Returns To Information Search: Consumer Mortgage Shopping Decisions

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The Truth in Lending Act (TILA) and the Real Estate Procedures Act (RESPA) promote informed consumer decision making in mortgage markets, primarily through disclosure of information. The effectiveness of currently provided information under TILA and RESPA was examined using the 1995 Federal Reserve's Survey of Consumer Finances. Specifically, we investigated the relationships between consumers' extent of search and the annual percentage rate (APR) of primary mortgages. Increased search paid off for refinancers, but not for other financers.
Key words: *Mortgage loans, Credit, Decision making, Information search, Survey of Consumer Finances*

Market transparency, a condition in which consumers can evaluate market alternatives and accurately discern all the relevant information – the existence of products, product varieties (brand-model combinations), retailers, prices, commodities – is a prerequisite to rational purchase decisions by consumers (Durkin & Elliehausen, 1990). Lack of information clearly can lead to wrong choices. In fact, information failure has been one of the major causes for the development of consumer organizations (OCED, 1992), and the provision of objective information became, and still is, an important issue for consumer policy (Bloom, 1989; Beales, Craswell & Salop, 1981; Day & Brandt, 1974; Ippolito, 1986, 1988; Price, Feick & Higie, 1987).

Information theorists point out several reasons why information failures occur (Akerlof, 1970; Asch, 1988; Brown & Dimsdale, 1973; Nelson, 1970; Salop, 1978; Stigler, 1961; Stigliz, 1979). First, information is costly both for consumers to acquire and for producers to produce. From the consumer's perspective, much of the value of information is unknown, from the producer's perspective, information becomes a public good once released. Furthermore, there is often an asymmetry of information between consumers and sellers, with sellers providing self-serving or unreliable information or withholding damaging information.

Mandatory disclosure is a popular remedy for information failure in many countries, including the U.S. (Durkin & Elliehausen, 1990; Ippolito, 1986; OCED, 1992). In the mortgage market, two federal laws were enacted to help consumers make informed choices through mandatory disclosure (Federal Reserve Board, 1997; Retsinas, 1997). The Truth in Lending Act (TILA) requires lenders disclose information about credit terms and costs, such as the annual percentage rate (APR) and finance charge. The Real Estate Settlement Procedures Act (RESPA) requires disclosure about settlement or closing costs.

The effectiveness of disclosure can be measured in several ways (Day, 1976; Moorman, 1996; Nelson, 1970; OECD, 1992), including whether consumer behavior and/or characteristics of markets, such as competition and price dispersion, have changed after disclosure. There is evidence that disclosure requirements have had some impact in making consumers more aware of the annual cost of credit, but there is less evidence that consumer behavior and characteristics of market have changed as a result (Day, 1976; Federal Reserve Board, 1987; Kinsey & McAlister, 1981; OCED, 1992; Shay & Schober, 1973).

Furthermore, both anecdotal and empirical evidence suggests that complex disclosures do not help consumers. Lee and Hogarth (1999) found that many consumers do not fully understand the APR and finance charge information disclosed, and Thakor, Beltz and Barefoot (1993) reported that many consumers experience information overload from the disclosures. Anecdotal evidence also suggests that many consumers, particularly the less educated and less affluent, find mortgage information to be confusing and the associated mathematical concepts difficult to comprehend. These results raise an important policy issue that seems deserving of further consideration: Does consumers' possession of mortgage information lead to more rational and informed decision making? Intuitively this is likely to occur with financially knowledgeable consumers; it may not be true of other groups of consumers, or indeed, of consumers as a whole.

The purpose of this study is to examine the effectiveness of information provided under TILA and RESPA by examining whether consumers' search for information actually leads to better decision making by investigating the relationship between the extent of information search and returns or payoffs to search. Considering the complexity and the overwhelming amount of information in mortgage shopping, it is hypothesized that only those who are relatively sophisticated will benefit from information search. In other words, even if less sophisticated consumers engage in search, the returns to search will be very limited.

This examination of the effectiveness of search seems necessary in the interests of all parties in the mortgage market. Mandatory information disclosure imposes costs on financial institutions, so there needs to be substantial public benefits to justify these costs. This study may help quantify some of those benefits. For government agencies involved in regulating and enforcing TILA and RESPA, this analysis will show how well the disclosures achieve their intended goals. Finally for consumers, required disclosures should help clarify not confuse. To the extent that search does not lead to better decisions, it would then be necessary to identify and quantify deficiencies in the disclosures.

We begin by providing some background information on the Truth-in Lending and Real Estate Settlement Procedures Acts, including a review of related previous research. Next we discuss the data and methodology we use in our analysis, followed by the results. Finally, we draw some conclusions for consumer educators, policy makers, and the research community.

BackgroundBoth the Truth in Lending Act and the Real Estate Settlement Procedures Act regulate consumer home mortgage transactions. The Truth-in-Lending Act, enacted by the Congress as Title I of the Consumer Credit Protection Act of 1968 (Public Law 90-321, May 29, 1968), was the first federal intervention into consumer credit markets to regulate the activities of creditors (Durkin & Elliehausen, 1990). Although TILA contains a group of substantive provisions regulating credit practices, the law remains primarily a disclosure law.

The main objectives of the statute are to aid consumers in making informed credit decisions and to promote price competition by facilitating comparison-shopping. According to the preamble of the act,

> The informed use of credit results from an awareness of the cost thereof by consumers. It is the purpose of this title to assure a meaningful disclosure of terms so that the consumer will be able to compare more readily the various credit terms available to him and avoid the uninformed use of credit (Title I of the Consumer Credit Protection Act of 1968, 15 U.S.C. 1601(a)).

TILA requires consumers undertake some action to receive the “benefits” of the law (Federal Reserve Board, 1987). That is, only by shopping can a consumer be assured of obtaining lower cost credit.

Under TILA creditors must disclose the cost of credit as a dollar amount (the finance charge) and the annual percentage rate (the APR). The total finance charge in dollars includes all interest and fees that must be paid to receive the loan, and the APR is the effective rate of interest paid over original term of the loan (the actual APR will differ if the loan is terminated early). In a mortgage transaction, these disclosures are required within three days of application. Prior to TILA, APR information was not available to consumers on a uniform basis; a variety of methods were used to calculate finance charges and payments, all of which stated rates considerably below the APR (National Commission on Consumer Finance 1973, p. 169)[a]. Creating uniformity in creditors’ disclosures was intended to assist consumers’ comparison-shopping.

Although the idea of price disclosure is simple, TILA and its implementing regulation, Federal Reserve Regulation Z, have grown to require an extensive list of information. For example, in the case of mortgages, disclosures about credit report fees, flood insurance, origination fees, credit life insurance, and numerous other charges may be required if they are necessary to obtain the loan. "Full disclosure" of information was mandated instead of concentrating on a few fundamental disclosures. As a result, problems have emerged for both consumers and creditors; extensive disclosure created an information overload for consumers as well as compliance burdens for creditors. Acknowledging the problems involved in extensive information disclosure, a movement to simplify the law gained support (Willenzik, 1979). Consequently, in 1980 Congress passed the Truth-in-Lending Simplification and Reform Act (Public Law 96-221). Several other legislative changes have been made over the years and Regulation Z, and the staff commentary is revised annually. Despite these previous efforts, the goal of simplification has not yet been achieved.

