

The Impact of Credit Counseling on Subsequent Borrower Credit Usage and Payment Behavior

January 2003

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We are deeply grateful to Trans Union, LLC, for providing the credit report data at the core of this empirical study. We also thank the members of the Creditor Relations Committee of the National Foundation for Credit Counseling, especially Chairman Bob Runke, who provided the inspiration and creative direction to launch the project; Cecelia Diehl and all the NFCC national staff who have provided guidance and comments throughout the project; and James Berkovec for econometric advice. Stephanie Wilshusen at the Credit Research Center provided expert statistical support in the construction of the empirical models. Credit Research Center Advisory Council members provided many helpful comments that improved the analysis. Last but certainly not least, we thank the five participating agencies for sharing their time and data in the interest of demonstrating for themselves, and their agency counterparts throughout the country, that financial counseling makes a difference.

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I. INTRODUCTION

Each year, millions of households find themselves overwhelmed with debt and struggling to maintain their monthly payments. Such debt problems have numerous causes, but the problems typically trace to events such as job loss, income interruption due to illness or disability, divorce or separation, and often just poor financial management. In 2001, nearly 1.5 million households resorted to personal bankruptcy as a solution. Between 2.0 and 2.5 million people sought advice and other assistance from a credit-counseling agency, sometimes prior to bankruptcy but mostly as an alternative to bankruptcy.¹ Providing assistance to financially troubled consumers has become a growth industry: as recently as 1990, the annual number of new clients to credit counseling agencies totaled less than 500,000.

We are aware of no empirical studies of financially troubled debtors to determine the long-term impact of having received financial counseling. There are at least two reasons why such evidence would be valuable. First, public policy is increasingly viewing counseling as important for preventing financial problems in the future. Homeownership counseling has long been required by the US Department of Housing and Urban Development in conjunction with a variety of affordable housing programs. More recently, regulatory attempts to reduce predatory lending in mortgage markets have required mandatory counseling for subprime borrowers considering “high-cost” mortgage loans. An important provision of the bankruptcy reform legislation working its way through the US Congress would require that consumers filing for Chapter 7 bankruptcy first complete credit counseling from a court-approved provider. Each of these counseling requirements seems to envision either a rehabilitative or preventive role for credit counseling to avoid future financial problems. However, this is precisely the issue about which there is a notable lack of evidence. Indeed, in a discussion of the rapid proliferation of financial education programs, the Federal Reserve Board staff recently noted “... research measuring the effectiveness of [financial] training has not kept pace.”²

A second reason for determining the value of financial counseling is that the market’s ability to continue providing these services requires some documentation of the value of the service in order for it to be properly priced. A peculiarity of the credit counseling industry is that the large majority of the revenue generated by counseling agencies

¹Source: National Foundation for Credit Counseling, Silver Spring, MD.

² Braunstein and Welch (2002), p. 449.

derives from a product that is not credit counseling. Very briefly, the bulk of agency revenues derive from administering debt repayment plans (Debt Management Plans, or DMPs) for those clients who qualify based on the outcome of an initial counseling session. These DMPs are attractive debt reduction measures for some consumers because they avoid bankruptcy but still gain creditor concessions in the form of reduced interest rates, late fees and minimum payments so long as the consumer stays with the plan. Creditors pay the agency a percentage of the funds recovered under the plan (“fair share” payments). The success or failure of these plans provides an imperfect but readily observable metric for evaluating the service provided by the agency.

Of course, not all consumers who seek counseling qualify for or need to be placed on DMPs. For many agencies, customers on DMPs represent the minority of clients counseled. For the remaining majority of counseled clients, the agency output is less tangible, consisting of education, advice, possibly referrals to social agencies or other institutions to solve specific problems, and generally recommendations for specific changes in clients’ behavior. Consumers may be charged a small fee for such counseling, but, in keeping with the social-service orientation of most counseling agencies, these fees typically represent a very small part of total agency revenues.³

Until the mid-1990s, the fair-share payments from creditors effectively subsidized the counseling service provided to clients who did not enter repayment plans. However, as competition from new entrants to the counseling market has eroded the “fair-share” percentage, agencies that provide counseling to a significant portion of their clients without setting them up on DMPs face a financial dilemma.⁴ Counseling outside of these plans may well rehabilitate and prevent future financial problems. But, such counseling is resource intensive. Creditors have made it clear that they will not continue to subsidize the cost of serving non-DMP clients unless the value of such counseling is demonstrated. Thus, the quality and quantity of counseling provided to hundreds of thousands of borrowers for whom debt repayment plans are not appropriate is in jeopardy.

This paper investigates whether financial counseling has a measurable, positive effect on client credit behavior. We examine the impact of one-on-one counseling delivered by five non-profit credit counseling agencies to approximately 14,000 clients during a five-month period in 1997. Credit bureau data provide objective measures of credit performance for these clients over a three-year period following the initial counseling

³ The oldest and largest group of credit counseling agencies are the non-profit members of the National Foundation for Credit Counseling. NFCC-member agencies counseled over 800,000 consumers in 2000 in 1,300 offices throughout the U.S., frequently under the trademarked name of Consumer Credit Counseling Service (CCCS).TM For these agencies, only about one-third of counseled consumers are placed on DMPs. Approximately 72% of agency revenues derive from the fair-share fees paid by creditors out of client DMP payments. DMP clients (consumers) are often asked to pay an additional monthly fee to the agency for the duration of the repayment plan. Agencies derive about 18% of their total revenues from such client contributions. Consequently, nearly 90% of NFCC agency revenues derive from the DMP plan product that is delivered to just one third of all clients. Source: Bayshore Consulting analysis of 1999 NFCC Agency Operating Reports, as outlined in letter to NFCC national office, April 26, 2000. A copy of the letter is on file with the authors.

⁴ Fair-share rates have fallen from historical levels of about 12-15% of funds recovered to 7-8% in recent years. (Belz 2002).

session, as well as for a large comparison sample of individuals with risk profiles and geographic residences similar to the client group in 1997 but who were not identified by the five agencies as having been counseled.

II. METHODOLOGY

Any study of the impact of credit counseling on borrowers faces some formidable methodological hurdles. The issues include the following:

1. Standardization of program content: Is the same basic material presented to all clients? Is the content individually tailored (counseling) or generic (classroom or home study)?
2. Identification of a counseled group of sufficient size to be statistically significant
3. Identification of a similarly situated non-counseled group as a comparison group
4. Ability to track subsequent performance of both groups over time with objective measures that relate to the content of the financial counseling

This section discusses how the current study addresses each of these methodological issues.

A. Standardization of Content

At the outset we note a distinction between education and counseling. Credit counseling entails the tailoring of advice to an individual borrower's specific circumstances. Credit education is more generic. It may deal with the same general concepts but without examples fitted to the individual. Applying this terminology, classroom credit education is often (although not exclusively) generic with few, if any, examples tailored to individual students. This distinction may be important in terms of the potential for each to change borrower behavior. However, there has been little or no evaluation of the effectiveness of either treatment.⁵ *All of the counseling analyzed in this report stems from one-on-one sessions between the borrower (possibly a couple) and a certified agency counselor.* Consequently, the conclusions apply only to financial education conducted in a one-on-one setting, and not necessarily to other methods of delivery.⁶

⁵ In contrast to the lack of research on the effectiveness of credit counseling, a small body of empirical work has examined the effectiveness of home ownership education and counseling (HEC). HEC has received far more policy attention because it is believed to be a valuable tool for increasing stable homeownership among traditionally underserved segments of the population. The scope of HEC is broader than credit counseling since it can touch on a variety of issues related to a home purchase, mortgage acquisition and post-purchase home maintenance. However, the methodological challenges to documenting the impact of HEC are quite similar to those faced by a study of credit counseling. For excellent surveys of both past research and methodological issues see Mallach (2000) and Quercia and Wachter (1996). For a recent study that found positive effects of pre-purchase HEC in terms of reducing mortgage delinquencies see Hirad and Zorn (2001).

⁶ We raise this distinction because the call for mandatory pre-bankruptcy counseling in the pending bankruptcy reform bill appears to require classroom-style education. However useful that may prove for alerting debtors to the existence of non-bankruptcy options, we simply do not have any evidence as to the value of such education for preventing a recurrence of financial problems in the future.

The counseling assessed in this study was administered by five NFCC agencies between April and August of 1997. All clients received a 60 – 90 minute session with a certified credit counselor. Each session provides an opportunity to analyze the family or individual's financial situation in a give-and-take forum that raises and resolves questions related to debt, income and payment issues. The counseling session normally includes key components: a discussion of the financial goals of the family; financial strengths and weaknesses; and a comprehensive, detailed review of the family's budget and spending patterns. Assets, liabilities, income and debts are reviewed to uncover resources that can help the client regain financial control. Options are discussed. The root of the problem that has led the client family to this point is assessed and, as appropriate, referrals to appropriate organizations in the community are made – often to a social service agency to address issues that may be contributing to family instability (e.g., addiction). Finally, a written action plan is developed to identify the appropriate next steps. Additional counseling sessions may be needed. Additional education programs and support groups may be offered.

What advice do counselors typically offer to clients in counseling sessions? Although each session is customized to the needs of the individual family, the following themes surface repeatedly:

- Ways to increase income, i.e., increasing exemptions, taking on part-time jobs, decreasing unnecessary payroll deductions, selling items the family can do without, etc.
- Decrease household spending, i.e., reducing utility costs, bringing lunch to work, etc.
- Be clear about priorities and pay high priority debt first
- Keep fewer lines of credit open
- Reduce debt levels
- Pay higher amounts on accounts that have larger balances combined with higher interest rates
- Make consistent and timely monthly payments
- Adjust or reformat existing accounts through refinancing; seek lower financing options
- Work with creditors directly to get payments/interest reduced
- Resolve credit reporting inaccuracies
- Don't apply for credit just to see if you can get accepted
- Avoid accumulating unnecessary inquiries on the credit report
- Review legal rights and options available
- Save for upcoming events: mortgage downpayment, marriage, Christmas, etc.

B. Identification of Counseled Individuals

The NFCC obtained the cooperation of five member agencies for this study. Participating agencies included CCCS of Atlanta, CCC Farmington Hills (suburban Detroit), CCCS of San Francisco, CCCS Southwest (Phoenix) and CCCS of Dallas. Each of these agencies operates multiple offices in their geographic market area (in some cases offices are located in more than one state). Each agency provided data on all clients for

whom an initial counseling session was conducted during 1997. Since this paper focuses on the impact of counseling on those consumers who do not establish DMPs, all sessions that resulted in DMPs were removed from the database, leaving a total of 55,527 clients for analysis.⁷ For each client, the agencies provided identification information (name, address and social security number). Table 1 below provides details of the sample by agency.

