Draft

Does Mortgage Broker Regulation Matter? Implications for Wages, Employment, and Outcomes for Consumers*

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Abstract

Mortgage brokers are an emerging regulated occupation. Thirty years ago, there were almost no mortgage brokers, because individuals who wanted a loan to buy or refinance a house went to a bank or savings and loan. With deregulation of financial services and technology improvements that allowed for easy development and dissemination of credit scores, now more than 60 percent of all housing finance is initiated through a mortgage broker.

Thirty years ago, there was no state regulation of the firms in the industry or members of the occupation. Now all states except Alaska regulate the industry and 18 states regulate the occupation by law. We have gathered all the laws and major administrative legal rulings covering the industry and occupation over the past 15 years by date and type of statute and administrative procedures. We have also gathered information by state on foreclosures, prices of loans by state and relevant banking area where brokers operate. In addition, we have data on wages and employment of mortgage brokers and loan officers over a period that coincides with the information on regulatory statutes. Our preliminary exploration of the influence of regulation on mortgage broker markets finds that it had a small and usually insignificant impact on both labor market outcomes and on the quality of service provided to consumers in housing financial markets.

I. Introduction

Occupational licensing has been among the fastest-growing labor market institutions in the United States. At the state level, about 20 percent of the workforce was licensed in 2000, up from 4.5 percent in the early 1950s (Kleiner, 2006). Recent estimates from the Princeton Data Initiative Project using information gathered through the Gallup Inc. organization puts the percentage of workers requiring a license to work at all levels of government at 28 percent in 2006 (Kleiner and Krueger, forthcoming,).

The implications of licensing for productivity or quality are unclear. In contrast, numerous studies of licensing show that it is associated with driving up prices from 4 to 35 percent, depending on the type of commercial practice and location (Kleiner, 2006). Further, the overall wage impact of occupational licensing relative to unlicensed occupations in cross-section data is at least 10 to 12 percent, with some estimates as high as 17 percent (Kleiner, 2006: Kleiner and Krueger, forthcoming). For example, for dentists, tougher state level restrictions and more rigorous pass rates are associated with 15 percent higher wage rates than in states with few restrictions, but with no measurable increase in observable quality (Kleiner and Kudrle, 2000). However, the influence of occupational regulations differs widely based on methods, occupations, and toughness of restrictions.

Most of the research on the regulation of industries and occupations has emphasized barriers to entry, but relatively little empirical work has examined the quality of output or prices. Our study examines both barriers to entry and its influence in the labor market, but also focuses on why and how licensing statutes or other administrative procedures affect service outcomes. The study of mortgage brokers will examine the role of regulation on labor market outcomes

such as wages and employment, and consumer outcomes, such as foreclosures and prices, for an occupation that is experiencing rapid growth and regulation at the state level.

The Role of Mortgage Brokers in the Housing Market

The housing market is among the most important sectors of the U.S. economy. American home ownership is among the highest in developed economies and it increased from 65 percent in 1998 to almost 70 percent in 2006 (*Wall Street Journal*, March 13, 2007). During 2005, the housing sector accounted for 5 percent of the U.S. GDP, and 62 percent of total U.S. household wealth (https:/ /www.cnbsnet.com / , 2005). In 2006 there was a pause in the value of single family homes after a long period of growth in housing prices. One consequence was an increase in the number of foreclosures, especially on loans provided by subprime lenders to individuals who pay higher interest rate because they are made to riskier borrowers. In addition, AltA lenders, who are "borderline subprime lenders", have been receiving more attention due to their rising number of foreclosures and their use of adjustable rate mortgages.

During the current growth in the housing market and the demand for subprime loans, there has been a disproportionate growth in the market for labor market intermediaries in financial markets such as mortgage brokers. With deregulation of financial services (Financial Institutions Reform, Recovery, and Enforcement Act of 1989), and technology improvements that allowed for easy development and dissemination of credit scores, now more than 60 of all housing finance is initiated through a broker, up from virtually zero thirty years ago (Smith, Pafenberg, and Goren, 2006).