RESPA is administered under Regulation X from the

Department of Housing and Urban Development (HUD) (Meier & Garman, 1995; Retsina, 1997). The Act contains both disclosure and substantive provisions. It requires that certain disclosures be given at various points in most mortgage transactions to ensure that consumers receive timely and useful information about the costs associated with the transaction. It also prohibits kickbacks and referral fees to protect consumers from unnecessarily high settlement costs and limits the amounts of money homebuyers are required to place in an escrow account. Within three days of the application lenders are required to provide the mortgage loan borrowers with a good-faith estimate of closing costs and an information booklet explaining the settlement statement.

Timing of information disclosures in mortgage shopping is an important issue. Since applying for a loan often requires non-refundable fees, consumers want to comparison shop before they apply for a loan. Thus, the current timing of TILA-RESPA disclosures does not help consumers' decision making prior to making the commitment of applying for a loan. Once the decision has been made (i.e. the consumer applies for a loan), the consumer becomes psychologically committed and is less likely to read and use disclosed information (see Mazis & Staelin, 1981). In addition, estimates provided before application for an actual loan can be different from the good faith estimate or the actual costs at the time of loan closing, again suggesting the possibility of suboptimal decision making.

In summary, the information required to be disclosed under TILA and RESPA is extensive, the concepts disclosed are complex, and the timing of disclosure is not when the information is most needed: “Consumers' primary concern is that they do not receive disclosures about mortgage costs earlier in the process. Under the existing rules, lenders are not required to provide a good faith estimate of the transaction costs until three days after the consumer applies for the loan, which may also require advance payment of non-refundable fees. ... Second, consumers want the cost disclosures ... to be as accurate as possible, so that they are not confronted with unexpected charges at the loan closing, when the consumer no longer has the flexibility to pursue other financing options. And third, commenters generally believed that the disclosures could be less complex and, therefore, more useful” (Meyer, 1997, p. 9).

Congress directed the Federal Reserve Board (FRB) and the department of Housing and Urban Development (HUD) to simplify and improve the disclosures given in a home mortgage transaction required under TILA and RESPA and to provide a single disclosure satisfying the requirements of both statutes. After reviewing comments provided by both industry and consumer representatives, FRB and HUD came to the conclusion that improving TILA and RESPA disclosures to make them significantly shorter, easier to understand, and consistent required legislative changes. In July 1998, the FRB and HUD issued a report to Congress, outlining recommendations for revising TILA and RESPA (Federal Reserve Board, 1998).

Characteristics of Information Disclosed Under TILA/RESPA

Consumer's access to information has been the subject of considerable attention in the literature (Beales, Mazis, Salop & Staelin, 1981; Bloom, 1989; Capon & Lutz, 1979; Day, 1976; Ippolito, 1986, 1988; Mazis, Staelin, Beales & Salop, 1981; Wilkie, 1975). According to Bloom (1989), "a market is viewed as having consumer information problems if consumers are making poorer choices for themselves than they would make if they could gain access to the amount and type of information they would like to have to guide their choices." (p. 162) Consumer information problems can occur when information is unavailable (Asch, 1988; Durkin & Elliehausen, 1990; Salop, 1978) or available in misleading (Ford & Calfee, 1986; Salop, 1978; Shimp & Preston, 1981; Wilkie, McNeill & Mazis, 1984), difficult-to-process (Mazis & Staelin, 1981; Russo, 1988), or unreasonably expensive forms (Bloom, 1989; Sepstrup, 1980; Russo, 1988; Russo & Leclerc, 1991).

Information related to consumer loans is fully available, as required under TILA-RESPA. In fact, with an assumption that more information is better, TILA-RESPA requires comprehensive information to be disclosed for consumers. On the other hand, there is a possibility of misleading information in mortgage markets. While lenders often use a low contract interest rate as a marketing device to attract borrowers (Cole & Mishler, 1995), the contract interest rate is often unrelated to other terms and conditions in the credit transaction, and often consumers are not aware of these other costs when choosing a mortgage loan. While the APR is intended to be the metric by which consumers can compare different loans, the APR can be misleading. For example, if a consumer plans to pay off a loan earlier, the APR may be the wrong metric for choosing among mortgages.

In consumer credit markets, consumers may have information, but they may lack understanding (Chang and Hanna, 1992; Kinsey & McAlister, 1981; Mandell, 1973; Thakor, Beltz & Barefoot, 1993). This lack of understanding also stems from the complexity of financial information disclosed (White & Barclay, 1981). Moreover, the proliferation of credit product choices available makes consumer's comparison shopping more challenging (Kimball, Frisch & Gregor, 1997). For example, many mortgage lenders offer a wide variety of mortgage products including fixed or variable rates or some hybrid of the two, varying terms to maturity, and different combinations of rate and points. The language of the creditor is also difficult to understand for many consumers (Chang & Hanna, 1992; Ramirez, 1979), and very few people understand the APR. Studies have shown that knowledge of the APR is not readily translated into knowledge about the dollar cost of credit (Kinsey & McAlister, 1981; Mandell, 1973). More recently, Lee and Hogarth (1999) documented consumers' confusion between the APR and the contract interest rate. McAlexander and Scammon (1988) noted that due to the complexity of financial information, increasing numbers of consumers have turned to the services of professional financial advisors. Unfortunately, not all consumers can afford to hire financial advisors.

TILA-RESPA disclosures require an extensive list of information, resulting in information overload for many consumers (Durkin & Elliehausen, 1990; Thakor, Beltz & Barefoot, 1993). In fact, based on observations from the bankers who furnish such disclosures, Thakor, Beltz and Barefoot reported that most consumer do not even attempt to read them. The high volume of information that is given to consumers reflects the assumption that the consumers will want, and should have a right to, highly detailed information. In practice, however, the amount of disclosed information has become an obstacle, rather than an aid, to consumers reaching informed decisions. It may be that the benefits of the disclosed information can be increased by giving consumers a smaller amount of better information (Russo, 1988).

In summary, in order to enhance decision making, consumers need information that is useful, unbiased, accurate, easy to understand, affordable and readily accessible. Also, in order to avoid information overload, the amount of disclosed information should not be excessive. With information disclosure requirements under TILA/RESPA, price and non-price information related to mortgages is available to consumers. This information is accurate, but it is quite complex; therefore it may be difficult for many consumers to understand. Furthermore, the disclosed information may not always permit easy comparisons because the details of transactions may differ substantially. The information may also be excessive in quantity and may not be provided at the right time in the decision process.

The Effectiveness of Information Disclosed Under TILA/RESPA

Public policy makers typically think that consumers will seek objective information if the government acts to make it available (Beales, Mazis, Salop & Staelin, 1981). Therefore, the effectiveness of information disclosure is often assumed rather than proven (OECD, 1992). The effectiveness of a disclosure remedy might be measured in a number of different ways (Day, 1976; Day & Brandt, 1974; Durkin, 1981; Durkin & Elliehausen, 1991; Moorman, 1996; Nelson, 1970; OECD, 1992): has the behavior of consumers been modified by the disclosure or have characteristics of the market changed in measurable ways?

In the mortgage arena, behavioral changes can be measured by whether or not consumers are searching more for a lower interest rate following the imposition of a disclosure requirement on mortgage lenders. Market changes can be observed by investigating the level and dispersion of interest rates offered by mortgage lenders before and after the imposition of a disclosure requirement. If other potential explanatory variables can be ruled out as the likely cause of observed changes, one could reasonably infer that the disclosure requirement was an effective remedy. In addition, improvements in awareness and comprehension of mortgage information can be other indicators of the effectiveness of the disclosure remedy.