Two issues that could affect the interpretation of the results should be noted. First, not all of the counseling sessions were conducted face-to-face. Telephone counseling emerged in the mid-1990s and has become an increasingly popular alternative to in-person meetings. Consumers may favor telephone counseling because of the convenience in terms of reduced time and travel costs. Some agencies may favor it from an operational standpoint because a given volume of clients can be served at lower cost, relative to the brick-and-mortar capacity required for in-person counseling. Agencies have also found that some consumers are more comfortable/less embarrassed about discussing their financial affairs if they can do so from a distance. Telephone counseling has boosted demand because it has overcome the initial reluctance of some consumers to give counseling a try.

We raise this point because the question of whether telephone counseling is as effective as face-to-face counseling is the subject of ongoing debate within the industry. Unfortunately, our results do not contribute to this debate. Our sample contains both in-person and telephone-counseled clients but does not distinguish one from the other. Only aggregate statistics on the percent of clients counseled by telephone are available. Table 1 displays the percentage of clients who were counseled in-person for each agency during 1997. If there is a difference in effectiveness of the two delivery methods, our results reflect a blend of the two.

A second point concerns the outcomes of the initial sessions. Clients who do not end up on DMPs are not a homogeneous group. At the end of an initial counseling session with a new client, the counselor typically makes an evaluation of the client's situation. NFCC agencies have developed several descriptive categories that are used across member agencies to describe the counseling outcome. In some cases the counselor designates the outcome as "client could handle," meaning that the client has sufficient income to service the debt without creditor concessions or other assistance. In other cases the client is recommended for a debt management plan but declines the offer. In still other cases the client is "referred for legal assistance," (e.g., bankruptcy or other legal advice) because specific issues must be addressed before a serious repayment effort is viable.

Based on discussions with the agencies, we have determined that the codes for these and other outcomes are applied inconsistently across agencies. Consequently, they are unreliable indicators of whether clients may be more or less likely to demonstrate post-counseling improvement in their debt levels and payment performance. While all agencies have these codes on their database, we did not request their inclusion in the files extracted for this project. Agencies were asked to include in their sample all clients with

⁷ Analysis of the post-counseling behavior of DMP clients will be conducted in a separate study.

an initial interview during the sampling period, except for those that were placed on debt management plans.

However, one agency apparently did make use of the outcome codes and excluded clients who were tagged as “referred for legal assistance” (RLA) or “client could handle” (CCH) prior to providing us with their data. The dropped cases represented about 23 percent of the initial interviews conducted by this agency in 1997 (8.5 percent RLA; 14.8 percent CCH). Notwithstanding the inconsistency in applying codes across agencies, the dropped cases seem to be a blend of the best and worst situated clients with respect to financial situation. Consequently, it is not possible to determine the direction in which the loss of these cases might bias the outcome observed in the remainder of that agency’s sample.

Table 1. Client Characteristics, 1997

Agency	Number of Offices	1997 Clients	Percent Counseled in Person
CCCS of Atlanta	15	15,684	87.5
CCCS Farmington Hills, MI	36	10,212	100.0
CCCS of San Francisco	12	7,289	48.1
CCCS Southwest, Phoenix	16	13,900	74.5
CCCS of Dallas	32	8,442	85.6
Total	111	55,527	81.1

C. What Behavior Should Be Measured?

Counseling has at least two objectives. Since clients almost always seek counseling assistance because they sense they are in financial trouble, one of the goals is to provide advice and assistance to reduce or cure the immediate problem and lower debt burden. But, the description above of the advice offered during counseling sessions makes clear that a second and longer-term goal is to improve borrower awareness, planning and budgeting skills to prevent overextension in the future. An evaluation of progress toward both goals requires some objective measures of credit usage and payment performance over an extended period.

Credit report information provides such a measure. For the NFCC project Trans Union (TU) provided credit bureau snapshots for individuals in both the counseled and comparison group samples at multiple points in time and under appropriate confidentiality and disclosure agreements. TU used the identification information for counseled clients that was supplied by the participating agencies and appended that individual’s credit file data. Appended data included the full set of variables describing the various credit data fields on the credit report, plus several types of risk scores. TU

depersonalized (i.e., removed the personal identification fields) the dataset before providing it to the research team for analysis.

The analysis below examines the credit bureau profile for each member of the counseled and comparison groups at two points in time, June 1997 and June 2000.⁸ The objective is to determine whether the counseled group's credit performance (defined in a variety of ways) improves over the three year period following the initial counseling session, relative to the comparison group.

Ideally, for this analysis we would see the clients' true credit profile at the moment they enter the first counseling session. The clients' credit reports provide a useful but imperfect substitute since there is always lag time between a credit event and the time it is first reflected on the credit report. For most events the lag is 30-60 days. Because we have access to a single credit bureau snapshot in June 1997, we selected into our analysis all clients of the five participating agencies for whom the initial counseling session took place between April 1st and August 31st in 1997 (60 days either side of the June bureau snapshot).⁹ Additional criteria for retention of each client in the sample included (1) ability to match client with a credit report in both June 1997 and June 2000 and (2) the client had an Empirica risk score present in the file for both years.¹⁰ The final sample of counseled borrowers that met these criteria included 14,559 individuals.

D. Identification of Comparison Group

A key component of the analysis was the selection of a comparison group of similarly situated borrowers who did not experience credit counseling during 1997. Since the counseled group came from five distinct agencies around the country (vs. a random sample of all clients nationally), geographic location was one of the two criteria for selection into the comparison group. The other criterion was that the borrower has a credit profile similar to members of the counseled group. Of course, there are literally hundreds of variables in a credit report, complicating the task of deriving a single measure that encompasses all dimensions of the borrower's credit profile. Fortunately, credit bureau risk scores are constructed to consolidate the predictive value of the individual credit report variables into a single index that measures the relative likelihood of future payment difficulties. The Empirica score contained in the Trans Union credit files is built to predict the likelihood of varying degrees of future delinquencies, non-

⁸ Currently only the June 1997 and June 2000 bureau snapshots were available for analysis. However, Trans Union has committed to providing archived snapshots from intermediate quarters, plus snapshots from quarters prior to the date of counseling. Additional hypotheses about the impact of counseling and the dynamics of the counseled clients' financial situation will be explored as those data become available.

⁹ Note that this includes a group of counseled clients for whom the snapshot precedes their counseling session. The five month sequence of counseled clients, each with a June 1997 bureau snapshot, allows us to explore the hypothesis that the decision to seek counseling may reveal information about the borrower's circumstances that is not yet evident in the credit report. This idea will be developed more fully in the following sections.

¹⁰ The Empirica score is Trans Union's proprietary credit bureau score. Empirica scores are comparable to FICO scores.

bankruptcy charge-offs and bankruptcies. Empirica scores are widely used by creditors to evaluate borrower risk. Consequently, the Empirica score provides a comprehensive and objective measure of creditworthiness for purposes of this analysis.

To summarize, borrowers were selected into the comparison group if (1) they lived in the same geographic area as the counseled group and (2) had the same calculated likelihood of future delinquency as the counseled group at the time the initial counseling occurred. These criteria were applied to a large random sample of over 1 million Trans Union credit files. The final comparison group consisted of borrowers who met the following specific criteria: (1) each resided in the 3-digit zip code ranges represented in the counseled client sample, (2) the borrower did not appear on the list of clients counseled by the five participating agencies during 1997, (3) each had both a credit report and an Empirica score for June 1997 and June 2000, and (4) each borrower's Empirica score value fell within the same range as observed in the counseled client sample. The resulting sample that served as the comparison group for subsequent analysis contained 98,322 records randomly selected from the pool of individuals who met these criteria. The majority of these individuals had Empirica scores that fell toward the upper end of the range for the counseled sample.

One final point is important when comparing the performance of the counseled vs. non-counseled groups below. Just because the comparison group members do not appear on the list of individuals counseled at the five participating agencies in 1997 does not ensure that they were never counseled. Some comparison group members could have sought counseling from these agencies in either earlier or later years. Some could have received counseling from one of these agencies' competitors at any time, either in-person or over the phone. Since the incidence of financial counseling is not reported to a credit bureau, there is no way to use credit report data to screen for counseling. For our purposes, the potential for some of the comparison group to have received counseling at a different time or from a different agency raises the bar for demonstrating a positive impact of counseling. In other words, if counseling actually has a positive effect, and if some members of the comparison group received counseling, then the overall performance of the comparison group will be elevated (to some degree). The impact of counseling would need to be strong to demonstrate statistically significant improvement in the performance of the counseled group relative to a comparison group that may contain some counseled borrowers.

D. Data Preparation

The analysis described in the following sections utilizes a variety of credit bureau attributes as either independent or dependent variables. Of the 112,881 borrowers in the counseled and comparison samples, 108,670 (96.3%) had complete information in both 1997 and 2000 for the credit bureau variables used for analysis.

Although credit bureau files provide a very detailed picture of each borrower's past and current credit usage, the bureau files contain virtually no demographic data on borrowers. A borrower's income is especially important for analyzing credit use and payment behavior. Because most debts are repaid in installments from current income, the

borrower's income largely determines the amount of debt that a consumer can service and the magnitude of the debt burden on the monthly budget.

The credit bureau files do contain information on where the borrower lives. Files provided by Trans Union for this study included geo-coded data that translated to various Census bureau definitions of geographic areas. These, in turn, were used to merge Census average statistics for those specific areas as a proxy for the missing information at the individual borrower level. A Census block group is the smallest geographic unit for which the census tabulates and publishes data.¹¹ Census block group numbers were provided for about three-fifths of the borrowers in the counseled sample. Median household income and median age for the block group were matched to the credit bureau data for these borrowers. The distance between the borrower's residence and the nearest counseling office was also calculated for these borrowers. Borrowers with no block group information were excluded for this analysis.¹²

As mentioned previously, the comparison sample contained many more borrowers than the counseled sample, especially at higher levels of Empirica scores. A random sample of borrowers from the comparison group was selected for this study. The comparison group sample was stratified by five initial (1997) Empirica score categories that spanned the range of scores observed in the counseled group, with approximately equal numbers of borrowers in each stratum. An appendix provides summary statistics on counseled and comparison-group borrowers in each of the five initial Empirica group categories.

To reduce the influence of extreme outliers (likely reflecting extraordinary circumstances or data errors) on the results, a few borrowers with no reported debts were excluded from the counseled group. Also a few borrowers with unusually low or high debts (the bottom and the top percentile of the distributions with respect to total debt and consumer debt) were excluded. These exclusions left a range in total debt from \$267 to \$306,017 and a range in consumer debt from \$42 to \$298,379. The same exclusions were used to select the stratified random sample of approximately equal size to serve as the comparison group. The final sample used for analysis consisted of 11,487 borrowers, 5,973 in the counseled group and 5,514 in the comparison group.

III. THE EMPIRICAL MODEL

Regression analysis was used to detect whether receipt of credit counseling changed borrowers' subsequent borrowing and payment behavior. The regression model provides a statistical estimate of the effect of counseling on behavior holding constant other observable factors that may influence the performance of both counseled and comparison-group borrowers over the evaluation period.