Another source of growth of the market for mortgage brokers has been the internet. The Internet has made possible a loan industry that is far more decentralized than in the 1980s. Because Internet-assisted credit reviews and loan origination require less manual labor to

assemble documentation and to process loans, further savings can be realized. A key ingredient is the independent mortgage loan broker (Gale, 2001). Most subprime lenders maintain a number of intermediaries who are not on the company payroll but instead, work on a commission basis. Brokers contact potential borrowers, meet with them, describe their loan options, and originate loan applications. Much of the broker's interactions with lenders is transacted over the Internet. As a result, brokers can submit a refinance application to a lender in a matter of hours. The lender or the broker then carries out a credit check via the Internet. One of the credit bureaus is contacted, the borrower's credit history is assembled and a credit score is computed. The lender then notifies the broker that the loan is denied or authorized, including the terms and conditions. For the broker's part, a commission is earned on each loan successfully placed. The broker therefore, acts as an Internet-enabled link between the borrower and the lender.

Using data from the Occupation Employment Survey and the Mortgage Bankers Association, National Delinquency Survey Figure 1 shows the growth of the subprime mortgage market as well as the growth of the number of mortgage brokers from 1998 to early 2006. Subprime mortgages have averaged about 20 percent of the overall mortgage market in 2005 and 2006 and accounted for $1.3 trillion dollars in loans outstanding in 2006 (Chomsisengphet and Pennington-Cross, 2006). As mortgage brokering has expanded, the regulation of the occupation and industry has become an important public policy issue at the state and federal level (Schumer, 2007). The application of a "suitability doctrine" (an established feature of securities law) or federal licensing standards is under active consideration, and several states' attorneys general are closely monitoring the industry and members of the occupation (Schumer, 2007). The suitability doctrine requires that the financial transaction be in the interest of the consumer.

In part, the method of compensation for individuals in the occupation has contributed to the public policies calling for further regulation of the occupation. For completing a mortgage loan origination the broker is paid a fee that averages over $2,000. The compensation of mortgage brokers is usually all commission. The form of this compensation is through two methods: cash payments directly from the borrower and cash payments from the lender. The lender makes a cash payment to the broker in exchange for an upwards adjustment of the interest rate on the loan. This payment can be thought of as negative "points" on a loan. Broker compensation may be all cash from the borrower, all points from the lender, or a mix of the two. The interest rate adjustment and associated "points" may be sufficient in some cases to cover all of the borrower's cash closing costs. Controversies have arisen over whether brokers' fees and related interest rate adjustments (called yield spreads) are optimal arrangements or symptoms of the information asymmetry which is part of consumer confusion over the complex mortgage terms by mortgage brokers. Mortgage brokers can earn commissions from both the borrower and the lender on the same transaction.

Our study documents the form and intensity of mortgage broker regulation and many of the differences over time and across U.S. states. It provides historical information available for further research. We next extend a model of occupational regulation to account for conditions under which members of the occupation have small variance in quality and tasks, and entry is easy. We show how under these conditions traditional occupational licensing has small effects. In the empirical section, we combine state regulations by year from 1996 to 2006, and a set of control variables to assess how mortgage broker regulation affects the labor market outcomes in the occupation, and the mortgage market across states and over time. The labor market analysis examines uses of panel data on the number and earnings of loan officers and mortgage brokers

by state and year. Consumer outcome measures to be assessed include foreclosure rates by race (i.e. from Home Mortgage Data Act (HMDA data) and the number of high priced loans, which indicate that consumers paid an excess amount for the loan. Our results show that the state regulation of mortgage brokers had small effects on either labor market outcomes or on the consequences for consumers. Further, we state our ongoing strategy to further probe these results.

II. *Occupational Regulation and the Labor Market*

Regulating entry through occupational and industry controls established by government is assumed to affect demand through entry and mobility and consequently impact quality (Benham, 1980). The expectation from economic theory is that licensing may create windfall gains or rents, and that these prospective gains in income provide an important impetus for licensure. The threat of loss of rents is a major reason why removal of licensure is so strongly resisted by members of a licensed occupation. Another benefit is the ability of licensing to provide some hedge against downside risks because of the occupation's ability to reduce competition differentially when conditions are bad (Wheelan,1998). Licensed occupations are able to limit supply in response to market conditions through changing licensing statutes, extending the required training program for entry, or reducing the numbers who pass an entrance exam (Cummings and Rankin,1999).

On the other hand, a major theoretical justification for licensing is that there are market failures due to asymmetric information on quality between producers and consumers that regulation can correct. Such failures can occur if it is more difficult for consumers than sellers to determine the quality of a service offered. Generally, licensed occupations claim that they will successfully cope with such undesirable market failures. Many of the occupations provide

training programs to their new and continuing members that highlight the important benefits to the public of licensing their occupation (Benham, 1980).