Many of the previous studies examining the effectiveness of TILA looked for changes in consumers' awareness of information. Following the passage of TILA, the Federal Reserve Board undertook two large surveys of consumers, the first immediately before the effective date of the law (July 1, 1969) and the second fifteen months later. Using these data sets, Shay and Schober (1973) found sharp increases in consumer awareness of the APR after the passage of TILA, although both overall awareness and gains in awareness varied substantially by income, education, race of borrower, and credit source. Specifically, Shay and Schober (1973) found that APR disclosure had relatively little impact on the poor, African Americans, and the less well educated. Surveying consumers eight years after TILA, Durkin and Elliehausen (1978) found that rate awareness had continued to grow, although they found that there were still demographic effects with better educated and higher income consumers more likely to be aware. Interestingly, they also found that lower income consumers still tended to be more aware of financial charges measured in dollars, as Due (1955) found before TILA.

Awareness and knowledge, however, are different (Lee & Hogarth, 1999). Kinsey and McAlister (1981) reported minimal improvement in consumers' knowledge of the APR for open-end credit, calling into question the effectiveness of information disclosure. In addition, little change in the behavioral objective of encouraging credit shopping was reported (Day & Brandt, 1973, 1974; Deutscher, 1973; Durkin & Elliehausen, 1978). Awareness of APR was not linked to consumer's search for credit information. However, it should be noted that lack of shopping does not necessarily indicate unreasonable or irrational behavior on the part of consumers. Under the economics of information framework, consumers may believe that additional shopping is more costly in terms of personal time and effort than expected savings in credit costs. Information search costs may exceed expected benefits for less sophisticated consumers (Day, 1976), and more sophisticated consumers may search more efficiently.

A report by the Federal Reserve Board (1987) addressed the question of whether credit cost disclosures have had any impact on the market for credit. This study reported on a demonstration project that disclosed APRs for various lenders in local newspapers. The Federal Reserve Board concluded that the comparative price program appeared to have increased competition in two of three credit markets studied, at least to some degree. The program reduced both the average level and the dispersion of percentage rates for mortgage loans. The availability of the price lists in the newspapers did not affect the likelihood of credit shopping, although the price lists may have enhanced the shopping efficiency of those who did shop.

In summary, there is limited research on the effectiveness of the current disclosures under TILA-RESPA. Disclosure requirements appear to have some impact in making consumers more aware of the annual cost of credit, but there is less evidence that either consumers' shopping behavior or credit market structures have changed.

Previous researchers concluded that a positive relationship exists between the overall amount of information search undertaken and consumer decision efficiency. Sproles, Geistfeld, and Badenhop (1978) provided empirical evidence that information improves consumers' abilities to evaluate product quality. Therefore, in mortgage markets, it can be hypothesized that consumers' search enhances their exposure to alternative mortgage loans, which in turn leads to obtaining a lower APR:

> Consumers who search more extensively will have a mortgage loan with a lower APR than consumers who search less extensively.

Alternatively, due to the quantity of complex information disclosed, the benefits of search may be substantially different across consumers (Day, 1976; Day & Brandt, 1974). Since consumer's cognitive ability and previous experiences influence their information processing capability (Alba & Hutchinson, 1987; Beales, Mazis, Salop & Staelin, 1981; Bettman & Park, 1980; Brucks, 1985; Johnson & Russo, 1984; Punj & Staelin, 1983; Russo, 1988), an alternative hypothesis is that only experienced consumers (who are more likely to have necessary information processing ability to comprehend mortgage information) who search more extensively will find and choose a mortgage loan with a lower APR, but information search will not benefit less experienced consumers: Experienced consumers who search more extensively will have a mortgage loan with a lower APR than experienced consumers who search less extensively.

> Search is not related to the mortgage APR of less experienced consumers.

Methodology

In this study the relationship between extent of search and payoffs to search measured as having a lower APR will be examined based on the hypotheses stated above. It should be noted that closing costs and/or monthly payments can be more important than the APR for some consumers, and for those consumers, having a lower APR may not be the appropriate measure of payoff to search. However, according to Worden and Sullivan (1987), nearly 80% of borrowers claimed that the primary motivation for their search in credit markets was to find a lower interest rate.

Being a refinancer (versus a purchase money mortgage or other financing[b]) is used as a proxy for experience and ability to understand the disclosed mortgage information. In order to test the two hypotheses, mortgage APR was estimated separately for refinancers and other financers including information search and other influencing factors as independent variables in an Ordinary Least Squares model. The differences between refinancers and other financers were examined by estimating a full interaction model (Maddala, 1992). In this section, a description of the data set is presented, and variables and analytical procedures employed in the OLS analyses are discussed.

Data

The 1995 Survey of Consumer Finances (SCF) is a triennial survey sponsored by the Federal Reserve with the cooperation of the Statistics of Income Division of the Internal Revenue Service (Kennickell, Starr-McCluer & Sunden, 1997; Kennickell & Woodburn, 1997). It is designed to provide detailed information on the financial characteristics of U.S. households. A primary purpose of the SCF is to provide data to analyze families' assets and liabilities. Between July and December of 1995, 4,299 consumers were interviewed by the National Opinion Research Center at the University of Chicago. Because of the dual sampling frame employed in the survey, data were weighted in the descriptive analyses (see Kennickell, McManus & Woodburn (1996) and Kennickell & Woodburn (1997) for detailed discussion of weight design). Also, because the survey uses a multiple imputation design, Repeated Imputation Inference (RII) techniques were used in the multivariate analyses (see Kennickell, 1991; Kennickell, Starr-McCluer & Sunden, 1997; Montalto & Sung, 1996; Rubin, 1987; and Kennickell, 1997). In addition, some variables such as age and income are "reconciled" by comparing component parts to a reported whole; for example, respondents report their ages and this is reconciled with the date of birth they provide elsewhere in the survey.

Dependent Variables

Two measures of the payoffs to search were studied using separate OLS analyses: (1) standardized mortgage APR and (2) first year's savings on interest.

Standardized Mortgage APR The APR of the first mortgage on the primary residence, (excluding vacation and investment homes), was analyzed to determine whether additional information search was associated with a lower mortgage APR (Table 1). Since the APR fluctuates over time due to economic conditions, the following standardized measure was used:

$$\frac{\text{Reported APR - Average APR for the Year the loan was obtained}}{\text{Average APR for the Year the loan was obtained}}$$

First Year' Dollar Savings in Interest Payment As a second measure of the payoffs to search, the potential dollar savings in interest payments for the first year of the loan were simulated for illustrative purposes based on the difference between what the household paid and what they would have paid if they had an average APR. Since higher income people tend to buy more expensive houses, borrowing larger amounts than low income people, using the actual loan amount to calculate this savings can be misleading. To eliminate this income effect, we simulated the first year' dollar savings in interest holding the loan amount constant. The median loan amount for the sample (adjusted in 1994 constant dollars), $70,910, was employed in the analysis. Mathematically,

(Reported APR - Average APR for the Year the loan was obtained) x $70,910

Independent Variables

Information Search The extent of information search (measured as a 1 to 5 ordinal variable) was based on the consumers response to the question, "When making major decisions about credit or borrowing, some people shop around for the very best terms while others don't. What number would you or your family be on the scale?" Although a mortgage is certainly a major borrowing decision, it is not possible to know how consumers interpreted this question relative to mortgage shopping.

