, and driving record of the drivers; annual mileage and how the car is used (i.e., pleasure, commuting, or business); and the make and model of the car.

For homeowners insurance, the risk factors that are commonly used to estimate the expected loss include the estimated replacement cost of the house, the construction type of the house, the geographical location, and the age of the utilities.

No single risk factor has been found that measures or predicts the total risk. Typically, insurers rely on twenty or more risk factors to accurately estimate an insured's likelihood of a claim and the expected loss. All risk factors work in combination to measure and predict the total risk.

The EPIC Study of 2003 which I co-authored showed, and the FTC Study of 2007 confirmed, that credit-based insurance scores for personal auto insurance are strongly related to an insured's likelihood of claim occurrence and add significant accuracy to the risk assessment process. In other words, credit-based insurance scores measure risk not previously measured by other known rate factors. The strength of the statistical correlation is such that a credit-based insurance score is among the most important risk factors used by insurers to accurately estimate the probability of claim occurrence.

The EPIC Study found that a credit-based insurance score was among the top three most important risk factors for each of the four major auto insurance coverages. No researcher has yet been able to find an alternative risk factor that could replace a credit-based insurance score as a predictor of claim likelihood without sacrificing a great deal of accuracy in the risk assessment process.

Causation

Sometimes critics of the insurance industry complain that it is inappropriate to use a risk factor, such as a credit-based insurance score, because it does not “cause” an insured to have an auto accident or “cause” a homeowners insurance claim. If causation were a standard for the use of any specific risk factor, there would be no risk factors that could be used to predict and measure risk.

While understanding the causes of auto claim losses (e.g., inattention to driving, driving too fast, following too closely, etc.) and understanding the causes of homeowners claim losses (e.g., lightning strikes, wind storms, faulty wiring, ruptured washer supply hoses, etc.) may be of interest when attempting to reduce losses, non-causal factors are the more practical and powerful predictors of the probability of an insurance loss.

The classical example of a relationship to loss that is not a cause-and-effect relationship is a home built in a river valley. Living in a river valley does not “cause” a flood. But there is a predictive relationship between the risk of a flood loss and the construction of a home in a flood plain. It would be foolish to presume there is no risk of a flood loss merely because the location of the home does not “cause” the flood.

Many other examples of risk factors can be cited that do not cause accidents to occur. Neither past traffic violations nor past accidents “cause” future insurance losses, but there is a predictive relationship between past driving records and future losses. An age of the driver is not the cause of an accident, but it is predictive of the likelihood of a future accident. No predictive risk factor used in the risk assessment process can be said to actually cause an auto accident.

Causality should not be the basis for allowing or disallowing the use of credit-based insurance scores, just as it should not be the basis for allowing or disallowing all other risk factors. The basis for allowing the use of any risk factor should be the ability of the risk factor to significantly contribute to the accurate measurement of the propensity for insurance losses.

It has long been a tenet of risk assessment that financial stability/responsibility was related to risk for private passenger automobile insurance. However, the concepts of financial stability and responsibility have been heretofore difficult to translate into objective, measurable risk factors. Credit-based insurance scores offer, for the first time, the means of objectively measuring the relationship between financial prudence and the propensity for insurance losses.

While it would be inconsistent with sound actuarial principles to require credit-based insurance scores to demonstrate a causal relationship, we could reasonably speculate that there are psychological factors that likely affect our adversity to risk and how we manage our personal lives. We could reasonably speculate that the results of these psychological tendencies can be observed in many aspects of our personal lives, including our credit history and insurance losses. Insurance scores may be providing an objective means of measuring personal responsibility and its effect on insurance losses, even though we may never fully understand the psychology involved.

Rather than speculate on what credit-based insurance scores are actually measuring, I would prefer to rely on the statistics. I fully recognize that statistical correlations can be spurious. Math statistical textbooks typically include warnings to math students that statistical correlations can be spurious. However, in the case of insurance scores there have been several studies published with analysts working independently, using different databases. All of the studies indicate the same conclusion. Credit-based insurance scores enhance the risk assessment process. It is highly unlikely that the statistically indicated correlation between credit-based insurance scores and insurance loss propensity is a spurious statistical relationship.