The structure of the market also may result in the demand for licensing being lower than optimum because of potential "free rider" problems that occur because consumers purchase professional services infrequently (Cox and Foster, 1990). Consequently, an individual consumer may incur high costs learning about a particular set of services, and determining which type of regulation is in their best interests. Moreover, the costs of taking action may be high since large costs are associated with informing and organizing a large group of consumers to take action. Many may not join to obtain the optimum amount of occupational regulation because they think that others may take group action. This is the case if the purchase price of the service is low. As a result, consumers would rarely demand either occupational licensure or higher forms of regulation. The basic models of occupational regulation also may apply to the mortgage broker industry, since they imply a transaction that is both complicated and usually involves large sums of money for the household.

Background on the Mortgage Loan Industry

A little more than two decades ago, the mortgage industry was made up almost entirely of large integrated firms (banks and savings and loans), which managed the entire process of bringing borrowers and investors together. They located investors and borrowers, and recommended the appropriate type of loan, investigated and analyzed borrowers' credit worthiness and the value of their collateral, closed the loans, serviced the loans, and made payments to the investors (Jacobides 2005).

With deregulation and technological change in the home loan industry, the lending process was vertically integrated so that mortgage brokers found borrowers and worked with

them to apply for an appropriate loan; mortgage banks evaluated applications and funded them, and sometimes serviced loans. They also bundled them, and sold them as securities (Jacobides 2005). Brokers also sometimes fund loans initially and resell them.

Several factors, including the rise of mortgage brokers, have lead to changes in the mortgage industry. With the deregulation of the industry, there was a large proliferation in mortgage products available to sub prime markets and the increased emphasis on volume worked together to penetrate higher risk markets that had previously been ignored by the industry. Between 1993 and 2001, sub prime lenders' share of the home purchase lending market grew from 1 percent to 6 percent. In lower-income households, the sub prime share was 10 percent. Furthermore, in lower-income households sub prime refinance loans made up twenty-seven percent of home refinance loans; a growth of more than 400 percent during this same period.

Home purchase loans to low-income borrowers in low-income communities increased by 80.4 percent between 1993 and 2001, compared with a significantly lower forty-eight percent growth in overall home purchase lending. The sub prime market was responsible for 44.7 percent of originations in 2002, as compared with 29.5 percent in the prime market (Joint Center for Housing Studies of Harvard University 2004).

Issues related to brokers' incentives and integrity have repeatedly surfaced in recent policy discussions, partly because of rising concerns about mortgage fraud. As shown in Figure 2, reports of mortgage fraud have escalated. The Figure shows the substantial growth in potential mortgage loan fraud as reported to the U.S. Treasury's Suspicious Activity Reporting (SARS) between 1997 and 2006 (http://www.fincen.gov/). The Treasury requires any federal bank to report any suspicious activity regarding potential mortgage fraud. Some of the growth in the amount of suspicious activity may be due to better and more through reporting. Nevertheless,

much of the growth is a result of the boom in housing prices and the growth of the subprime market where there were opportunities for suspicious behavior by mortgage brokers and their clients including false documents on employment and wealth given on behalf of the individuals applying for a loan. In addition, states such as Minnesota and California that are among the more regulated states, both assigned about one enforcement official per 5.5 million residents in their states to investigate violations of licensed mortgage broker offices and regulated brokers.

An Overview of Occupational Regulation and Prices

Most estimates of the impacts of occupational licensing policies on price of the service show positive impacts (Cox and Foster, 1990). These practices range from restrictions on interstate mobility by limiting reciprocity to restrictions on advertising and other commercial practices (Shepard, 1978: Feldman and Begun, 1978: Bond et. al., 1980). The rationale for these impacts on raising prices could be that government regulations reduce uncertainty or the likelihood of poor service or "lemons" in the market (Akerloff, 1970). Consequently, consumers perceive the service to be of higher quality and demand more of the service driving up the price. On the other hand, regulations could be a form of rent-capture by the incumbent practitioners by limiting entry or restricting price information in the market for the service (Friedman, 1962,). By virtue of the government granting a monopoly in the market for the service, the long- term impact could be lower quality service and higher prices. From the empirical studies of licensing, it is difficult to tell which of these effects dominates in the determination of the rise of prices for licensed services. However, a consequence for regulated occupations with high incomes is the ability to raise prices through regulation. The monopoly power granted by the state may reallocate income from lower income customers to higher income practitioners.