How well consumers' response to the above question reflects the true extent of their information search relative to mortgage shopping depends in part on how consistently consumers search for information across a variety of credit products, such as vehicle loans, credit card rates, home equity loans, home equity lines of credit, mortgages, and other types of consumer loans. Significant correlations among consumer's search for different types of credit products are expected because consumer's search behavior tends to be product domain specific (Yale & Gilly, 1995). Those who engage in extensive search activities for vehicle loans should also tend to search extensively for home mortgage loans. Therefore, although the respondents' answers were not directed specifically toward mortgage shopping, their answers should reflect their tendency to search when facing a mortgage decision.

Table 1
Variables

Variables	Description
Dependent Variables	
Standardized Mortgage APR	(Reported APR - Average APR for the year the loan was obtained) ÷ (Average APR for the year the loan was obtained)
Dollar savings in the first year's interest payment with median loan amount	(Reported APR - Average APR for the year the loan was obtained) x $70,910
Independent Variables	
Extent of Information Search	ordinal, 1 (almost none) to 5 (a great deal)
Credit History	1 if turned down for loan or obtained smaller loan than applied for, else 0
Mortgage Insurance	
Federal insurance	1 if the mortgage is insured by a public entity
Private insurance	1 if the mortgage is insured by a private entity
No insurance	1 if the mortgage is not insured; omitted category
Type of Loan	
Adjustable APR	1 if the mortgage is an adjustable rate mortgage
Fixed APR	1 if the mortgage is a fixed rate mortgage; omitted category
Term of Loan	continuous, number of years
Source of Loan	
Commercial bank	1 if mortgage obtained from commercial bank; omitted category
S&L	1 if mortgage obtained from S&L
Finance company	1 if mortgage obtained from finance company
Mortgage company	1 if mortgage obtained from mortgage company
Other lenders	1 if mortgage obtained from other lenders not above
Demographics	
Age	age of reference person
Household income	log of annual total household income
Female headed household	1 if female head
Race-ethnicity	
Hispanic	1 if Hispanic
African American	1 if African American
Other non-white	1 if other non-white
Non-Hispanic white	1 if non-Hispanic white; omitted category
Education	
Less than high school	1 if years of education <12 and no GED
Some college	1 if years of education >12 and ≤ 16 but no B.S.
B.S.	1 if a college degree is earned
Graduate degree	1 if years of education >16
High school/GED	1 if respondents report a high school diploma or GED; omitted category
Martial Status	
Divorced/separated	1 if divorced or separated
Widowed	1 if widowed
Never married	1 if single, never married
Married	1 if married or living with partner; omitted category
Household size	
1	1 if 1 individual in household
2	1 if couple or 2 persons; omitted category
3	1 if household has 3 individuals
4	1 if household has 4 individuals
5 or more	1 if household has 5 or more
Region	
Northeast-New England	1 if live in CT, ME, MA, NH, RI, VT
Northeast-Middle Atlantic	1 if live in NY, NJ, PA
South-South Atlantic	1 if live in DE, DC, FL, GA, MD, NC, SC, VA, WV
South-East South Central	1 if live in AL, KY, MS, TN
South-West South Central	
Midwest-East North Central	1 if live in AR, LA, OK, TX; else 0
Midwest-West North Central	1 if live in IL, IN, MI, OH, WI; else 0
West-Mountain	1 if live in IA, KS, MN, MO, NE, ND, SD; else 0
West-Pacific	1 if live in AZ, CO, ID,MT, NV, UT, WY, NM; else 0
	1 if live in AK, CA, HI, OR, WA; else 0; omitted category

There are two other counter-balancing sources of bias with this question. First, for those cases in which the respondents responded to this search effort question with respect to other credit decisions, there may be a tendency to underestimate the extent of their search. Because mortgage loans are large relative to other consumer loans, the anticipated benefits of search are the greatest for mortgage loans among consumer loans (Beatty & Smith, 1987; Stigler, 1961). Second, the wording of the question ("major" decisions about credit or borrowing) may tend to lead consumers to think about larger loans such as mortgage. In addition, respondents may perceive that search is socially desirable and therefore they would be inclined to exaggerate the amount they searched, thus overestimating the extent of search (Deutscher, 1973). To some extent, this overestimation would compensate for the underestimation bias introduced by not considering search within the mortgage context.

There are many factors other than information search which could influence the APR of the mortgage obtained, and these influencing factors need to be included in the analysis in order to determine the incremental impact of search. Therefore, the following independent variables were included in analysis

(Table 1).

Applicant Characteristics In an era of risk-based pricing, the credit risk posed by an applicant will influence the price of credit they are offered. For example, borrowers with a poor credit history will face a higher APR because of their poor credit records, regardless of their information search efforts. The 1995 SCF gathered data regarding whether respondents had been turned down for a loan application or whether they had obtained a smaller loan than they applied for. The borrowers who reported either of these incidents were identified as having a poor credit history.

Mortgage Characteristics Certain characteristics of the mortgage can influence the APR. Mortgage lenders customarily require a down payment of at least 20% of the appraised value of a home, but they will accept a smaller down payment if the mortgage is insured by a public or private entity (Canner & Passmore, 1995). Thus, whether or not the mortgage is federally or privately insured influences the APR. Also, adjustable rate mortgages tend to have lower APRs than fixed rate mortgages, at least for the first year. To capture these characteristics of mortgages, several dummy variables were included. First, two variables, federal insurance and private insurance, were included with no insurance as base. Federal insurance refers to mortgages covered by the government provided programs administered by the Federal Housing Administration (FHA) and the Department of Veterans Affairs (VA). Second, a variable to indicate whether or not the mortgage had an adjustable rate was included.

Term of Loan The term of the loan is expected to influence the mortgage APR; longer term loans (30 years) generally will have higher APRs than shorter term loans (15 years).

Type of Lender The type of institution from which consumers borrowed money may influence the mortgage APR. For example, if the borrowers obtained a loan from the previous owners, the APR may be lower than the average market rate. However, since many respondents did not specify the type of lender, only four types of lenders (Savings and Loan, finance company, mortgage company, and other lenders) were included as a set of dummy variables with commercial banks as the base.

Demographic Variables A set of demographic variables was included to capture their possible impacts on APR. *Age* of household head: The respondent's reconciled age was employed. *Household income*: In order to reduce heteroskedasticity (unequal variance of the disturbances), the natural logarithm of annual total household income before taxes was used instead of the absolute dollar amount (Montalto & Sung, 1996). Although the original data set included negative income (i.e. spending down assets or writing off capital losses or business expenses), conceptually negative income is closer to a measure of assets or debts than income. Therefore, for households whose income was less than zero, income was considered as zero. *Female headed household*: male headed household was used as the base.[c] *Race-ethnicity*: Race/ethnicity was categorized into Hispanics, African-American, other nonwhites with non-Hispanic whites as the base. *Education* of household head: To reduce potential multicollinearity as well as to capture non-linearity, a set of dummies was included with high school graduates or equivalent as base: the included categories were less than high school, some college, B.S., and graduate degree. *Marital status*: Three dummy variables, divorced or separated, widowed, and never married, were included with married or living with a partner as the base. *Size of household*: households were divided into single persons, two-person households (base), three person households, and four or more person households. *Region*: The 9-level Census Division code was employed for measuring region, see Table 1 for regional categories.