¹¹ There were 229,192 block groups for the 1990 Census (Bureau of the Census 1994). The average block group contains a little more than 1,000 persons.

¹² Credit use and payment statistics for borrowers with and without the Census block numbers were similar. Analyses that did not include geographic variables at the block group level (i.e., with the full sample of 108,670 borrowers) did not produce results that differed from those reported below.

The change in behavior over a three-year evaluation period from June 1997 and June 2000 is the dependent variable in the regression analysis. We considered several different measures of behavior: (1) summary measures represented by credit bureau scores, (2) measures of credit use such as the amount of debt or the number of bank cards with balances, and (3) payment performance such as the number of accounts that are past due. The measures of credit use were chosen to represent actions that counseled borrowers were advised to take (e.g., reduce number of credit lines, reduce debt levels, etc.). Table 2 provides definitions and descriptive statistics for the dependent variables.

A. The Basic Model

We model the change in behavior generally as dependent on receipt of credit counseling, an objective measure of the borrower's ability to handle debt, the interaction between the receipt of counseling and the borrower's ability to handle debt, and the initial level of the behavior.

Debt management ability is captured in the initial Empirica risk score. The Empirica score reflects information on the borrower's past performance, current level of indebtedness, length of time credit has been in use, pursuit of new credit, and amounts of credit lines currently available. Borrowers who initially had high credit bureau scores apparently managed their debts better than did borrowers with lower credit bureau scores. However, some borrowers with high initial scores may subsequently experience distress because they have chosen to use more debt or suffered an unexpected reduction in income or increase in expenses.

The interaction between the receipt of counseling and debt management ability is included in the model because the impact of counseling is likely to differ depending on the borrower's ability. Borrowers who initially had lower ability are likely to obtain greater benefits from counseling than borrowers with initially higher ability. Since the borrower's initial Empirica score serves as a proxy for ability, *we hypothesize that borrowers with lower initial Empirica scores are likely to benefit more from counseling than borrowers who have higher initial scores.*

Finally, the initial level of the behavior measured by the dependent variable is included because the ability to change that level over a given period of time is often a function of the value at the start of the period. For example, a borrower with a high level of debt may be able to reduce indebtedness only slowly because high debt-service payments leave him with little discretionary income available for faster repayment of principal. Similarly, a borrower with an initially high credit bureau score but who has experienced mild delinquency in the past may be able to improve his score only very slowly because information on the past delinquency (which holds down the score) can remain on the credit history for up to seven years.

This model is written as follows:

$$\Delta Y = \beta_0 + \beta_1 C + \beta_2 E + \beta_3 T \cdot E + \beta_4 Y_I + e, \quad (1)$$

where ΔY is the change in behavior, C is a dummy variable indicating whether or not the borrower received credit counseling, E is the borrower's initial credit bureau score, Y_I is the initial level of the behavior, and e is a random disturbance. The effect of counseling is measured by the partial derivative of the equation with respect to C ,

$$\partial \Delta Y / \partial C = \beta_1 + \beta_3 E.^{13} \quad (2)$$

Several variables are added to the basic model to account for other factors that may affect changes in behavior. These variables indicate the month in which counseling took place and the state in which the borrower lived. As mentioned, borrowers in the sample received counseling between April and August of 1997. *We hypothesize that observed changes in counseled borrower's behavior will be smaller for those counseled in later months than earlier months because those clients who did not seek counseling until July or August are less likely to have adverse information reflected in the June credit report, relative to borrowers counseled earlier in the period.*¹⁴ This is because the sample of borrowers counseled in July and August is likely to be more heavily populated by clients for whom a financial crisis occurred *after* the June bureau snapshot. Put another way, the June bureau snapshot overstates the creditworthiness of these borrowers at the outset of the observation period and consequently would understate the observed improvement over the subsequent 3 years.

The state variables were included because changes in consumers' borrowing and payment behavior are known to vary substantially across geographic areas.¹⁵ Thus, the full model for evaluating the effects of counseling is

$$\Delta Y = \beta_0 + \beta_1 C + \beta_2 E + \beta_3 C \cdot E + \beta_4 Y_I + \sum_i \gamma_i M_i + \sum_j \delta_j S_j + e, \quad (3)$$

where M_i is a dummy variable indicating the month of counseling and S_j is a dummy variable indicating the borrower's state of residence.

B. Accounting for Self-Selection into the Counseled Group

Borrowers receive credit counseling because of choice rather than random selection. Consequently, it is possible that borrowers who choose counseling are more inclined to modify their borrowing and payment behavior than borrowers who do not seek counseling. If so, then some or all of any observed improvement in performance of the counseled group over the three-year observation period could be attributable to the borrower's motivation instead of the counseling itself. That is, choice of counseling would be correlated with the disturbance ε in the evaluation equation (equation 3),

¹³ Other specifications were considered for the interaction of counseling and initial Empirica score, including one that allowed the coefficient for the interaction effect to differ across Empirica score deciles. Results for the other specifications did not differ substantially from those presented below.

¹⁴ See footnote 7.

¹⁵ See *Monthly Statements* (various issues), a monthly newsletter on consumer borrowing and payment trends edited by the Credit Research Center and published by Trans Union, 1999–2000. Copies are on file with the authors.

making estimates of the effect of counseling biased and inconsistent. This problem is called selection bias.¹⁶

One remedy for selection bias is to estimate the model using a two-stage procedure. In the first stage, a model is estimated to predict whether or not a borrower chooses counseling. The explanatory variables for this model include variables that are not correlated with the error in the evaluation equation. In the second stage, the predicted probability of choosing counseling, $\hat{\Pr}(C)$, from the first stage is used in place of the counseling dummy variable C in equation 3. $\hat{\Pr}(C)$ is uncorrelated with the disturbance. This procedure produces an unbiased estimate of the counseling effect.

We estimated the probability that a given borrower would choose credit counseling as a function of the level of credit use, D_i ; willingness to repay debts as scheduled, W ; transaction costs, measured by proximity to credit counseling offices, M ; and experience, X . $\Pr(C)$ is estimated using a logistic regression model

$$\hat{\Pr}(C) = \frac{\exp(\sum_i \alpha_i D_i + \phi_1 W + \phi_2 M + \sum_i \theta_i X_i + u)}{1 + \exp(\sum_i \alpha_i D_i + \phi_1 W + \phi_2 M + \sum_i \theta_i X_i + u)} \quad (4)$$

The specific variables used to estimate the borrowers' decision to choose credit counseling are described in table 3. High levels of debt, especially debt relative to income, can be indicative of financial difficulties that would cause borrowers to seek credit counseling.

For example, borrowers may turn to credit counseling when the burden of debt increases sharply after a reduction in income or an unexpected expense. As mentioned, the credit bureau data used for this study do not provide data on income and expense shocks for individual borrowers, although they contain quite detailed measures of total debt. Consequently, in addition to variables measure levels of several types of debt, we include a proxy for debt burden calculated as the ratio of initial consumer debt (for each borrower) to median household income (for the borrower's Census block group).¹⁷

Other credit bureau variables may also signal financial stress. We hypothesize that borrowers that use multiple accounts, acquire new accounts, or utilize a greater percentage of their revolving credit limits are more likely to experience financial stress that would lead them to seek credit counseling. A large number of credit inquiries may indicate unsuccessful efforts to acquire additional accounts. Recent delinquent payments are evidence that borrowers are having problems repaying their debts. All of these credit characteristics are likely to be associated with a greater probability of seeking credit counseling.

¹⁶ For discussion, see Maddala (1983). The remedy for selection bias used in this paper was one proposed by Barrow, Cain, and Goldberger (1980).

¹⁷ This usefulness of this proxy rests on the assumption that people tend to live near people of similar demographic characteristics.

Borrowers differ in their willingness to repay debts as scheduled. Some borrowers make every effort to pay promptly and rarely experience delinquencies. Others are quite casual making payments and develop a history of late payments. Thus, a history of late payments may suggest a lower willingness to repay. We use non-recent serious delinquencies (the number of trades 60+ days delinquent between June 1996 and June 1999) as evidence of borrowers' willingness to repay. Borrowers with a history of delinquencies would be expected to be less troubled by new repayment problems and would therefore be less likely to seek credit counseling than borrowers with a greater willingness to repay.

As an indicator of the transaction costs associated with obtaining counseling, we include the distance between the borrower's residence and the nearest credit counseling office. Convenience is frequently cited as influencing consumer financial decisions. Borrowers who live far from a credit counseling office are less likely to seek counseling than borrowers who live nearby.¹⁸ Thus, we expect distance to a counseling office to be inversely related to the probability of obtaining credit counseling.

Finally, two measures of borrower experience are included in the model. Experience grows with the number of months that the borrower has been included in credit reporting files. In addition, we use the median age for the Census block in which the borrower resides as a proxy for general experience. Since the expected benefit from counseling is likely to be lower for experienced borrowers than for inexperienced borrowers, the experience variables are likely to be inversely associated with the probability of obtaining counseling.

Substituting $\hat{\text{Pr}}(C)$ for C in equation 3 yields the following equation for estimating the effect of credit counseling on borrowers' behavior:

$$\Delta Y = \beta_0 + \beta_1 \hat{\text{Pr}}(C) + \beta_2 E + \beta_3 C \cdot E + \sum \gamma_i M_i + \sum \delta_j S_j + v. \quad (5)$$

The variables used in this evaluation model are described in table 4.

¹⁸ The trend toward telephone counseling may reduce the importance of location as a factor influencing the choice of credit counseling.