In the case of regulation by industry, there are also implications for economic outcomes. For example, in France, local merchants must approve the establishment of a new business, which is likely to eliminate competition in licensed industries and occupations such as attorneys, accountants, and architects on a geographic or location-specific basis (Bertrand and Kramarz, 2001). The estimates suggest that this regulatory practice reduces overall job growth by 10 percent. In the application of regulation to mortgage brokers, economic theory suggests that all else equal, increases in costs to the firm will be passed along to consumers. These costs will show up in increased fees charged by the firm to consumers. Spread out over multiple consumers, though, this price increase will be minimal and consumers may be willing to pay the premium if there were some quality benefit derived from licensing. The greater costs to the consumer come from the decline in mortgage firms. The first is the problem of a reduction in supply. Without options for the consumer, a firm may have an incentive to offer a similar or inferior product at a higher cost, and thus lead to a welfare loss to the consumer. In addition, there is a problem of choice. With a predicted reduction in numbers, not only would consumers not be able to choose their optimal mortgage broker, some might not be able to have access to a mortgage broker at all. Since mortgage brokers may give consumers a higher quality product at a lower price with greater choices, and will incur a loss to those who are not able to obtain access to loans, either in increased costs or the inability to acquire financing to buy a home.

III. Theory of Occupational Regulation

Much of the theory of occupational regulation dates to Akerloff's theory of signaling and the role that potential "lemons" in the market may have on honest providers of the service (Akerloff, 1970). Leland formalizes and extends the Akerloff model to include the role of minimum standards and the conditions (Leland, 1979). Licensing may provide greater certainty about the

quality of a service and raise the average quality of the service.

In occupations, such as mortgage brokers, where the cost of entry into the profession shows little relationship to variation in quality, unlike doctors and lawyers, where variation is larger for the service, licensing may have fewer effects. Broker licensing has short training periods for entry, but honesty and reputation matters for the quality of the service. The cost of losing a license is low, since the main attribute is sales and processing the loan to both the consumer of the loan and the lender. Similar occupations that the broker could enter would include most other types of sales positions that are not regulated, but where income would be similar and additional training costs would be minimal. In contrast, physicians would lose significant income and would have fewer similarly lucrative occupational alternatives (Kugler and Sauer, 2005).

For consumers, the search for a loan and the associated learning costs of obtaining a loan are high and transactions infrequent. The final transactions usually include detailed legal jargon and complex finance concepts. Learning the real value of the loan requires consumers to investment in learning about terms that they will only use infrequently. Therefore, the mortgage broker serves as an intermediary to service both the borrower and the lender.

The model developed by Shapiro for licensing involves a minimum constraint on the level of training within a one period model (Shapiro, 1986). Formally, licensing is a requirement that all sellers obtain some minimum level of human capital, K, which is called the licensing standard. Then Cq(K) is the minimum total cost of supplying services of quality q if the licensing standard is K[1].

[1] The basic Shapiro model assumes that quality improves through education which is required by licensing K : Licensing standard human capital K_L : Low quality service human capital

K_H : High quality service human capital $K_L < K_H$, where $C_q(K) = \frac{1}{T}\min_k[k + c_q(k)]$ s.t. $k \geqq K$, if the standard is low.

Given the characteristics of the mortgage broker licenses (MBL), such as a low licensing standard (K), marginally distinguishable K_L and K_H, and significant consumer risk related to quality (i.e. honesty), within the Shapiro model MBL would not be meaningful. Therefore a low licensing standard may imply that the licensing is not binding ($K < K_L$ and K_H). Moreover, even if the licensing is binding, because there are reputation problems, the MBL is not effective. Finally, since the difference of good human capital (K_H) and bad human capital (K_L) is not easy to distinguish, then licensing is not an attractive option. Consequently, licensing is unlikely to be attractive when K_L and K_H are close together.

Regulation of Occupations and the Labor Market

Would the standard assumptions of the role or occupational regulation apply to the regulation of mortgage brokers? Specifically, licensing is assumed to restrict entry, which affects the earnings and the supply of individuals in these occupations. Similar to the variation of the impact of unionism on relative wages across occupations and industries, there also are expected differences in the impact of licensing on earnings largely based on the characteristics of the occupation (Lewis, 1986).