Analysis

Because of the over-sampling of wealthy households, the data must be weighted when generating descriptive statistics. In the multivariate analysis, special techniques must be employed to account for the five implicate data sets. The multiple imputations are repetitions drawn to simulate a Bayesian distribution of the missing values under a model. Therefore, appropriately combining analyses of each data set completed by imputation yields an approximately valid Bayesian inference under that model (Rubin, 1987). More specifically, the multiple imputed values are averaged to produce the best estimate of what the results would have been if the missing data had been observed, and the variance estimates are corrected for the uncertainty due to missing values. These resulting inferences are called repeated-imputation inferences (RII). Montalto and Sung (1996) provide more detailed discussion of practical applications of RII in the analysis of SCF data sets.

As discussed earlier, Ordinary Least Squares (OLS) analyses were used to analyze the payoffs to search. Using the RII technique, estimates were derived from all five implicates, and the variability in the data due to missing values and imputation was incorporated in the estimations. SAS/IML programs were utilized for implementing the RII.

We also examined the differences between refinancers and other financers by estimating a full interaction model (Maddala, 1992). In the full interaction model, a new vector of variables was created by multiplying the refinancing dummy (whether a respondent refinanced his/her loan or not) by each independent variable. These interaction terms were added to the set of independent variables, and this full interaction model was estimated using the full sample (all mortgage borrowers, primary residence only). In each case where the estimated coefficient for the interaction term was significant (at 95% confidence level) there was a statistical difference between the refinancers and other financers with respect to that independent variable. For details on testing the stability of regression coefficients across samples, see Maddala (1992, p. 318).

Results

Descriptive Characteristics

Among all 4,299 consumers, 39.5% said that they currently had a mortgage on their primary residence, excluding home equity loans or lines of credit (the remaining 60.5% were renters or home owners without mortgages). Characteristics of the mortgage-holding sample are presented in Table 2. Among these mortgage borrowers, 31% held refinanced loans.

Information Search Respondents showed diversity in their information search behavior. When making major decisions about borrowing, 10.9% of mortgage holders did almost no shopping, while 26.4% did a great deal of shopping. It should be noted that more respondents marked their responses in almost no shopping (1), moderate (3), and a great deal of shopping (5) categories. This result can be at least partly attributed to the fact that in original survey, the Likert type responses of 2 and 4 did not include verbal descriptions of "little and "a good amount." These verbal descriptions were added by the authors.

Credit History Refinancers were less likely to have evidence of a poor credit history than other financers (chi-square statistic=10.34, p-value=0.001).

Table 2.

Descriptive Statistics for Sample (data are weighted)

Variables	Refinancer (30.7%)	Other Financer (69.3%)	All Borrowers (100%)
APR			
Mean	7.98	8.34	8.23
Median	7.75	8.00	8.00
Dollar Savings			
Mean	- 37.75	9.62	- 4.90
Median	-150.47	-89.35	-99.79
Information Search			
Almost no shopping	9.5%	11.6%	10.9%
Little	5.3%	6.2%	5.9%
Moderate	38.8%	42.3%	41.2%
Good amount	18.9%	13.9%	15.4%
A great deal	27.5%	25.9%	26.4%
Poor Credit History			
Yes	16.3%	24.3%	21.8%
No	83.7%	75.7%	78.2%
Mortgage Insurance			
Federally insured	19.4%	36.7%	31.4%
Privately insured	15.0%	19.3%	17.9%
No insurance	65.6%	44.0%	50.6%
Loan Type			
Adjustable	14.3%	20.4%	18.6%
Fixed	85.7%	79.6%	81.4%
Amount of Loan ($)			
Mean	94,481	80,015	84,448
Median	73,906	69,000	70,910
Term of Loan (years)			
Mean	20.84	25.24	23.89
Median	20	30	30
Age			
18-29	3.7%	12.4%	9.7%
30-44	43.4%	42.1%	42.5%
45-54	31.7%	24.4%	26.6%
55 or older	21.1%	21.1%	21.1%
Mean	46.4	44.2	44.8
Median	45	43	44
Household Income			
Less than $30,000	16.0%	29.4$	25.3%
$30,000 - $44,999	18.1%	26.7%	24.1%
$45,000 - $69,999	30.0%	23.9%	25.8%
$70,000 or more	38.8%	20.0%	24.9%
Mean	76,624	54,510	61,288
Median	59,000	40,000	45,000
Female Headed Household	13.7%	18.4%	17.1%
Race			
Non-Hispanic whites	86.4%	79.1%	81.3%
African American	5.7%	10.7%	9.2%
Hispanics	3.1%	6.1%	5.1%
Others	4.8%	4.2%	4.4%

Education			
Less than high school	6.5%	12.4%	10.6%
High school or GED	30.1%	30.8%	30.6%
Some college	14.8%	19.3%	17.9%
B.S.	27.3%	25.1%	25.8%
Graduate degree	21.3%	12.4%	15.1%
Variables	Refinancer (30.7%)	Other Financer (69.3%)	All Borrowers (100%)
Marital Status			
Married/living w/partner	81.4%	72.8%	75.4%
Separated/divorced	10.7%	15.9%	14.3%
Widowed	2.5%	4.1%	3.6%
Never married	1.6%	4.9%	6.0%
Household Size			
1	10.6%	12.4%	11.9%
2	29.0%	32.6%	31.5%
3	19.4%	20.2%	19.9%
4	27.4%	20.8%	22.8%
5-8	12.5%	14.0%	13.8%
Region			
NE-New England	6.7%	3.8%	4.7%
NE-Mid Atlantic	10.9%	12.9%	12.3%
South-South Atlantic	16.1%	21.8%	20.1%
South-E. S. Central	5.2%	8.2%	7.3%
South-W. S. Central	5.4%	10.3%	8.8%
Midwest-E. N. Central	20.1%	18.0%	18.6%
Midwest-W.N. Central	8.5%	6.2%	6.9%
West-Mountain	6.5%	7.8%	7.4%
West-Pacific	20.6%	11.0%	13.9%
Number of Respondents	520	1178	1698

Mortgage Loan Characteristics The amount of refinanced loans tended to be greater, and the term of these loans tended to be shorter. For example, the median loan amount for refinancers was $73,905, while median loan for other financers was $69,000 (loan amounts were adjusted using the Consumer Price Index in 1994 constant dollars; Bureau of Labor Statistics 1998). The median term of the loan for refinancers was 20 years, compared to 30 years for other financers.

Mean Payoffs to Search The means for mortgage APR and the first year's dollar savings in interest payment (based on the median loan amount of $70,910) across each level of information search are presented in Table 3. Refinancers who searched a great deal obtained an average APR of 7.49, which was lower than those who searched less. For other financers there was no strong relationship between APR and the extent of search, although those who shopped a "good amount" or a "great deal" had lower APRs than those who shopped "little" or a "moderate" amount. Refinancers who searched a great deal saved the largest sum of money, $364, in the first year's interest payment. However, for other financers, there was no strong relationship between the first year's dollar savings and other levels of information search.