Table 2. Dependent Variables

Summary Measures	Variable Description	Mean	Standard Deviation
CHG EMP SCORE	Change in Empirica Score	17.902	68.327
CHG EMPBK SCORE	Change in Empirica bank card score (borrowers with active revolving accounts only)	15.966	65.789
Debt Use	Variable Description	Mean	Standard Deviation
CHG # TRADES	Change in number of trades with balance > 0	-1.925	3.939
CHG TOTAL DEBT	Change in total debt, thousands of dollars	0.598	58.272
CHG CONSUMER DEBT	Change in consumer debt, thousands of dollars	-4.415	27.835
CHG REVOLVING DEBT	Change in revolving debt, thousands of dollars (borrowers with active revolving accounts only)	-5.058	8.442
CHG # BANK CARDS	Change in number of bank cards with balances > 0 (borrowers with active revolving accounts only)	-.798	1.379
BANK CARD UTILIZ	Utilization of bank card credit lines, in percent (borrowers with active revolving accounts only)	-13.966	35.128
Payment Performance	Variable Description	Mean	Standard Deviation
CHG 30+ DELINQ	Change in the number of trades 30+ days past due in last 12 months	-1.400	3.146
CHG 60+ DELINQ	Change in the number of trades 60+ days past due in last 12 months	-.863	2.645

Table 3. Selection Model Variables

Dependent Variable	Variable Description	Mean	Standard Deviation
COUNSELED	=1 if borrower received counseling; 0 otherwise	.520	.169
Explanatory Variables	Variable Description	Mean	Standard Deviation
# TRADES	Initial number of trades with balances > 0	5.635	4.085
TOTAL DEBT	Initial total debt, thousands of dollars		
CONSDEBT/INCOME	Initial consumer debt to median household income, percent	49.518	61.168
REVOLVING DEBT	Initial revolving debt, dollars		
# NEW BANK CARDS	Number of new bank card accounts in the last 12 months	.639	1.127
BANK CARD UTILIZ	Initial utilization of bank card credit lines, percent	74.241	36.714
# INQUIRIES	Number of inquiries in last 6 months	.932	1.547
# 30+ DELINQ	Number of trades 30+ days past due in last 12 months	2.583	3.030
# 60+ DELINQ	Number of trades 60+ days past due between June 1990 and June 1996	1.748	2.761
MILES TO OFFICE	Distance between borrower's residence and nearest counseling office, miles	13.686	37.824
MONTHS IN FILE	Months borrower has been in credit bureau file	117.909	59.762

Table 4. Evaluation Model Variables

Dependent Variable	Variable Description	Mean	Standard Deviation
ΔY	Change in behavior, June 1997-June 2000 (see table 1 for specific variables)	---	---
Explanatory Variables	Variable Description	Mean	Standard Deviation
Credit behavior and ability variables, (initial 1997 values):			
EMP SCORE	Empirica score	587.918	83.430
EMPBK SCORE	Empirica bank card score	584.522	86.795
# TRADES	Total number of trades with bal > 0	5.635	4.085
TOTAL DEBT	Total debt (\$1,000)	43.283	52.758
CONSUMER DEBT	Consumer debt (\$1,000)	20.248	22.436
REVOLVING DEBT	Revolving debt (\$1,000)	8.550	13.287
# BANK CARDS	Bank cards with balances > 0	1.831	2.102
BANK CARD UTILIZ	Bank card utilization (%)	74.241	36.715
$\hat{Pr}(C)$	Predicted probability that borrower received counseling	.520	.169
$\hat{Pr}(C)*EMP SCORE$ <i>or</i>	Interaction of $\hat{Pr}(C)$ and initial Empirica score <i>or</i>	304.674	104.364
$\hat{Pr}(C)*EMPBK SCORE$	Empirica Bank Card Score	302.254	100.574
Month received counseling (April is omitted group):			
MAY	= 1 if May, 0 otherwise	.107	.039
JUNE	Month received counseling: = 1 if June, 0 otherwise	.095	.293
JULY	Month received counseling: = 1 if July, 0 otherwise	.102	.302
AUGUST	Month received counseling: = 1 if August, 0 otherwise	.103	.304
State of residence (Texas is omitted group):			
ARIZONA	= 1 if Arizona, 0 otherwise	.291	.454
CALIFORNIA	State of residence: = 1 if California, 0 otherwise	.129	.335
GEORGIA	State of residence: = 1 if Georgia, 0 otherwise	.154	.361
ILLINOIS	State of residence: = 1 if Illinois, 0 otherwise	.002	.042
MICHIGAN	State of residence: = 1 if Michigan, 0 otherwise	.125	.331
NEW MEXICO	State of residence: = 1 if New Mexico, 0 otherwise	.054	.225
NEW YORK	State of residence: = 1 if New York, 0 otherwise	.059	.235
OKLAHOMA	State of residence: = 1 if Oklahoma, 0 otherwise	.001	.035

IV. RESULTS OF MODEL ESTIMATION

The final sample used for analysis consisted of 11,487 borrowers, of which 5,973 were in the counseled group and 5,514 were in the comparison group.

A. The Selection Model

The results of estimating the selection model indicate that a model based on credit bureau data can predict the choice of credit counseling reasonably accurately.¹⁹ The logistic regression model for the probability of obtaining counseling was significant at the 1% level (see table 5). About two-thirds of observations were correctly classified in counseled or comparison groups, using a 0.5 threshold for classification (not in table). Thirty-six percent of counseled group members were incorrectly classified as comparison group members, and 32.2% of comparison group members were incorrectly classified as counseled group members.

The estimated coefficients generally were significant and had the expected sign. Holding other factors constant, a larger number of accounts (with positive balances), greater consumer debt relative to income, larger numbers of credit bureau inquiries, active revolving accounts, and new revolving accounts, and greater bank card utilization were all positively related to incidence of counseling. The total amount of debt was negatively related. This last result probably reflects an (unmeasured) income effect. Individuals with higher incomes tend to have both greater demand for debt and greater ability to pay.

Delinquency spells played a significant role in the decision to seek counseling. The number of 30+ delinquencies in the last twelve months was positively related to the probability of obtaining counseling. This result may indicate that delinquencies provide a catalyst that prompts a borrower to seek help with current difficulties. In contrast, the number of 60+ delinquencies between June 1996 and June 1999 was negatively related to the probability of obtaining counseling, consistent with our hypothesis that a chronic history of delinquencies dampens motivation to seek counseling in response to current difficulties.

The results for credit experience were mixed. Borrowers' length of time on the credit bureau file was positively related to the probability of obtaining counseling, contrary to our expectation. In contrast, the likelihood of counseling declined as the median age of the borrower's Census block group rose.

Finally, the distance between the borrower's residence and the nearest credit counseling office was negatively related to the probability of seeking counseling (as expected) but not significant. Several possibilities may account for lack of significance. We know that nearly 20% of our counseled borrowers obtained counseling by telephone (although we can't identify them individually). For these borrowers, the availability of counseling by telephone neutralizes the influence that distance would otherwise exert over the decision to seek counseling. It is also possible that the most convenient counseling office may be

¹⁹ We note again that the counseled group for this study is representative of about two thirds of all clients who receive counseling at NFCC agencies, but does not include the remaining one third of all clients who sought counseling and subsequently established Debt Management Plans.

one closer to the borrower' place of work, making distance from the borrower's residence less of a factor. Lastly, because the comparison group was drawn from the same geographic areas (3-digit Zip code area) as the counseled group, the differences in distance for the counseled and comparison groups may not be large enough to produce a significant result.

Table 5. Selection Model Estimation Results
Dependent Variable: Probability of Receiving Counseling

Variable (1997 levels)	Coefficient	Standard Error
# TRADES	0.077***	0.008
TOTAL DEBT	0.001**	a
TOT CONSDEBT/ MED HH INCOME	0.001**	a
# INQUIRIES	0.026**	0.011
NEW REVOLVING ACCTS	0.049	0.020
AMT REVOLVING DEBT	0.021***	0.002
BANK CARD UTILIZ	0.005***	a
# 30+ DELINQ	0.059***	0.007
# 60+ DELINQ	-0.030***	0.008
MEDIAN AGE	-0.005*	0.003
MONTHS IN FILE	0.001**	a
MILES TO OFFICE	a	a
INTERCEPT	-0.873***	0.109
-2 Log L	14509.0	
Chi-square	1,397.0	
Number of observations	11,487	

***/**/* Significant at 0.01/0.05/0.10%.

a: Less than 0.0005.

B. Evaluation Models

Below we describe the estimation results for each of the three categories of dependent variables. Collectively, these models demonstrate, using ten different measures of borrower credit performance, that borrowers who received financial counseling generally improved their credit profile over the subsequent three years, relative to observationally similar borrowers who did not receive counseling.²⁰

Summary Measures of Creditworthiness

All of the estimated evaluation models were significant at the 1% level. The model evaluating the Empirica score explained 21.3% of the change in Empirica scores between 1997 and 2000 (table 6). The model evaluating the Empirica bank card score explained 18.0% of the variation in Empirica bank card scores for active bank card users.

Of the key explanatory variables, the coefficients for the probability of obtaining counseling, the initial Empirica score, and the interaction variable were all significant at the 1% level in both models. Higher initial Empirica scores were associated with smaller changes in scores over time, as hypothesized. Note that this coefficient reflects the combined effects of both the borrower's initial ability in handling credit and the initial level of the score. The coefficient on the probability of obtaining counseling was positive, indicating that membership in the counseled group is associated with larger Empirica score changes over time. The coefficient on the interaction variable was negative. Together, these results indicate that, holding other factors constant, the counseling experience has a positive effect on Empirica score over time, but the effect is greatest for clients who have lower Empirica scores at the outset. This finding is consistent with our hypothesis that counseling provides the greatest benefit to those borrowers with the least demonstrated ability to handle credit. The magnitude of the lift in Empirica score resulting from the counseling experience is illustrated and discussed in greater detail in section V.

The coefficients on the variables that capture the month in which the borrower was counseled are all significant. Keep in mind that the omitted group consists of borrowers who were counseled in April. In both the Empirica and Empirica bank card models the coefficients are negative and become smaller (that is, increasingly negative) from May to August. These results indicate that observed improvement in the Empirica and Empirica bank card scores diminishes for individuals counseled in later months (relative to those counseled in April). This is consistent with our hypothesis that clients who do not seek counseling until August are less likely to have adverse circumstances reflected in their June, 1997 credit report than are clients who sought counseling in April or May. More broadly, this suggests that the decision to seek counseling is a signal that a borrower is experiencing financial distress, information that is often not yet apparent in the

²⁰ Because of the variance in types of debt held by borrowers in the sample, we estimated each of the models described below for the entire sample as well as two subsets of borrowers, those with mortgage debt (3,503 borrowers) and those with active revolving credit accounts (10,160 borrowers). The results of estimation for the two subsets of borrowers differ somewhat in magnitude from those for the entire sample, but not sufficiently so to require a separate discussion of estimation results. Consequently, the following discussion pertains to the estimates for the full sample.

borrower's credit report. We will discuss the implications of this "early warning indicator" more fully in section V.

Many of the dummy variables indicating state of residence were significant. These results indicate that geographic differences do play a role in explaining changes in behavior. This could be due to different economic factors and conditions that affect borrower incomes and ability to pay.