The major types of institutional licensing factors that often influence the earnings of licensed occupations are statutory and administrative variables. Statutory factors such as general and specific levels of education that are required to become licensed tend to vary by state. Furthermore, states can vary in the stringency with which they each set the requirements for practicing in an occupation.

For mortgage brokers, there are large variations in the types of statutes that have been passed by the states. For example, Alaska has no explicit statutes, but Ohio regulates all the workers who have to process a loan. Nevertheless, becoming a mortgage broker, from either the

firm or the worker perspective, is much easier and has fewer constraints than other financial service occupations.

Indexing the Statutory Provisions

To quantify the statutory factors that impact licensing, a composite index is used to obtain a quantitative value of the relative restrictiveness of each state's licensing provisions. Table 1 panel a shows the general and specific education and bonding requirements for statutory provisions that were gathered for owners of a mortgage broker establishment, and panel b gives the provisions for regulating brokers. Since many owners are sole proprietors and many brokers work independently these are effectively requirements for entering the occupation for many broker/owners. The indices chosen were a summated rating scale and a index of the state statutes. Using the summated rating approach adds up the values of each of the statutory requirements for licensure to form one measure of the restrictiveness of entry into the occupation. An alternative latent variable measure is the Rasch-type model that places each of the variables within a logical structure. The empirical measure of the Rasch model we use is known as a partial credit model, which is a nonlinear model that assigns weights that are consistent with an implicit structure to the regulatory system. This approach assumes that the distance between parameters is equal and that the categories are equal integers. The development of the Rasch scale uses maximum likelihood estimation procedures to calculate a unique index for each state. Although not all of the factors that might go into a fully specified structural regulation variable are identified, we can capture the major provisions which likely impact regulation for the persons in the firm and occupational regulation using different weighting schemes and both linear (summated rating scale) and nonlinear measures (measures) of the system.

The anatomy of the regulatory system for brokers is consistent, with no variables being negatively correlated and significant. By examining the correlation matrix, the results are positively correlated and significant within the regulatory system. Use of individual variables on outcomes in our statistical models produced similar results[2].

In Table 2, we show the top and bottom five states ranked by their restrictiveness on mortgage broker licensing. Florida has the largest number of statutory provisions regulating mortgage brokers. The five states with the least restrictive statutes in 2004, such as Alaska and Wyoming, are less populous and more politically conservative. Texas and Montana had the greatest increase in the regulation of mortgage brokers during the period 1999 to 2004. In general, the larger industrial states were more likely to pass regulatory provisions on mortgage brokers.

Figure 3 shows the growth of regulation over time from 1996 to 2006. The mean value of the summated rating value for the states was 3.2 in 1996 and it increased to almost 8 in 2005. As the membership in the occupation grew, more states began regulating the members in the occupation. This may be a consequence of members in the occupation seeking regulation, and the public's concern about growth of foreclosures and the increase in the prices of loans associated with the "spread" that brokers were able to claim as part of the loan process.

IV. Estimates from the Model

Table 3 shows the means and standard deviations for both the labor market and service market with the measure of the summated rating scale. The basic data show the growth in occupational regulation and in the number of loan officers and brokers in the OES. Initially, the

[2] We estimated simple correlations among the individual items in our index. Almost all were positively correlated, and many were statistically significant. Among the negatively correlated ones, none were statistically significant. Our estimates using the individual items that comprise our index were similar in statistical significance and magnitude.

multivariate analysis will focus on the potential restriction of supply and how it is impacted by regulation. The approach we use is to estimate the impact of occupational regulation on the hourly wages of loan officers and employment. Next, we examine both the quality and monopoly impacts of regulation for mortgage brokers. In order to examine the impact of licensing of firms and workers on the quality impacts of regulation and to the extent regulation restricts competition, we specify several equations for each set of outcomes[3]. These estimates show the impact of regulation on the quality of services received by consumers, and we estimate models of regulation on the level of foreclosures on homes, and the prices of those loans.

Wages and Employment of Brokers

One potential influence of regulation is on the restriction of the number of practitioners, and that restriction may drive up wages. Since a high percentage of compensation of loan officers and mortgage brokers is commission-based with many sole proprietors, restricting entry would have direct effects. In order to examine this relationship, we estimate the impact of the toughness of state regulations on the hourly wages and employment using state level data in the Occupation and Employment Survey conducted by the Bureau of Labor Statistics. The Occupational Employment Statistics (OES) program produces employment and wage estimates for over 800 occupations. For loan officers and brokers the data are available from 1999 to the present by state on a biannual basis. These data from the OES includes both Loan Officers and Brokers where the licensing laws apply, and the state OES estimates are highly correlated (r=.81) with the National Mortgage Broker Association membership by state.