Unfairly Discriminatory Rates and Proxy Effect

Rate regulatory laws throughout the United States consistently require that insurance rates not be unfairly discriminatory. This rate standard has a history in insurance literature and rate regulation that goes back in time over 150 years.

Traditionally, insurance rates have been considered to be unfairly discriminatory if there are premium differences that do not correspond to differences in expected losses and expenses, or if there are differences in expected losses and expenses that are not reflected in premium differences. Because credit-based insurance scores provide an important and accurate measurement of risk, it would be unfairly discriminatory to charge insurance premiums that ignored the differences in risk measured by these scores. Two insureds with significantly different insurance scores represent a significantly different risk of loss and as such it would be unfairly discriminatory to charge these two very different insureds the same premium.

In addition to studying the relationship of insurance scores and risk, the FTC also studied the relationship between credit-based insurance scores and race, ethnicity, national origin, and income. The FTC attempted to determine if differences in credit-based insurance scores were correlated to differences in insurance risk or whether the scores were merely a proxy for race or household income.

The FTC concluded:

a. Credit-based insurance scores are effective predictors of risk under automobile policies.

b. Credit-based insurance scores appear to have <u>little effect</u> as a proxy for membership in racial and ethnic groups in decisions related to insurance (emphasis added).

The FTC's use of the term "little effect" left the door open for the possibility that credit-based insurance scores did have some proxy effect, no matter how small, with respect to race and ethnicity. Based on its analysis the FTC estimated the proxy effect for African Americans to be +1.1% and for Hispanics to be +0.7%.

The FTC measured this purported proxy effect by comparing the average predicted risk derived from a model without controls for race to the average predicted risk for each racial group derived from a model with controls for race. In order to have any confidence that the small 1.1% and 0.7% proxy effects on risk are accurate and have any significance, the FTC needed to precisely control its analyses for all known risk factors other than race. Unfortunately, the FTC simply did not have a database that was refined enough to accurately identify such a small proxy effect of 1.0% or less.

The FTC acknowledged "that the large differences in average risk on comprehensive coverage for Hispanics and African Americans should be treated with some caution, as the geographic risk variable in the FTC database is not a very effective control for geographic variation in risk on comprehensive coverage" (emphasis added). I was directly involved in designing the database used by the FTC, exclusive of data concerning credit-based insurance scores, race, and household income. I advised the FTC that the geographic risk data were less than an ideal control for geographic variation in risk for the bodily injury coverage, as well as for the comprehensive coverage.

The way that the FTC grouped the data by age/gender/marital status, by tenure, by mileage, and by geography reduced the FTC's ability to accurately control its statistical analysis for all known risk factors. The FTC's problems with the traffic violations data also limited its ability to accurately measure a proxy effect. It is highly likely that the 1% and less proxy effect which the FTC ascribes to race would have disappeared entirely had the FTC been able to more accurately control the analysis for all known risk factors, especially the geographic risk factor.

To support this contention I would draw attention to the calculation of the proxy effect for the property damage liability coverage. The data used by the FTC to control for geographic risk for the property damage liability coverage was not ideal, but it was better geographic data than for any other coverage. Where the FTC could adequately control for geographic risk the FTC found "very little difference in the impact of credit-based insurance scores on predicted risk based on whether the model included controls for membership in a protected class". In fact, the FTC found some evidence that inclusion of race in its model may be having an effect that was opposite a proxy effect for the property damage coverage (see FTC Study page 68). I suspect that if the FTC had been able to control for geographic risk as accurately for all coverages as it did for the property damage liability coverage, all hints of a proxy effect would have disappeared, as was the case for the property damage coverage.

My primary criticism of the FTC Study is that readers were not properly warned as to the limitations of the data. The database was sufficiently refined to allow for general conclusions as to the ability of credit-based insurance scores to predict risk, both on an overall basis and within racial and income groups. The database was not sufficiently refined to allow for the measurement of a proxy effect that is as small as 1% or less.