Multivariate Analysis of Mortgage APR
Multivariate RII analysis results are presented in Table 4. Results which were consistent across the five separate implicates were confirmed in the RII results, although the level of significance is more stringent under the RII.

Refinancers Among the independent variables, the extent of information search, term and source of loan, age and education of household head, household size, and the region were found to significantly influence refinancers' mortgage APR. Searching a great deal reduced mortgage APR by nearly 11%[d] compared to doing almost no shopping, supporting information search theory. Another way of looking at this is that holding all other variables constant, refinancers who searched a great deal obtained an APR that was 11% smaller than those who did no shopping and 5.5% smaller than those who did a moderate amount of shopping (note that a 11% smaller APR means that the shopper would find a 7.12% APR instead of an 8% APR; that is, shoppers would save about 11%, not 11 percentage points).

Table 3.
Mean Payoffs to Search Across the Extent of Search

	Almost no Shopping	Little	Moderate	Good Amount	A Great Deal	Total
Mean APR						
Refinancers	8.51	8.37	8.05	8.15	7.49	7.98
Other financers	8.06	8.40	8.41	8.36	8.37	8.34
All mortgage borrowers	8.18	8.39	8.30	8.28	8.09	8.23

Mean $ Savings in Interest Payment‡						
Refinancers	$ 329.16	$140.81	$15.40	$93.38	-$364.12	-$37.75
Other financers	-176.52	20.52	26.45	22.30	56.10	9.62
All mortgage borrowers	-42.07	53.41	23.27	48.98	-77.95	-4.90

‡ Negative number is saving; positive number is excess payment.

As expected, having a longer term loan increased the APR; compared to a 20 year loan, a 30 year loan had an APR that was 0.4% lower. Refinancers who obtained their loan through a finance company had higher APRs while those who refinanced through a mortgage company had lower APRs compared to commercial banks, as expected.

Older persons had higher APRs than younger persons. There is no *a priori* reason to expect this, but it may reflect some of the stickiness in mortgage refinancing (older persons may be less willing to deal with the perceived hassles of the refinancing process and may not refinance as often, resulting in holding on to a mortgage with a higher APR). Higher levels of education were associated with lower APRs, as expected. Having a graduate degree (as compared to being a high school graduate) resulted in an APR that was lower while having less than an high school education resulted in an increase in APR. Interestingly, two-person households had the lowest APRs; being in a household of any other size, larger or smaller, resulted in an APR that was higher. Living in the South Atlantic states was associated with an APR that was lower than living in the Pacific West.

Other Financers Mortgage insurance, having an adjustable rate loan, source of loan, education, and household size were found to influence other financers' APR; having a poor credit history was marginally significant. Other financers who had private mortgage insurance had mortgages with APRs that were higher than those with no type of mortgage insurance; this is consistent with higher risk loans that require such insurance. As expected, households with adjustable rate loans had lower APRs. Other financers who borrowed from other lenders had lower APRs than those who borrowed from commercial banks. In part, this may reflect seller/owner financing and/or financing through family members, either of which would have lower interest rates. Households with poor credit histories paid more for their mortgages; as noted this result is only marginally significant, but may be reflective of the growing sub-prime lending market.

As with refinancers, other financers with higher levels of education obtained loans with lower APRs. Other financers living in one-person households had higher APRs than two-person households.

Table 4
RII (Repeated Imputation Inferences) of OLS Regression Results of Standardized APR: Parameter Estimates (P-Value)

Independent Variables	Refinancers	Other Financers	👓$_{Ri}$ ⑤ 👓$_{Oi}$
Intercept	0.014 (.89)	0.042 (.74)	
Extent of information search	**-0.027 (.00)**	0.001 (.13)	*
Poor credit history (Good credit history as base)	0.019 (.29)	0.033(.07)	
Mortgage Insurance (No insurance as base)			
Federally insured	0.027 (.12)	-0.014 (.48)	
Privately insured	0.006 (.77)	**0.060 (.01)**	
Adjustable Rate Loan (Fixed Rate as base)	-0.020 (.30)	**-0.082 (.00)**	*
Term of Loan	**0.001 (.01)**	-0.001 (.26)	*
Source of Loan (Commercial banks as base)			
Savings & Loans	0.001 (.97)	-0.053 (.14)	
Finance Company	**0.034 (.05)**	-0.015 (.45)	
Mortgage Company	**-0.051 (.00)**	-0.026 (.25)	
Other lenders	-0.034 (.17)	**-0.064 (.01)**	

Demographics			
Age of reference person	**0.002 (.03)**	-0.001 (.76)	
Household income	-0.007 (.36)	-0.001 (.93)	
Female headed	0.018 (.59)	-0.002 (.94)	
Race (White as base)			
Hispanic	0.056 (.14)	0.031 (.31)	
African American	0.019 (.53)	-0.035 (.27)	
Other Nonwhites	-0.000 (.99)	0.025 (.47)	
Education (H.S. or GED as base)			
Less than h.s.	**0.086 (.00)**	-0.049 (.09)	*
Some college	**-0.057 (.00)**	**-0.066 (.00)**	
B.S.	-0.014 (.39)	-0.038 (.11)	
Graduate degree	**-0.051 (.01)**	**-0.052 (.04)**	
Marital status (Married/living w/ partner as base)			
Div/Separated	-0.046 (.28)	0.012 (.67)	
Widowed	-0.029 (.59)	-0.015 (.73)	
Never married	-0.021 (.69)	-0.013 (.72)	
Household size (two-persons as base)			
1	**0.095 (.02)**	**0.077 (.01)**	
3	**0.076 (.00)**	-0.003 (.91)	*
4	**0.076 (.00)**	0.017 (.39)	*
5 or more	**0.070 (.00)**	-0.008 (.75)	*
Independent Variables	Refinancers	Other Financers	$\beta_{Ri} \neq \beta_{Oi}$
Region (Pacific West as base)			
NE: New England	-0.026 (.39)	-0.007(.860)	
NE: Mid Atlantic	-0.022 (.36)	0.039 (.18)	
South: S. Atlantic	**-0.056 (.01)**	0.020 (.44)	
South: E.S.Central	-0.003 (.93)	0.052 (.14)	*
South: W.S. Central	-0.047 (.13)	0.037 (.22)	
Midwest: E.N. Central	-0.005 (.83)	0.034 (.21)	
Midwest: W. N Central	-0.004 (.87)	0.042 (.24)	
West: Mountain	-0.017 (.58)	0.048 (.18)	
F-Statistics	4.074 (.00)	2.279 (.00)	
Degree of Freedom	35	35	

***** implies significance of the variable in the full interaction model, thus $\beta_{Ri} \neq \beta_{Oi}$

Interaction Model The full interaction model supports the difference between refinancers and other mortgage borrowers for the extent of information search variable: statistically significant differential effects of information search were noted for refinancers versus other financers. Higher levels of information search lowered the refinancers' APRs significantly, but did not significantly affect other financers' APRs, providing empirical evidence to the alternative hypothesis posed. Having an adjustable rate mortgage affected the APR of other financers but not that of refinancers. Having less than a high school education affected the APR of refinancers, but not other financers. Being in a larger household (3 or more persons) affected the APR of refinances, but not that of other financers. Living in the South Atlantic states was associated with the APR obtained by refinances but did not affect the APR of other financers.