Table 4 presents our basic state level results from 1999 to 2004. In panel A of the Table

[3] As an additional test of the robustness of our results, we specified and estimated each individual component of the measure of occupational regulation for our equations for wages, employment and foreclosures, and found similar results to those specified in Tables 4 through 6. The results are available from the authors.

we show the relationship between lag of regulation and the logarithm of hourly wage levels[4]. In panel B we specify the same model but use the Rasch measure of regulation to test for the robustness of our estimates. When there are no covariates, the regulation variable is significant and positive, but the magnitude of the relationships suggests slightly more than a one-percent increase in hourly wages for a one unit increase in the summated ratings index or a change in one statutory provision. For logarithm of hourly wages, there is no statistically significant impact of the regulatory variables on either the level or changes in wages when state economic factors are accounted for in the estimates. The lag economic factors tend to dominate the reduced form wage equation with state income and homeownership significant based on the fixed effects or random effects specification. Consistent with the theory, given the weak statutory provisions that currently exist for mortgage brokers at this stage of the development of the occupation, and the lax enforcement of the statutes, there does not seem to be much effect of regulation on wages.

In Table 5 we show the relationship between regulation and state level employment from 1999 to 2004[5]. Panel a gives the estimates using the summated rating measure of regulation, and panel b specifies a similar model, but uses the Rasch measure of regulation to probe whether a nonlinear form of the statutes that has an implicit structure for the measure, would matter for this occupation. Similar to the wage estimates in Table 4, the regulation variables are statistically significant when no other covariates are included and positive. The passage of tougher regulations may shift out the demand for broker services, since they may be perceived to be more honest. Another plausible interpretation is that brokers may enter the occupation before the standards become fully effective and make entry into the occupation more difficult. This was

[4] Estimates for changes in regulation and changes in wages also showed no statistically significant impact. In none of the estimates were the regulation variables significant in any of our results when we used state level controls. We also estimated nonlinear models of the regulation variables and they were also not significant. The estimates are available from the authors.

[5] We also examined changes in employment over the period with both changes and levels of regulation, and found no significant relationships. The estimates are available from the authors.

the case for the passage of tougher regulations in accounting (Cummings and Rankin, 1999). The results with additional covariates suggest that regulation was not statistically significant. Again the state economic factors dominate the growth of broker and loan officer employment levels and growth. As the occupation matures we anticipate that states where mortgage brokers are growing can have sufficient political clout to implement more rigorous statutes to possibly restrict entry, but at this state of occupational evolution there is little influence of regulation on employment levels or growth[6].

Occupational Regulation and Foreclosures

If state regulation matters, it would impact brokers and lenders where the regulations really bite -- in the subprime market. Tables 6 through 8 show the impacts of state regulation on measures of mortgage industry lending quality. Since regulation is intended to reduce adverse outcomes for home buyers, we focus on the impact of regulation on the foreclosures of owner-occupied residences using data from the Mortgage Bankers Association, National Delinquency Survey, 1979- 2005. In Table 6, we estimate an ordinary least squares model of the impact of the lag summated and Rasch measures of mortgage brokers statutes on the foreclosure rate in a state for the period March 1998 through March 2006. Again in panel a, we show estimates using the summated rating variable and in panel b we give the Rasch measure[7]. The results are consistent in showing no significant effect of regulation. The imprecisely estimated relationship for the policy variable comes in spite of several of the state-level economic variables being precisely estimated. For example, income and home ownership are negatively related to foreclosure rates in some of the random and fixed effects specifications. On the other hand,

[6] We also estimated a quasi- difference-in-difference approach where we examined wage and employment changes in states that adopted a regulation law or substantially increased the restrictiveness of the law (e.g. a change of three using our summated rating scale). The impact was not statistically significant.