Table 6. Evaluation Model Estimation Results: Summary Measures of Behavior

Variable	Change in Emp Score from 1997 to 2000		Change in EmpBank Card Score from 1997 to 2000	
	Coefficient	Standard Error	Coefficient	Standard Error
PROB. OF BEING IN COUNSELED GROUP (COUNSELED)	249.123***	(24.707)	272.867***	(27.936)
COUNSELED * 1997 EMPIRICA SCORE <i>or</i> 1997 EMPIRICA BANK CARD SCORE	-0.469***	(0.042)	-0.516***	(0.048)
1997 EMP SCORE <i>or</i> 1997 EMPBANK SCORE	-0.126***	(0.021)	-0.074***	(0.025)
MAY	-9.991***	(1.915)	-8.962***	(2.188)
JUNE	-11.716***	(2.016)	-12.546***	(2.285)
JULY	-14.963***	(1.958)	-13.759***	(2.209)
AUGUST	-20.397***	(1.957)	-21.326***	(2.211)
ARIZONA	5.556***	(1.686)	6.075***	(1.944)
CALIFORNIA	10.950***	(2.060)	11.388***	(2.330)
GEORGIA	4.255**	(1.958)	6.169***	(2.292)
ILLINOIS	-23.881*	(13.628)	-15.386	(15.178)
MICHIGAN	4.066*	(2.076)	7.803***	(2.406)
NEW MEXICO	-3.143	(2.780)	-3.831	(3.259)
NEW YORK	14.212***	(2.687)	16.380***	(3.017)
OKLAHOMA	12.927	(16.260)	-2.002	(19.058)
INTERCEPT	106.421***	(12.722)	75.071***	(14.793)
R-SQUARE	0.213		0.181	
F-RATIO	208.0***		149.5***	
Number of observations	11,487		10,161	

*** ** * Significant at 0.01/0.05/0.10%.

Debt Usage

In the three estimated models evaluating change in general credit use, the models explained 48.4% of the variation in the number of accounts with balances greater than zero, 10.8% of the variation in total debt (including mortgage), and 25.0% of the variation in consumer debt (excluding mortgage). Table 7 indicates that the initial Empirica score was significant in the total debt equation, but not for the number of accounts or consumer debt. Initial values for number of accounts, total debt, and consumer debt were all significant. The coefficients of particular interest, those for

probability of obtaining counseling and the interaction term, are significant and have opposite signs, consistent with the Empirica score models discussed previously. Again, these results indicate that the effect of counseling is generally beneficial, but depends on the initial Empirica score.

Table 7. Evaluation Model Estimation Results: General Credit Use

Variable	Change in Number of Trades with bal. > 0 from 1997 to 2000		Change in Total Debt from 1997 to 2000		Change in Total Consumer Debt From 1997 to 2000	
	Coefficient	Standard Error	Coefficient	Standard Error	Coefficient	Standard Error
PROB. OF BEING IN COUNSELED GROUP (COUNSELED)	-13.668***	(1.162)	-89.594***	(22.438)	-58.622***	(9.987)
COUNSELED * 1997 EMPIRICA SCORE	0.018***	(0.002)	0.130***	(0.038)	0.089***	(0.017)
1997 EMP SCORE	-0.001	(0.001)	0.038*	(.019)	-0.005	(8.706)
1997 NUMBER OF TRADES <i>or</i> 1997 TOTAL DEBT <i>or</i> 1997 TOTAL CONSUMER DEBT	-0.531***	(0.013)	-0.302***	(.011)	-0.540***	(0.013)
MAY	-0.481***	(0.089)	-7.105***	(1.739)	-3.147***	(0.772)
JUNE	-0.447***	(0.094)	-6.620***	(1.830)	-1.664***	(0.813)
JULY	-0.687***	(0.091)	-11.137***	(1.777)	-3.872***	(0.789)
AUGUST	-0.625***	(0.091)	-8.469***	(1.777)	-2.226***	(0.789)
ARIZONA	-0.157**	(0.079)	5.788***	(1.535)	0.682	(0.680)
CALIFORNIA	-0.179*	(0.096)	9.218***	(1.877)	-0.849	(0.830)
GEORGIA	-0.109	(0.091)	6.614***	(1.782)	0.183	(0.790)
ILLINOIS	-1.241*	(0.636)	-10.724	(12.373)	-3.430	(5.494)
MICHIGAN	-0.204**	(0.097)	4.512**	(1.885)	4.229***	(0.837)
NEW MEXICO	-0.211	(0.130)	-0.144	(2.524)	-0.515	(1.121)
NEW YORK	-0.064	(0.126)	-0.208	(2.439)	-1.045	(1.085)
OKLAHOMA	1.406*	(0.759)	4.590	(14.763)	8.046	(6.556)
INTERCEPT	3.359***	(0.596)	2.493**	(11.564)	13.391***	(5.145)
R-SQUARE	0.485		0.109		0.230	
F-RATIO	674.5		87.8		214.1	
Number of observations	11,487		11,487		11,487	

***/**/* Significant at 0.01/0.05/0.10%.

We considered three measures of revolving account use and estimated evaluation models for the subset of borrowers with active revolving accounts. The models explained 60.0% of the variation in revolving debt, 58.3% of the variation in the number of bank cards with balances greater than zero, and 24.8% of the variation in the utilization of bank card credit limits. Initial values of revolving debt, bank cards with balances greater than zero, and bank card utilization were inversely related to subsequent changes in those variables,

and initial Empirica scores were inversely related to changes in revolving debt and bank card utilization but not to the number of bank cards with balances greater than zero. And in each of the three models, the probability of obtaining counseling and interaction variables were significant and opposite in sign, making the direction and size of counseling effects depend on initial Empirica score.

Table 8. Evaluation Model Estimation Results: Revolving Credit Use

Variable	Change in Amount of Revolving Debt from 1997 to 2000		Change in Number of Active Bank Card Trades from 1997 to 2000		Change in Utilization of Bank Card Credit Lines from 1997 to 2000	
	Coefficient	Standard Error	Coefficient	Standard Error	Coefficient	Standard Error
PROB. OF BEING IN COUNSELED GROUP (COUNSELED)	-46.694***	(3.736)	-4.020***	(0.600)	-	(20.863)
COUNSELED * 1997 EMPIRICA SCORE	0.087***	(0.007)	0.008***	(0.001)	0.245***	(0.033)
1997 EMP SCORE	-0.020***	(0.003)	a	(0.001)	-0.234***	(0.020)
1997 REVOLVING DEBT or 1997 ACTIVE BANK CARD TRADES or 1997 BANK CARD CREDIT LINE UTILIZATION	-0.793***	(0.009)	-0.803***	(0.010)	-0.649***	(0.018)
MAY	-1.413***	(0.281)	-0.213***	(0.046)	-1.564	(1.516)
JUNE	-1.423***	(0.293)	-0.196***	(0.048)	2.136	(1.618)
JULY	-2.184***	(0.284)	-0.295***	(0.046)	1.553	(1.547)
AUGUST	-2.079***	(0.284)	-0.382***	(0.046)	3.286**	(1.526)
ARIZONA	0.522**	(0.249)	-0.079*	(0.041)	0.305	(1.401)
CALIFORNIA	0.635**	(0.300)	0.139***	(0.049)	-3.025*	(1.589)
GEORGIA	0.777***	(0.294)	-0.050	(0.048)	1.280	(1.658)
ILLINOIS	1.555	(1.948)	-0.380	(0.318)	6.716	(9.813)
MICHIGAN	0.200	(0.309)	-0.048	(0.050)	-4.401**	(1.716)
NEW MEXICO	0.199	(0.418)	-0.116*	(0.068)	4.355*	(2.437)
NEW YORK	0.761**	(0.387)	0.307***	(0.063)	-3.372*	(2.001)
OKLAHOMA	1.493	(2.446)	0.340	(0.400)	-14.183	(17.612)
INTERCEPT	12.211***	(1.979)	0.672**	(0.322)	182.384**	(12.872)
R-SQUARE	0.601		0.584		0.250	
F-RATIO	954.0		890.0		122.6	
Number of observations	10,161		10,161		10,161	

***/**/* Significant at 0.01/0.05/0.10%.

a: Less than 0.0005.

Payment Performance

We estimated models for number of accounts with recent delinquencies (30+ and 60+ days past due in the last 12 months). The variable structure of these models differed from the previous models in that they did not include the initial number of recent delinquencies.²¹

The estimated models explained 37.0% of the variation in change in the number of accounts 30+ days delinquent and 23.9% of the variation in change in the number of accounts 60+ days delinquent. As in the other evaluation models, the coefficients for the probability of obtaining counseling and the interaction term were significant and opposite in sign.

Table 9. Evaluation Model Estimation Results: Payment Performance

Variable	Change in Number of Trades 30+ Days Past Due in Past 12 Months from 1997 to 2000		Change in Number of Trades 60+ Days Past Due in Past 12 Months from 1997 to 2000	
	Coefficient	Standard Error	Coefficient	Standard Error
PROB. OF BEING IN COUNSELED GROUP (COUNSELED)	-47.293***	(1.018)	-30.315***	(0.941)
COUNSELED * 1997 EMPIRICA SCORE	0.073***	(0.002)	0.049***	(0.002)
1997 EMP SCORE	-0.019***	(0.001)	-0.011***	(0.001)
MAY	0.009	(0.079)	0.133*	(0.073)
JUNE	-0.066	(0.066)	0.086	(0.077)
JULY	0.117	(0.081)	0.193***	(0.075)
AUGUST	0.283***	(0.081)	0.359***	(0.075)
ARIZONA	0.073	(0.069)	0.051	(0.064)
CALIFORNIA	0.113	(0.085)	0.054	(0.078)
GEORGIA	0.244***	(0.081)	0.308***	(0.075)
ILLINOIS	1.333**	(0.561)	1.045**	(0.518)
MICHIGAN	0.330***	(0.086)	0.355***	(0.079)
NEW MEXICO	0.317***	(0.115)	0.256**	(0.106)
NEW YORK	0.030	(0.111)	-0.160	(0.102)
OKLAHOMA	-0.262	(0.670)	-0.073	(0.619)
INTERCEPT	11.817***	(0.524)	6.422***	(0.484)
R-SQUARE	0.370		0.240	
F-RATIO	449.9		241.3	
Number of observations	11,487		11,487	

*** / ** / * Significant at 0.01/0.05/0.10%.

²¹ Three years seems a sufficiently long enough period of time for adjustment that the initial value would not limit the change in behavior.

V. DISCUSSION OF THE NET EFFECT OF COUNSELING

The preceding tables display the results of statistical estimates that isolate the impact of the credit counseling experience on client credit usage over the three-year period following the initial counseling session. The statistical techniques do this by (1) correcting for self-selection bias (e.g., borrowers who choose to seek counseling may be more motivated to take corrective steps to improve their credit profile), (2) comparing the experience of the counseled group to the experience of non-counseled borrowers who live in the same geographic area and who have a similar risk profile at the outset of the observation period, and (3) holding constant other observable factors that may influence the performance of both groups of borrowers over time.

What is the net effect of counseling? The answer depends, of course, on the aspect of behavior one wishes to measure. The following series of charts displays the results for three categories of credit performance measures. Figures 1 and 2 describe the change in summary measures of creditworthiness as captured by bureau-based risk scores. These indices are the broadest measures of performance because they are built to predict the likelihood of future payment delinquencies based on the predictive value of past credit use and payment behavior. They are widely used by credit grantors and so constitute the single best measure of whether a client has improved his or her opportunities in the credit markets.