Multivariate Analysis of Dollar Savings in the First Year's Interest Payment

Because the absolute size of the loan should influence the dollar savings, the median loan amount ($70,910) was used to estimate the dollar value of the payoffs to search in the first year of the loan. Multivariate results are presented in Table 5. These findings closely parallel the results of the mortgage APR analysis.

Refinancers Among the independent variables, the extent of information search, term and source of loan, age and education of household head, household size, and region were found to significantly influence refinancers' dollar savings. Holding all other variables constant, refinancers who did a great deal of search paid $634.64 less in interest payments in the first year than those who did no shopping and $317.32 less than those who did a moderate amount of shopping.[e] Refinancers with longer term loans paid more in interest the first year; compared to a 20 year loan, refinancers with a 30 year loan would have paid $117.40 more in interest. Households who refinanced through finance companies paid $201 more in interest while households who refinances through mortgage companies paid $285 less in interest compared to those who refinanced with commercial banks.

Table 5.

RII (Repeated Imputation Inferences) of OLS Regression Results of Dollar Savings in Interest Payment

Independent Variables	Refinancers	Other Financers	$\beta_{Ri} \neq \beta_{Oi}$
Intercept	77.83 (0.89)	284.08 (0.71)	
Extent of information search	**-158.66 (.00)**	65.32 (.06)	*
Poor credit history (Good credit history as base)	126.22 (.24)	**213.38 (.04)**	
Mortgage Insurance (No insurance as base)	154.76 (.12)	-70.00 (.55)	
Federally insured	37.88 (.76)	**375.43 (.01)**	
Privately insured			
Adjustable Rate Loan (Fixed Rate as base)	-110.32 (.33)	**-493.27 (.00)**	*
Term of Loan	**11.74 (.01)**	-7.77 (.22)	*
Source of Loan (Commercial bank as base)	-6.17 (.97)	-223.26 (.11)	
Savings & Loans	**201.15 (.054)**	-75.65 (.51)	
Finance Company	**-285.85 (.01)**	-153.20 (.26)	
Mortgage Company	-189.24 (.18)	**-381.32 (.01)**	
Other Lenders			

Demographics			
Age of reference person	**8.45 (.03)**	-51.25 (.89)	
Household income	-41.27 (.39)	-13.36 (.85)	
Female headed	95.40 (.63)	-37.86 (.82)	
Race (White as base)			
Hispanic	359.55 (.09)	169.28 (.35)	
African American	96.94 (.58)	-242.53 (.20)	
Other Nonwhites	-5.76 (.97)	145.92 (.47)	
Education (H.S. or GED as base)			
Less than h.s.	**499.00 (.00)**	-289.31 (.09)	
Some college	**-326.78 (.01)**	**-408.71 (.00)**	*
B.S.	-91.72 (.35)	-241.53 (.09)	
Graduate degree	**-300.93 (.00)**	**-313.93 (.04)**	
Marital status (Married/living w/ partner as base)			
Div/Separated	-256.70 (.29)	-89.04 (.61)	
Widowed	-161.73 (.61)	-17.13 (.95)	
Never married	-141.47 (.65)	-46.40 (.83)	
Household size (2 as base)			
1	**562.98 (.02)**	**446.94 (.01)**	
3	**440.53 (.00)**	-23.67 (.87)	*
4	**445.86 (.00)**	108.37 (.37)	*
5 or more	**413.90 (.00)**	-52.39 (.72)	*

Independent Variables	Refinancers	Other Financers	$\beta_{Ri} \neq \beta_{Oi}$
Demographics			
Region (Pacific West as base)			
NE: New England	-158.39 (.36)	-43.20 (.86)	
NE: Mid Atlantic	-117.46 (.41)	256.36 (.14)	
South: S. Atlantic	**-326.62 (.01)**	124.76 (.43)	*
South: E.S.Central	-32.63 (.87)	316.40 (.13)	
South: W.S. Central	317.05 (.08)	229.91 (.19)	
Midwest: E.N. Central	-28.35 (.82)	210.04 (.19)	
Midwest: W. N Central	-23.66 (.88)	267.60 (.20)	
West: Mountain	-96.30 (.59)	281.97 (.18)	
F-Statistics	4.101 (.00)	2.423 (00)	
Degree of Freedom	35	35	

***** implies significance of the variable in the full interaction model, thus $\beta_{Ri} \neq \beta_{Oi}$

Older households paid more in first year interest than younger households. Again, higher levels of education were associated with greater savings in interest. Having less than a high school degree cost households nearly $500 in first year interest, compared to a $300 savings in first year interest for households with graduate degrees. Being in a two-person household, as compared to a household of any other size, was associated with a saving of between $413 to $562. Households living in the South Atlantic paid about $326 less in interest than households in the Pacific West.

Other Financers Poor credit history, having private mortgage insurance, having an adjustable rate loan, source of loan, education, and household size influenced other financers' dollar savings. Households with poor credit histories paid about $213 more in first year interest, as expected. Having private mortgage insurance was associated with an extra $375 in first-year interest compared to having a mortgage with no insurance. Households with adjustable rate loans saved $493 in first year interest compared to those with fixed rate loans. Borrowing from other lenders, as compared to commercial banks, was associated with a $381saving in first-year interest.

Households with less than a high school education paid between $313 and $408 more in first-year interest than households with higher levels of education. Single person households paid $446 more in first-year interest than a two-person household.

Interaction Model As with the APR model, the full interaction model supports the differences between refinancers and other financers. Significant differential effects were found for extent of search, having an adjustable rate loan, education, household size and region. Extent of information search, term of loan and region were associated with interest savings of refinancers but not other financers. Having an adjustable rate mortgage influenced the savings of other financers but not refinancers. Education and household size had differential effects on refinancers and other financers, as noted in Table 5.

Discussion, Limitations, and Conclusions

Mortgage borrowers showed diversity in their search behavior. Facing a major borrowing decision, 11% of mortgage holders did almost no shopping, while 26% did great deal of shopping. In general, those who refinanced tended to shop more than other financers. Shopping effort may be related to the time constraints associated with financing an initial purchase; often there is limited time to shop or wait for more appropriate rates. Another possible explanation could be that the costs of information search are higher for other financers than refinancers, indicating a form of information failure.

Furthermore, refinancers who shopped more received lower APRs on their mortgage loans compared to those who shopped less, thereby saving money. Results from Repeated Imputation Inferences (RII) techniques with Ordinary Least Squares analyses of two measures of payoffs to search (standardized mortgage APR and dollar savings in the first year's interest payment based on the median amount borrowed) indicated that information search pays off only for refinancers, who may have more knowledge and experience in mortgage borrowing. Their experience may make them more able to understand the information obtained in their search. Search does not seem to pay off for other financers who may be less experienced and less able to understand, interpret, and process the information gleaned in their search.

It is important to note some of the limitations in this study that may affect the outcomes reported. First, our measure of payoff to search was in terms of obtaining a lower APR; however we know that some consumers shop for other features. We have assumed that consumers are minimizing their long-term costs; the case could be made that some consumers have chosen to minimize their short-term costs (money paid up-front), which we have not captured. Second, our measure of first year's dollar savings based on the median loan depends in part on the average APR for the year in which the loan was obtained. For many of the mortgages in this analysis (e.g. those obtained in the 1960's and early 1970's when mortgage interest rates were stable), this measure is probably appropriate. However, for years with high fluctuations in interest rates (e.g. the early to mid-1980's), this yearly average measure may not be the appropriate base for comparison. It may be more appropriate to use the month and year in which the loan was obtained to construct the average APR and then calculate the dollar savings measure.