7 The potential exists for an endogenous relationship between foreclosures and overall foreclosures. We found that forecloses in year t-1 was related to the passage or increase in tougher regulations. We plan to probe this relationship in our further work.

although the unemployment rate is negatively related to foreclosures, the counterintuitive result may be the positive relationship of the variable with income. Moreover, subprime loans are usually given in areas or states where the unemployment rate is high.[8]

To the extent that current state regulations matter, they could be related to the enforcement of licensing standards for brokers. In most states, the regulations are poorly enforced, and the regulatory agencies are sparsely staffed with monitors of the statutes for the occupation and industry. We plan to probe the enforcement aspect of the statutes in extending the current model.

High Priced Mortgages

Since brokers salaries are determined by commission and the greater the "yield spread" on a loan the larger the commission for the broker, there are incentives for brokers to sell high price loans to consumers. These high priced loans are more likely to occur in the subprime market where consumers are less likely to be sophisticated about loan pricing and other options available to them. The popularized term for these high priced loans is " subprime lending." The Federal Reserve tracks these high priced loans through the Home Mortgage Disclosure Act (HMDA) data collection which records home mortgage applications in the U.S. for first-lien mortgages that we focus on in our analysis. A high priced loan is defined as one whose annual percentage rate (APR) is 3 percentage points above the contemporaneous 30-year Treasury bond yield. APR is defined as an internal rate of return, taking into account any initial rates and setting any index variables in the contract at current market values, assuming they remain constant for 30 years (or the maturity of the loan). If regulation is effective, high priced loans may be reduced when other economic factors are taken into account, to the extent that some high priced loans reflect a broker taking advantage of the yield spread between borrowers and lenders.

[8] We also estimated the impact of the state unemployment rate on all mortgage foreclosures, and found a hypothesized positive relationship.

Not all mortgages involve a mortgage broker, and the HMDA data do not indicate whether a broker handled the application. We use two strategies to proxy for this missing information. For federally regulated banks and thrifts, we use the borrowers' location (available at the census tract level from the HMDA data) to condition on whether the loan was made outside of the lender's Community Reinvestment Act (CRA) assessment area. Under the CRA, federally regulated banks and thrifts must declare an assessment area where the degree of services they provide will be evaluated for compliance with the CRA. Typically these areas include the lender's principal retail offices, while the lender generally has fewer offices outside its assessment area. Federally regulated lenders are presumed to rely on their retail offices to originate the majority of their mortgages within their assessment areas but to rely much more on brokers to reach mortgage customers outside their assessment areas (Avery, Brevoort, and Canner 2006). Accordingly, for federally regulated banks and thrifts, we focus on mortgages originated outside of each reporting lender's CRA assessment area. For mortgage banks not subject to the CRA, we rely on reports from industry publications and industry experts to identify a set of lenders known to rely almost exclusively on mortgage brokers for loan applications. In Table 7 we estimate probit equations for a random sample of 50 percent of all home purchase mortgages made by CRA –regulated HMDA reports for 2005, the last year we could obtain data[9]. Our results are presented in Table 7 for Whites and African Americans. In spite of having a large sample size of more than 440,000 transactions we find that the cluster adjusted standard error measure of regulation using the summated rating scale was not precisely estimated in either the white or African American sample when controls for the financial characteristics of individual or the neighborhood where the home was purchased.

[9] We also examined HMDA loans for refinancing and home improvement loans, using the same specified model, and found consistent results.

In order to reduce heterogeneity that examining many different subprime lenders may introduce, we examine a large broker dependent subprime lender in 2005 with operations in all states called "Option One Inc." [10] Using all home purchase mortgages originated by Option One Inc. for both whites and African Americans our probit estimates using the cluster adjustment find that the regulations were not statistically significant.[11] Our economic variables for individual credit and neighborhood characteristics were generally as hypothesized. Even when controlling for firm characteristics state regulations during 2005 had imprecisely estimated influences on high priced loans.

In order to further probe our results, we randomly assigned values zero through eighteen to each loan in place of our index and found statistical significance for the state statutory placebo variables at the 10 percent level in three of ten estimates with the same controls as our other results. We plan to develop additional bootstrapping methods to further probe the results of these estimates. In addition we expect to analyze changes in the laws on high priced loans using state boundaries as instrumental variables and further developing a panel for 2006. We also hope to explore if there is "supermodularity" such that licensing impacts labor and consumer markets only after reaching certain thresholds (Topkis, 1998).

V. Conclusions

Our preliminary exploration of the influence of regulation on mortgage broker markets finds that it has a small and usually insignificant impact on both labor market outcomes and on the quality of service provided to consumers in housing financial markets. One implication of our results is that state policies as currently constructed may be too weak to matter. Current

10For "Option One" we obtained similar results for home improvement and home refinance mortgages. In addition, we examined five other large national subprime lenders that do business in all 50 states with HMDA variable controls and found similar results.