In my opinion, the proper conclusion to be drawn from the FTC Study is that credit-based insurance scores are not proxies for race or income. Knowing someone's score provides no information, or even the basis for an educated guess, as to their race or income. If a small proxy effect does exist it is so small as to be unmeasurable by the FTC database. Surely the very small proxy effect hypothesized by the FTC, but not statistically proven, cannot invalidate an important risk factor that contributes significantly to the measurement of risk and benefits everyone by making insurance coverage more readily available.

California Rate Regulation

Ratemaking regulations implemented in California subsequent to the passage in 1989 of Proposition 103 have limited insurers' abilities to implement accurate rate factors, thereby creating hidden cross-subsidies within the insured population. In California these hidden subsidies primarily benefit urban insureds and disadvantage rural insureds. California rate regulations also result in the disallowance of legitimate and necessary business expenses and limit the underwriting profit factors to amounts that are well below most insurers' true cost of equity capital.

California has imposed a ban on the use of credit-based insurance scores, apparently based on the mistaken notion that it is "protecting" low-income insureds and racial minority insureds. This ban actually creates significant and undesirable cross-subsidies. Many low-income insureds with better than average insurance scores are currently being required to subsidize relatively rich insureds with poor scores. Also, as shown by the FTC Study, significant numbers of insureds within every racial minority group are being required to subsidize the cost of insurance for those of all races with below-average scores.

This arbitrary ban in California on insurance scores potentially creates, in my opinion, an undesirable change in the nature of competition. Rather than competing on price and competing to write as much business as is financially prudent, insurers will likely tend to turn to pre-screening marketing techniques and insurance will not be readily available for some insureds with above-average risk.

Critics of the insurance industry often contend that any restrictions on the risk assessment process, or arbitrary limits on rates, are justified as long as the insurance market has not completely collapsed through insurer withdrawals or insolvencies. In my career, I have seen rate regulation push the New Jersey personal insurance market towards collapse during the 1970's and 1980's. We may be seeing the same thing recurring now in the Florida homeowners insurance market. In my opinion, there is little in the California "experiment" with rate regulation that should be transported to other states. If all states copied California there would be no states left to provide subsidization and create the capital necessary for this industry to remain financially healthy for the benefit of every insured.

Federal Reserve Board Study

In August 2007 the Federal Reserve Board (i.e., FRB) released its study of the impact of credit scoring on the availability and affordability of credit. There were both similarities and striking differences in the FRB's findings and the FTC's findings with regard to credit-based insurance scores.

The FRB found the mean credit score for Asians and non-Hispanic whites to be slightly above average. The mean score for Hispanics was 38% of the average and for African Americans it was 26% of the average. The FTC's findings with respect to the median insurance scores by racial group were strikingly similar to the FRB's findings.

Both the FRB and the FTC conducted multi-variant analyses of other known risk factors. In order to determine if the apparent differences in average scores by racial group were due to race or due to other known risk factors, both the FRB and the FTC conducted a multi-variant analysis within each racial group. When the race is the same for all participants in the study, the FRB found that credit scores were predictive of credit risk and the FTC found that credit-based insurance scores were predictive of auto insurance losses. These findings prove that credit scores and credit-based insurance scores are not surrogates for race.

Unlike the FTC, the FRB recognized and discussed the fact that a practice applied uniformly to all applicants may not have a precisely uniform impact on all sub-groups. The FRB recognized that "courts and federal regulators of credit discrimination" have traditionally accepted some degree of differential impact if there is a "sufficient business justification" for the practice in question.

Unlike the FRB, the FTC mistakenly suggested that a small portion of the total risk being measured may be ascribed to race. The portion of risk mistakenly ascribed to race was the portion of the risk the FTC was unable to explain with other known risk factors. I have previously discussed in this testimony how the FTC failed to adequately control for geographic risk on three of the four major auto insurance coverages, and why what the FTC labeled as a "proxy for race" was nothing more than unexplained geographic risk.

Exhibit I

CURRICULUM VITAE

NAME:	Michael J. Miller
BUSINESS ADDRESS:	21253 N 825 East Road Carlock, IL 61725 E-Mail: mmiller@ask-epic.com
EDUCATION:	ILLINOIS STATE UNIVERSITY Bachelor of Science – 1968 Major – Mathematics Minor – Accounting
CONTINUING EDUCATION:	Estimated study time exceeding 3,000 hours necessary for completion of 10 qualifying exams for membership in Casualty Actuarial Society (CAS). Participation as an attendee and on the faculty of the CAS Loss Reserve Seminar, the CAS Ratemaking Seminar, and other CAS educational seminars on special topics, such as rate of return and underwriting practices. Meet all continuing education requirements of the American Academy of Actuaries necessary to sign a public actuarial opinion.