Figures 3 through 11 display the change in specific dimensions of debt usage such as the number of accounts with positive balances, total amounts of debt and percentage utilization of revolving credit lines. These measures provide corroborating evidence of counseling's impact because opportunities and recommendations for adjusting and managing each of these elements of a client's borrowing profile are discussed during the counseling session. Finally, figures 12 through 15 display the delinquency experience of clients over the last 12 months of the observation period (July, 1999 through June 2000). *It is important to note that all of the charts display the change experienced by counseled clients, relative to the comparison group.*

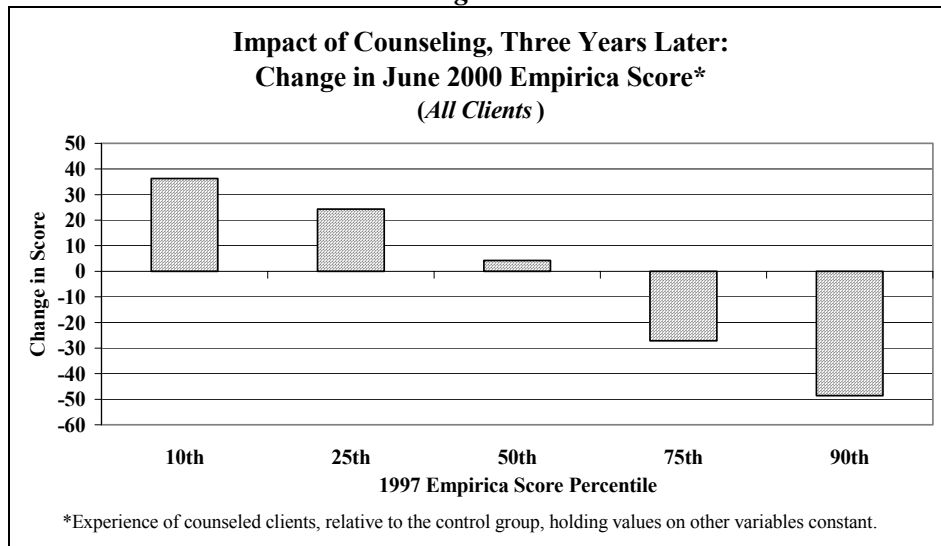
The discussion of the regression estimates in section IV found a significant interaction between a borrower's initial Empirica score and the change in that score over the three-year period. Indeed, the initial Empirica score appears to influence the magnitude of the impact of counseling on every one of the performance margins displayed in figures 1 through 15. Consequently, each of the charts illustrates the net effect of counseling (relative to the comparison group) at five distinct points along the distribution of the sample with respect to initial Empirica score. Specifically, the charts display the net effect of counseling for individuals in the 10th, 25th, 50th, 75th, and 90th percentiles of the initial Empirica score distribution.

A. Change in Risk Profile

Figures 1 and 2 illustrate that the net effect of the counseling experience is greatest for borrowers with the poorest credit profiles at the time of counseling. Figure 1 displays the net effects for all clients, and figure 2 focuses only on those with mortgage debt in 1997. More specifically, figure 1 indicates that, holding other factors constant, borrowers with initial Empirica scores in the 10th percentile who were counseled experienced a net 36.3 point increase in their Empirica scores over the three year period, relative to borrowers with the same initial Empirica scores in the comparison group.²² Figure 1 also shows that improvement in the Empirica score attributable to counseling diminishes for borrowers in higher percentiles. The Empirica scores for counseled borrowers in the higher initial score ranges actually decline relative to the scores of their counterparts in the comparison group who had identical scores at the outset.

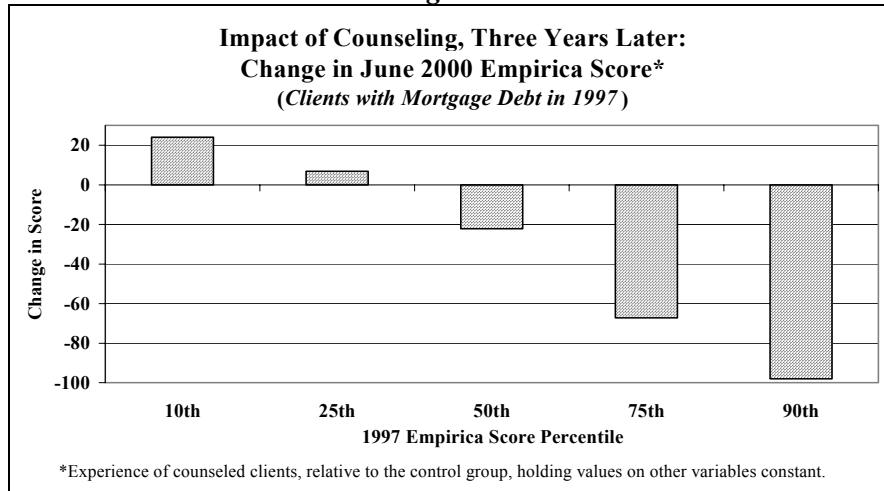
Of course, this last observation should not be interpreted as indicating a negative impact of counseling for initially high-scoring borrowers. On the contrary, the decision to seek counseling reveals important information about a borrower’s likely future credit performance that is not captured in the Empirica score available to creditors at the time of counseling. Borrowers often know before their creditors that their financial prospects have deteriorated, due to events such as job loss, divorce or uninsured illness. Borrowers who seek counseling are acting upon this private information. With their initial counseling session they reveal both the existence of a problem and a willingness to take steps to find a solution.

Figure 1



²² Note again that this does not imply that the average Empirica score for counseled borrowers in the 10th percentile rose by 36 points in absolute terms. These calculations measure change *relative to the comparison group*. To interpret the meaning of a 36 point shift in Empirica score, Trans Union provided a table depicting the relative frequencies of predicted events along the Empirica score scale. A score in the 550-559 range corresponds to a predicted frequency of charge-off/repossession/bankruptcy over the subsequent 24 months of 38.6%. In contrast, a score in the 590-599 range (approximately a 36 point improvement) corresponds to a predicted frequency of charge-off/repossession/bankruptcy of 24.1%.

Figure 2



Consequently, the observed decline in Empirica scores (relative to the comparison group) for counseled clients with higher initial scores is likely the result of the event that prompted them to seek counseling. Why doesn't counseling offset their crisis-induced decline in score over time, as it appears to for counseled borrowers with lower initial scores? The answer may stem from the fact that a financial crisis that triggers the decision to seek counseling is less common for high-scoring borrowers, and consequently more devastating to their scores. Borrowers with higher scores, by definition, have experienced fewer financial problems, and their scores have farther to drop as a consequence of a new crisis. In contrast, a new crisis impacts the score of an initially low-scoring borrower relatively little. Even with counseling, borrowers with higher initial scores spend the next three years digging out of the hole into which their scores have dropped. The chart indicates that three years is not sufficient, and at the end of that period they still lag significantly behind their counterparts in the comparison group.²³

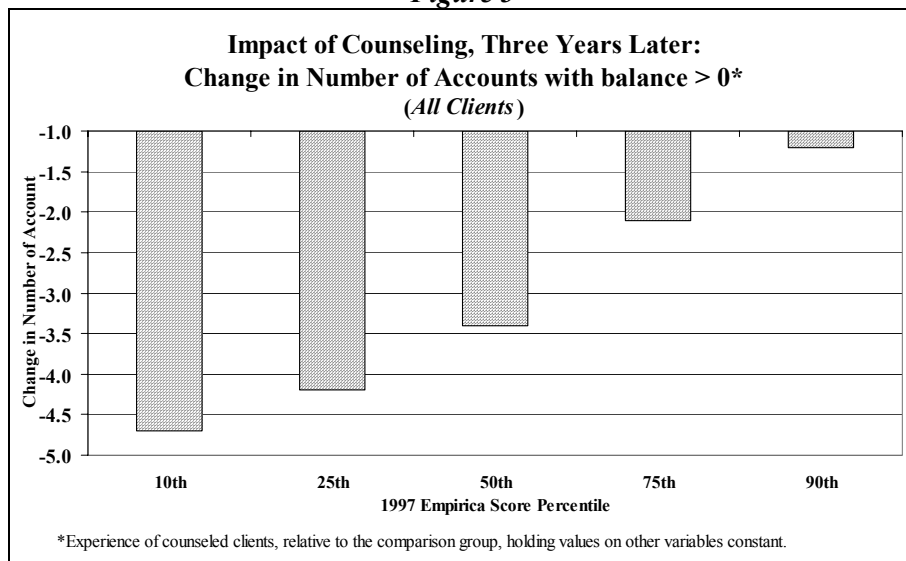
B. Change in Debt Levels and Account Usage

Figures 3 through 11 display changes in specific credit report variables following counseling in 1997. Relative to the control group, all clients except those with the very highest initial Empirica scores reduced the number of accounts they owned with positive balances (total and revolving), total dollars of debt, and total non-mortgage debt. This

²³ We previously noted that the selection-bias correction procedure was designed to control for the fact that borrowers end up in counseling by choice rather than random assignment. That is, borrowers who seek counseling have initial attributes that are different from the comparison group, and those attributes could influence their post-counseling performance, independent of the counseling experience itself. Our selection model attempts to control for such a bias by indicating which borrowers are most likely to seek counseling based, to a large degree, on their past credit history. While the sudden occurrence of a financial crisis can certainly trigger the choice of counseling (a unique initial attribute of the many in the counseled group), the onset of a crisis is often not evident or predictable based on the information in the borrower's credit report. This would be particularly true for borrowers with higher initial Empirica scores. Consequently, this particular bias remains in the counseled group sample, despite the use of the selection model.

result occurred regardless of whether clients had a mortgage in 1997.²⁴ Clients with bank card debt reduced their utilization levels. Clients reduced their revolving debt, although for most clients the number of bank cards with balances greater than zero rose slightly, relative to the control group. The lower revolving debt (which includes retail credit) but greater number of bank cards with positive balances suggests that counseled borrowers may have responded to favorable rate solicitations to refinance more costly debts. The large majority of these changes are consistent with the recommendations of counselors and signal borrowers who are actively making changes to improve their financial circumstances. That they occur across a broader range of the client distribution than does the improvement in Empirica score reinforces the idea that counseling triggers demonstrable (and positive) behavioral changes.

Figure 3



²⁴ Anecdotal evidence suggests that clients with highest initial Empirica scores often had assets (including business assets) that they were trying to protect. Many of these borrowers may value the assets more highly than improving their credit profile and may seek to refinance debts to lengthen maturity rather than reduce debts.