As indicated earlier, the extent of search measure was based on the consumer's response to a general question about major borrowing decisions. While obtaining a mortgage is a major borrowing decision and consumers have a general tendency to show consistent patterns of behavior facing similar decisions, it is not possible to know if consumers interpreted this question relative to mortgage shopping. Also, some consumers may have used a mortgage broker and implicitly understood that although they went to only one source, they were in fact getting information from a variety of mortgage providers. Thus, the extent of search for these consumers could have been reported as either little (one source) or a great deal (many providers).

For consumer educators and housing counselors, one important aspect of the relationship between shopping and returns to search is the issue of timing. Current disclosures of APR and closing costs required by TILA and RESPA are given after the mortgage loan application has been made (that is, after the culmination of the shopping process), although lenders will provide estimates to mortgage shoppers prior to application. While there is likely to be a strong positive correlation between these initial estimates and actual interest rates and costs, the interest rate given during the shopping phase of the mortgage process may not be the APR of the actual mortgage. Thus, there is a slight disconnection between the information gleaned in the search process and our outcome measure of mortgage APR. Educators can help consumers ask the right questions during the shopping process to make sure they get the information they need prior to application.

Even once the consumer has applied for a loan, much depends on when the consumer chooses to lock-in the interest rate. In rapidly changing interest rate environments, the timing of this lock-in will determine whether or not the consumer receives a better-than-average APR on the loan. This aspect of timing introduces potential error into our model of the connection between information search and APR. Again, educators can help consumers understand the factors associated with interest rate changes and help them obtain the information they need to make a lock-in decision.

When shopping for a mortgage, as part of the estimates provided by lenders, consumers are often quoted a contract interest rate and points rather than the APR. In most cases when consumers are shopping, the lender may not know all of the fees and charges consumers will be paying. The more fees and charges there are, the larger the difference between the simple contract rate and the APR (for example a zero point loan will have a smaller contract rate-APR differential than a loan with two points). Also, in a slow-moving real estate environment, sellers may cover some portion of these closing costs. The APR calculation does not take into account whether the buyer or the seller pays these costs; the effective APR is closer to the contract rate if the seller pays these costs, but the disclosed APR will be calculated as if the buyer is paying. Therefore, search strategies that do not account for these differentials may result in consumers paying a higher-than-average APR. Consumer educators and housing counselors can help consumers calculate various contract rate and point costs they will actually experience with a particular loan.

Disclosures are presented in a way that conforms to Truth in Lending Act's Regulation Z and the Real Estate Settlement Procedures Act's Regulation X. The detailed information allows consumers to see what they will be paying for finance charges, the monthly payment, and the total cost of the loan (usually over 30 years) as well as what they are paying for different closing services (title insurance, surveys and inspections, abstract services, etc.). However, in an information search process, consumers may be more interested in information related to short term considerations (monthly payment) and the total amount of cash due at closing rather than the details provided by these disclosures. Educators and counselors can help consumers work through the estimates of up-front costs as well as a determination of the trade-offs between these up front costs and longer term costs. Furthermore, educators can help consumers calculate the cost of paying some costs up-front versus capitalizing them into the mortgage loan itself.

Our findings indicate an interaction between extent of information search and refinancing. Refinancing, however, may really be capturing several concepts: understanding the information disclosed in the mortgage shopping and settlement process, familiarity with the mortgage shopping and settlement experiences, flexibility in timing, or efficiencies in search.

If refinancing is really a proxy for understanding the disclosed information, this suggests that information needs to be provided in more understandable formats so that less sophisticated or less experienced consumers can more fully utilize that information and benefit from it. While the APR was designed to help consumers choose among loans with various contract interest rates and points, most rate sheets do not make the rate-discount point trade-off clear. Consumers need help to do the basic calculations to compare different rate and point combinations.

If refinancing is a proxy for familiarity with the mortgage shopping and settlement experiences, then home buyer education programs need to provide meaningful simulations of the shopping and settlement processes so consumers can "jump start" their real mortgage shopping with some experiential learning.

If refinancing is a proxy for flexibility in timing related to mortgage shopping, then there may be little that educators or policy makers can do. Home purchase contracts often contain clauses that require the buyer put in a mortgage loan application within a few days or weeks in order to keep the contract valid. First-time buyers who need to gather information quickly to make decisions about mortgage applications could benefit from disclosures provided earlier in the shopping process, rather than waiting until three days after application. Educators can assist by helping first-time buyers to quickly gain access to a wide range of information; for example, helping consumers conduct Internet searches or tracking interest rates of local financial institutions may assist first-time buyers who are pressed for time.

Refinancing may be capturing some efficiencies in search, due to experience. Home buyer education programs can help first-time buyers learn efficient search techniques, such as using rate quotes printed in newspapers and searching the Internet.

As of this writing, policy makers, industry representatives, and legislators are in the process of reviewing the current disclosures schemes to determine whether they meet the criteria of providing meaningful content, how they can be simplified, and how the timing of disclosures can be improved to facilitate the shopping process. Teams of analysts from the Housing and Urban Development and the Federal Reserve Board have engaged in a set of discussions aimed at streamlining and improving the disclosures required under RESPA and TILA.[f]

Simultaneously, financial industry trade associations are developing and reviewing alternative disclosure formats. Consumer educators need to continue, and probably bolster, efforts to educate home buyers on how to interpret the information they receive in the shopping process. The home buying and mortgage shopping processes are complex, and while streamlined disclosures may reduce the volume of information consumers need to process, there is every possibility that the information will continue to be complex. Education efforts need to recognize the complexities and trade-offs inherent in mortgage products and help consumers make mortgage decisions based on sound information and a clear understanding of how to use that information to meet their needs.

Finally, for the research community, there is substantial work needed to refine the model developed for this project. Improved measures of search and payoffs to search can help better define issues that can be addressed by policy makers and educators.

Endnotes

a. *There has been a debate over the usefulness of the APR as a device for facilitating comparison-shopping. For example, Celec (1981) argued that the APR measure required under Regulation Z is not consistent with the mathematical procedures involved in calculating the interest charges on a loan, and more importantly that the APR underestimates the true cost of credit. Kinsey and McAlister (1981) also questioned whether the APR is the information which allows consumers to make informed choices. Many consumers fail to translate the percentage rate into the dollar cost of credit, and credit users are more interested in dollar costs than interest rates. The argument is that to the extent that consumers cannot translate APRs into reasonably correct dollar finance charges, the APR does not provide sufficient information for selecting a credit provider.*

b. *A "purchase money mortgage" is the terminology used for the original purchase of a home. Subsequent to a purchase money mortgage, consumers may refinance with either a first (sometimes called "primary") or second mortgage.*

c. *In the SCF, a married couple household is coded as having a male head.*

d. *This is -0.0274 evaluated at 5 (=0.137) as compared to -0.0274 evaluated at 1 (equals 0.027).*

e. *This is -158.66 evaluated at 5 (=793.30) as compared to -158.66 evaluated at 1 (158.66) and at 3 (equals 475.98).*

f. *See Joint Report to the Congress Concerning Reform to the Truth in Lending Act and the Real Estate Settlement Procedures Act,* *www.federalreserve.gov/boarddocs/RptCongress/default.htm#tila*

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