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS:	Casualty Actuarial Society (CAS)	
	Associate Member	1971
	Fellow	1981
	American Academy of Actuaries (AAA)	1975
	Conference of Consulting Actuaries	2002-2004
	Fellow	
	International Actuarial Association	
	Midwestern Actuarial Forum	
	Chartered Life Underwriter (CLU)	

PROFESSIONAL ACTIVITIES:	CAS Committee on Risk Classification,	
	Member	1982-1984
	Chairman	1983-1984
	CAS Committee on Principles of Ratemaking	
	Member	1985-1987
	Chairman	1991-1992
	CAS Examination Consultant	1987-1990
	CAS Long-Range Planning Committee	1993-1994 1997-2000
	CAS Board of Directors	1992-1993 2001-2003
	CAS Officer,	
	Vice President – Research and Development	1993-1996
	CAS Task Force on Non-Traditional Practice Areas	
	Chairman	1998-2000
	CAS/SOA Joint Task Force on Financial Engineers	1998-2001
	AAA, Liaison Committee to the National Association of Insurance Commissioners	1985-1988
	Actuarial Education and Research Fund Board of Directors	1994-1996
	AAA, Casualty Practice Council	1990-1993
	Property Casualty Committee of Actuarial Standards Board, Member	1987-1993
	Chairman of Ratemaking Subcommittee	1987-1988
	Chairman of Property/Casualty Committee	1989-1993
	Midwestern Actuarial Forum	
	Education Officer	1986-1987
	President	1988
EMPLOYMENT HISTORY:	State Farm Insurance	1967-1984
	M. J. Miller and Company	1984
	Tillinghast	1984-1993
	Miller, Herbers, Lehmann, & Associates, Inc.	1994-2002
	EPIC Consulting, LLC	2003-Present

PROFESSIONAL PUBLICATIONS:

"Private Passenger Automobile Insurance Ratemaking", Proceedings of CAS, Volume LXVI.

"Review – Risk Classification Standards by Walters", Proceedings of CAS, Volume LXVIII.

"A History of the Rating and Regulation of Personal Car Insurance in the United States", The Institute of Actuaries of Australia, February, 1990.

"An Evaluation of Surplus Allocation Methods Underlying Risk Based Capital Applications", CAS Discussion Paper Program, Volume I, 1992.

"How to Successfully Manage the Pricing Decision Process", CAS Discussion Paper Program, 1993.

"Building a Public Access PC-Based DFA Model", CAS Forum, Summer 1997, Volume 2.

"Auto Choice: Whose Fault Is It Anyway", Contingencies, January/February 1998

"Actuarial Implications of Texas Tort Reform", CAS Forum, Spring 1998.

"The Relationship of Credit-Based Insurance Scores to Private Passenger Automobile Insurance Loss Propensity", June 2003.

"Disparate Impact and Unfairly Discriminatory Insurance Rates", CAS Call Paper Program, February 2009.

PRESENTATIONS:

Faculty member on National Association of Insurance Commissioners' orientation program for new insurance commissioners, 1987-1994.

Faculty member on National Association of Independent Insurers' seminars on ratemaking and loss reserving.

"Key Provision in Rate Filings", Society of State Filers.

Numerous presentations at educational seminars and meetings conducted by the Casualty Actuarial Society on topics including ratemaking, loss reserving, underwriting, risk classification and rate of return.

EXPERT TESTIMONY:

Rate Regulatory Hearings in Alberta, California, Florida, Georgia, Louisiana, Maryland, Massachusetts, Michigan, Mississippi, New Brunswick, New Jersey, New York, North Carolina, Ohio, Oklahoma, Ontario, Pennsylvania, Texas, Vermont, West Virginia, and Wyoming.

Courts in Alabama, California, Florida, Minnesota, Mississippi, New Hampshire, Pennsylvania.