Figure 4

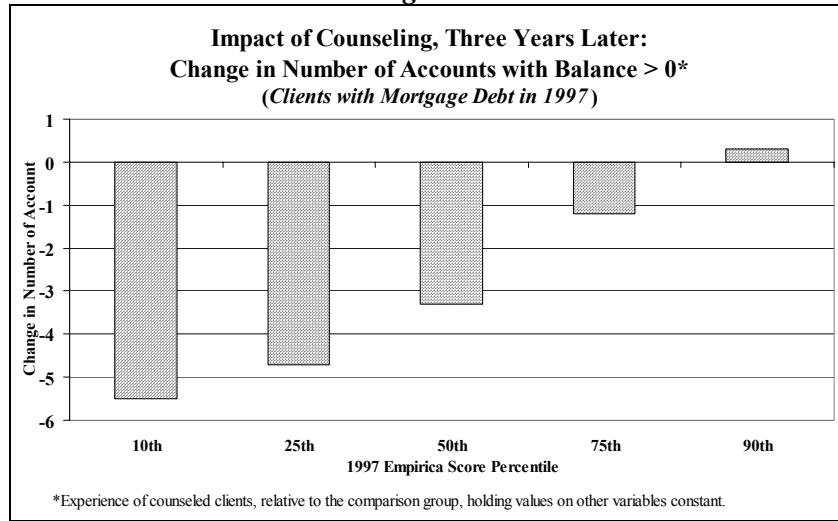


Figure 5

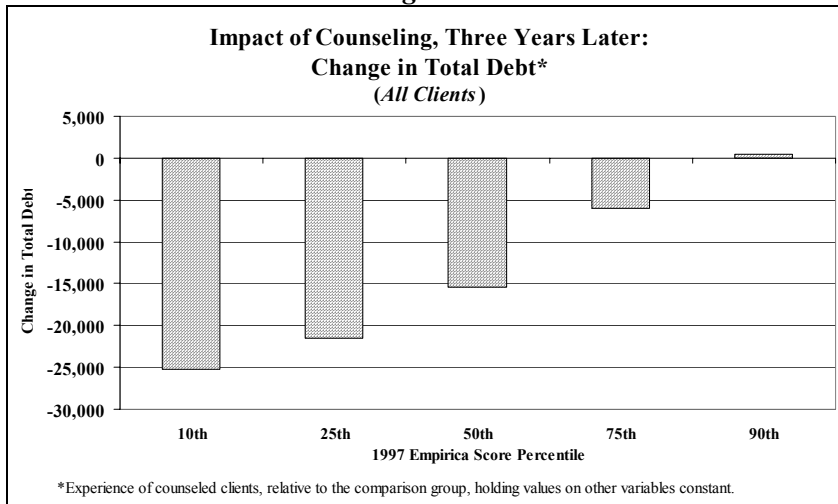


Figure 6

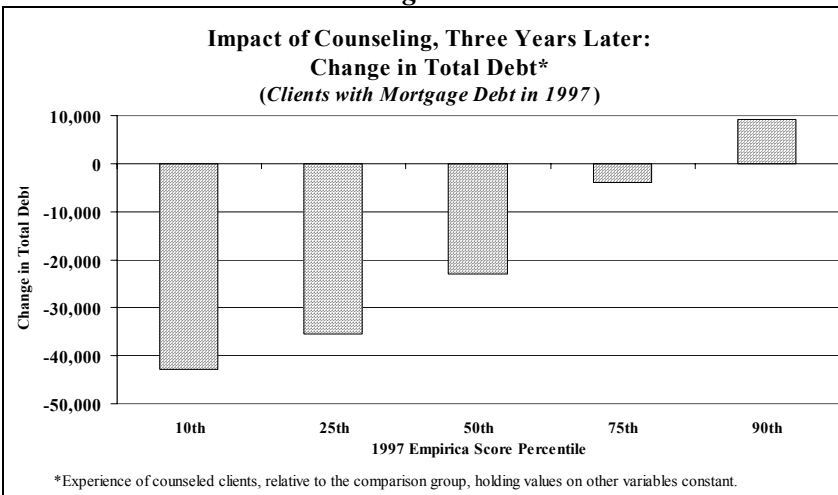


Figure 7

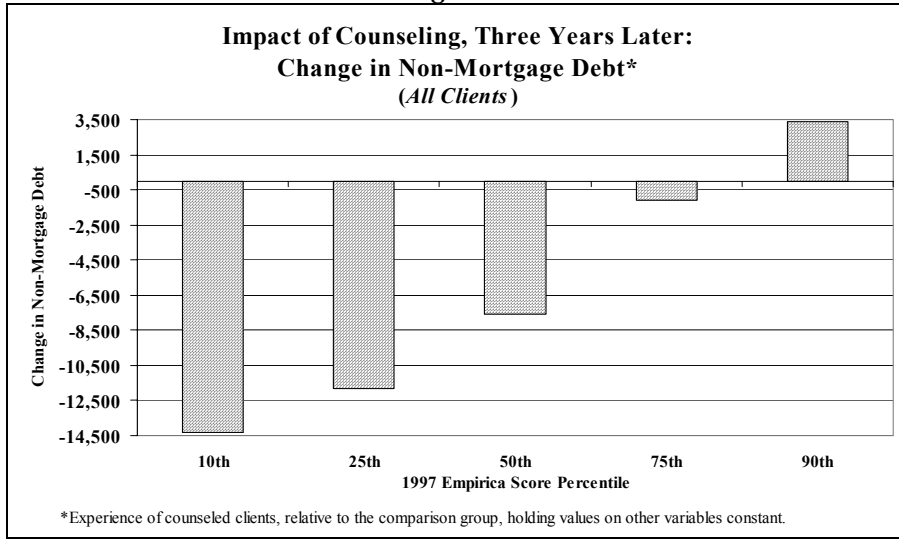


Figure 8

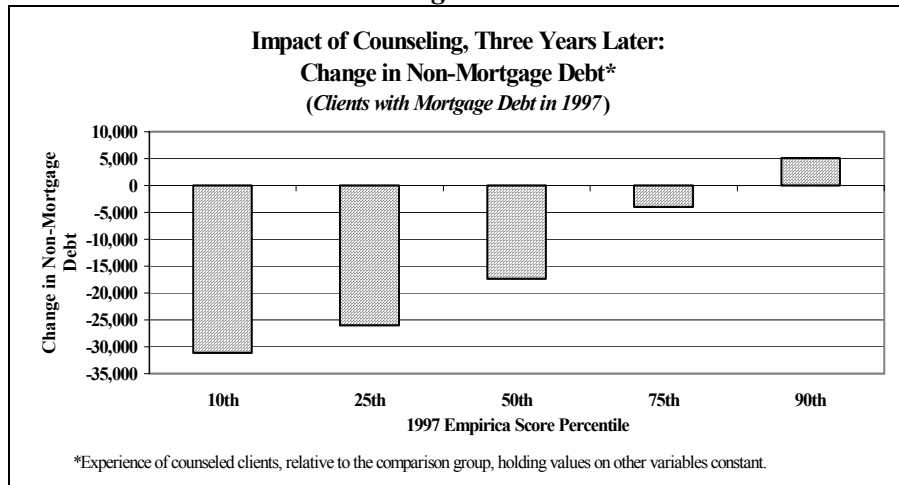


Figure 9

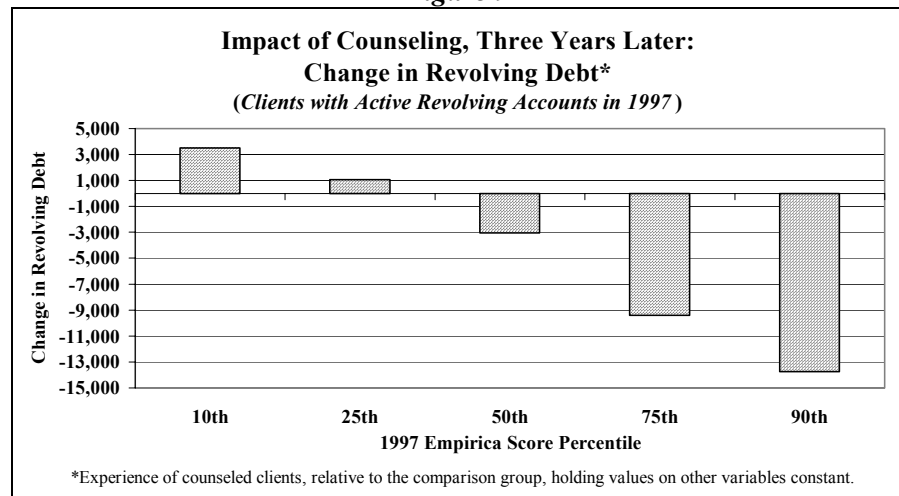


Figure 10

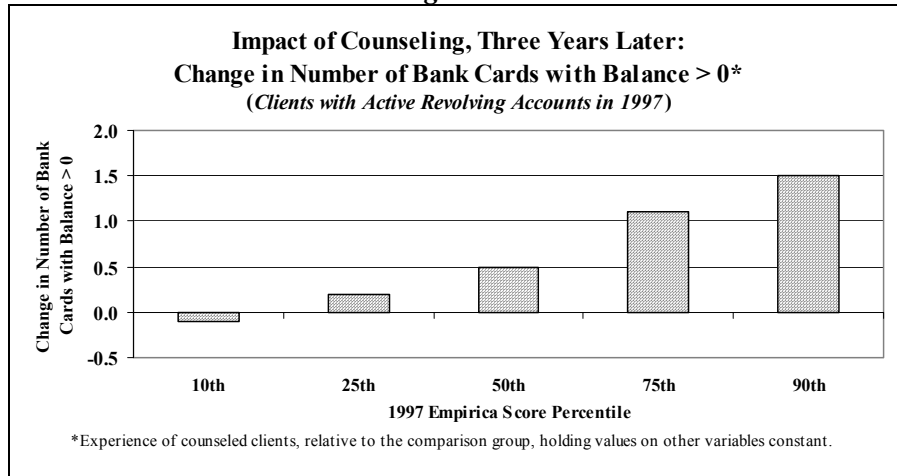
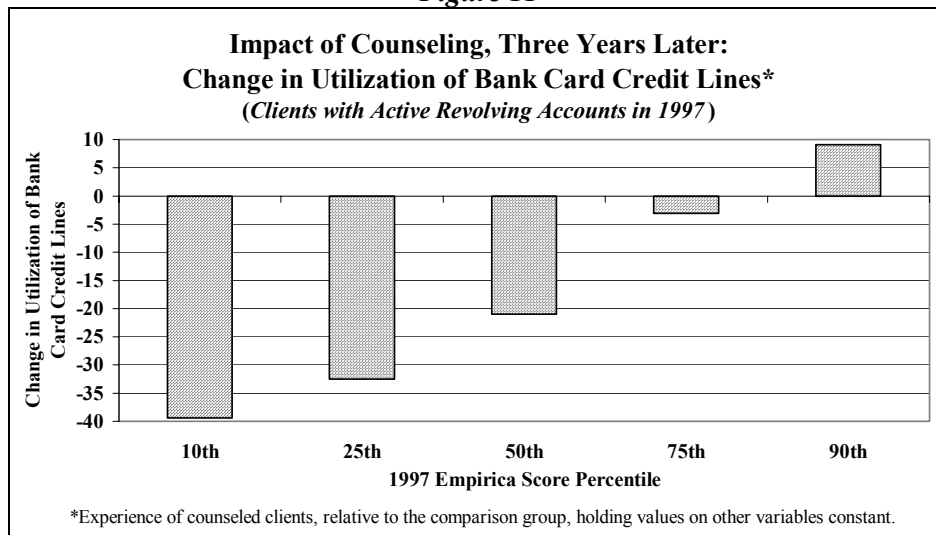


Figure 11



C. Change in Payment Behavior

Finally, Figures 12-13 indicate substantial improvement in delinquency experience for most counseled clients. For example, figure 12 reveals that borrowers in the 25th percentile with respect to initial Empirica score had 9.0 fewer delinquencies of 30+ days in the 12 months prior to June 2000, relative to comparison group members in the same percentile. As was the case for most other performance measures, the positive impact of counseling on delinquency experience diminishes for clients with higher initial Empirica scores.

Figure 12

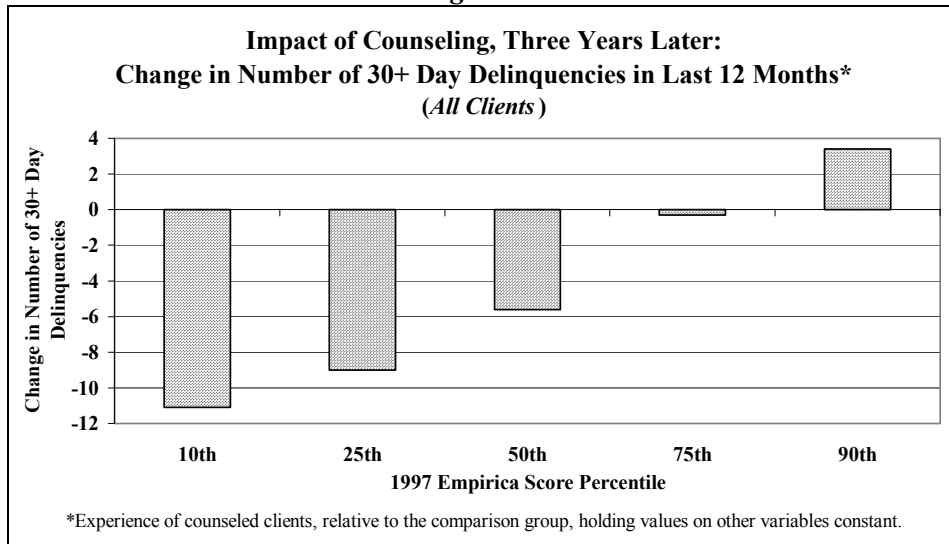
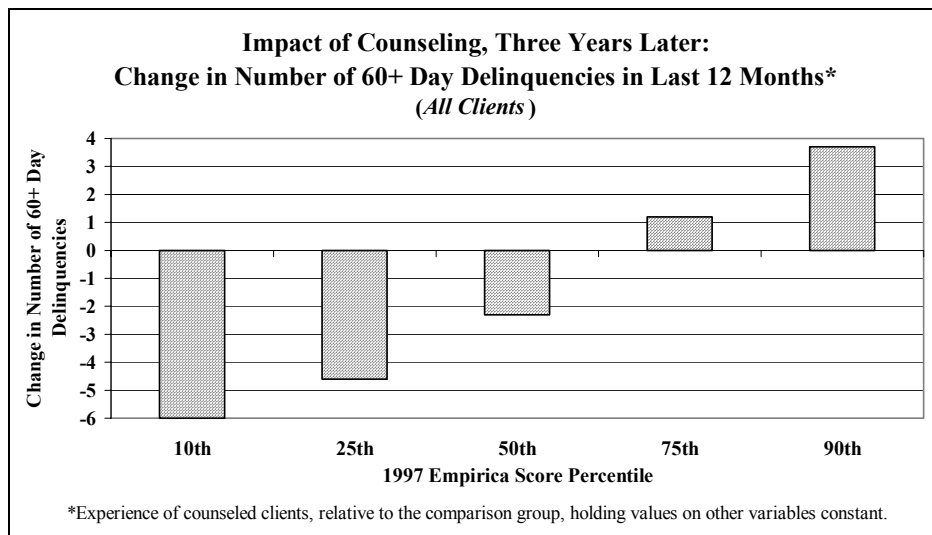


Figure 13



VI. CONCLUSIONS

This study demonstrates, for the first time, that one-on-one credit counseling has a positive impact on borrower behavior over an extended period. The study examined the impact of one-on-one credit counseling delivered by five member agencies of the National Foundation for Credit Counseling to approximately 14,000 clients during 1997. Clients were selected to be representative of agency clients who did not enter into formal Debt Management Plan agreements. Credit bureau data provided objective measures of credit performance for these clients over a three-year period following the initial counseling session, as well as for a large sample of borrowers with similar risk profiles

and geographic residences in 1997 but who were not identified by the five agencies as having received counseling. Because it is possible that some members of the comparison group received counseling from some other agency, there is a bias in the sample design toward finding no significant improvement in the counseled group relative to the comparison group. Consequently, the results provide even more powerful evidence that counseling impacts behavior in a positive way.

The statistical estimates isolate the impact of the credit counseling experience on subsequent client credit behavior by

1. correcting for self-selection bias (e.g., borrowers who choose to seek counseling may be more motivated to take corrective steps to improve their credit profile),
2. comparing the experience of the counseled group to the experience of non-counseled borrowers who live in the same geographic area and who have a similar risk profile at the outset of the observation period,
3. holding constant other observable factors that may influence the performance of both groups of borrowers over time.

Using ten different measures of borrower credit performance, the empirical analysis found that borrowers who received financial counseling generally improved their credit profile over the subsequent three years, relative to observationally similar borrowers who did not receive counseling. Highlights of the results include the following.

- Holding other factors constant, financial counseling has a significant and positive impact on summary measures of borrower creditworthiness (e.g., Empirica risk score) over time, but the effect is greatest for clients who have lower Empirica scores at the outset.
- Across a broad range of specific credit characteristics (e.g., number of accounts with positive balances, total debt, revolving debt, bank card percentage utilization), counseled clients experience improvement relative to the comparison group. For many credit attributes, there is evidence of improvement for counseled clients even when their Empirica scores have not improved relative to the comparison group.
- Delinquency experience (as measured by the reduction in 30+ and 60+ day delinquencies) after three years is substantially better for counseled clients, relative to the comparison group.

REFERENCES

Barnow, Burt S, Glen G. Cain, and Arthur S. Goldberger. "Issues in the Analysis of Selectivity Bias." In *Evaluation Studies, Review Annual*, vol. 5, E.W. Stromsdorfer and G. Farkas, eds. Beverly Hills: Sage Publications, 1980.

Beltz, Jess. "An Analysis of the Relationship between Creditors, Consumer Credit Councils, and Debt-Strapped Consumers." Fort Wayne Indiana: Indiana University-Purdue University at Fort Wayne, School of Business and Management, July 2002.

Braunstein, Sandra and Carolyn Welch. "Financial Literacy: An Overview of Practice, Research, and Policy." *Federal Reserve Bulletin*, 88 (November 2002): 445-457.

Hirad, Abdighani and Peter M. Zorn. "A Little Knowledge is a Good Thing: Empirical Evidence of the Effectiveness of Pre-Purchase Homeownership Counseling." McLean, Virginia: Freddie Mac, 2001.

Malach, Allan. "Home Ownership Education and Counseling: Issues in Research and Definition." Philadelphia: Federal Reserve Bank of Philadelphia, 2001.

Maddala, G.S. *Limited Dependent and Qualitative Variables in Econometrics*. Cambridge: Cambridge University Press, 1983.

Quercia, Roberto and Susan Wachter. "Homeownership Counseling Performance: How Can it be Measured?" *Housing Policy Debate*, 7 (1996): 175-200.

US Bureau of the Census. *Geographic Areas Reference Manual*. Washington: US Department of Commerce, Bureau of the Census, Economics and Statistics Division, 1994.

Table A1
Mean Initial Values of Selected Measures of Credit Use and Payment Behavior for
Counseled and Comparison Group Borrowers, by Initial Empirica Score Groups

	Empirica score group ¹					
	<u>All</u>	<u>Lowest</u>	<u>Second</u>	<u>Third</u>	<u>Fourth</u>	<u>Highest</u>
<i>Initial Empirica score</i>						
Counseled	585	496	532	571	628	699
Comparison	593	496	533	575	632	749
<i>Total debt (dollars)</i>						
Counseled	50,347	42,104	47,148	46,700	55,723	60,126
Comparison	35,631	27,025	32,320	30,854	37,675	52,099
<i>Non-mortgage debt (dollars)</i>						
Counseled	24,404	22,125	21,805	22,069	27,525	28,564
Comparison	15,876	15,119	16,661	15,718	17,514	14,342
<i>Active bank cards</i>						
Counseled	2.3	1.68	1.84	1.92	2.77	3.29
Comparison	1.24	0.85	1.89	1.13	1.57	1.64
<i>Revolving debt (dollars)</i>						
Counseled	11,635	7,936	8,780	9,878	14,067	17,604
Comparison	5,208	3,582	4,793	4,777	6,522	6,631
<i>60+ day delinquencies</i> <i>in last twelve months</i>						
Counseled	1.80	3.93	3.26	1.49	0.24	0.03
Comparison	1.17	2.99	2.36	1.06	0.20	0.01

¹ Empirica score groups are (1) less than 515, (2) 51-549, (3) 550-599, (4) 600-658, and (5) 659-821.

Table A2**Mean Change in Selected Measures of Credit Use and Payment Behavior for
Counseled and Comparison Group Borrowers, by Initial Empirica Score Groups**

	<u>Empirica score group</u>					
	<u>All</u>	<u>Lowest</u>	<u>Second</u>	<u>Third</u>	<u>Fourth</u>	<u>Highest</u>
<i>Initial Empirica score</i>						
Counseled	11	56	37	13	-18	-33
Comparison	25	66	39	20	0	-6
<i>Total debt (dollars)</i>						
Counseled	-6,752	-14,156	-11,714	-5,636	-2,291	295
Comparison	8,844	-1,807	1,524	8,260	17,691	20,677
<i>Non-mortgage debt (dollars)</i>						
Counseled	-8,813	-11,866	-9,535	-7,356	-1,112	-7,528
Comparison	171	-4,225	-3,099	989	4,428	3,639
<i>Active bank cards</i>						
Counseled	-1.19	-1.00	-0.98	-0.90	-1.42	-1.63
Comparison	-0.13	-0.19	-0.28	-0.86	-0.10	0.02
<i>Revolving debt (dollars)</i>						
Counseled	-7,378	-6,212	-6,316	-7,000	8,307	-9,098
Comparison	-1,045	-1,895	-2,660	-1,317	-247	1,120
<i>60+ day delinquencies in last twelve months</i>						
Counseled	-0.94	-2.82	-2.23	-0.62	0.57	0.46
Comparison	-0.76	-2.18	-1.36	-0.40	0.32	0.09