11 We also used regulations in 2004 on high priced mortgages with the same controls as in Table 7 and 8 and found similarly insignificant results.

education requirements are modest and enforcement lax. The underlying economic factors seem to dominate in both the labor market for wages and employment, and basic income and neighborhood conditions matter for foreclosures and high priced loans. It is unclear whether federal licensing as has been proposed in the U.S. Senate would improve the quality of services to consumers based on our analysis.

We plan to examine this issue in more detail using updated statutory data and enforcement characteristics. In addition we are implementing instrumental variable techniques of state boundaries on the prices of mortgages. We are also gathering data on the state enforcement of the licensing statutes to examine if this matters more than the passage of a statute or making the current ones tougher.

We nevertheless speculate that our finding is a result of the early stages of regulation of the industry and occupation. The result is consistent with the findings of Law and Kim (2006) that showed that during the early periods of occupational regulation in the United States that the monopoly impacts were modest. Similar to other occupations that have evolved with near universal licensing in the states, mortgage brokers could also benefit through higher wages and the ability to reduce entry. We anticipate that further analysis of the issue with updated statutes, statistical techniques, and better measures of monitoring may help policy makers assess the quality and monopoly impacts of the state regulations, or whether federal regulation may provide an optimal solution for the emerging occupation of mortgage brokers.

Figure 1: Growth of Subprime Loans and Loan Officers/Brokers

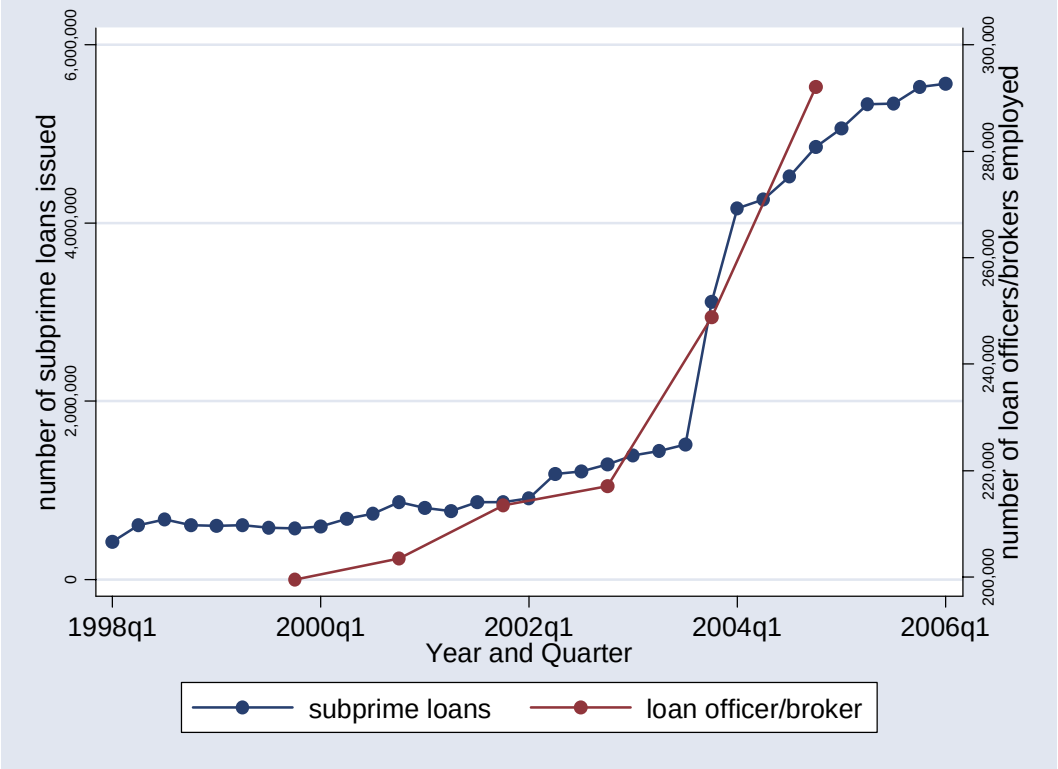

Figure 2: Annual Suspicious Activity Reporting (SARs) Data from the U.S. Department of the Treasury

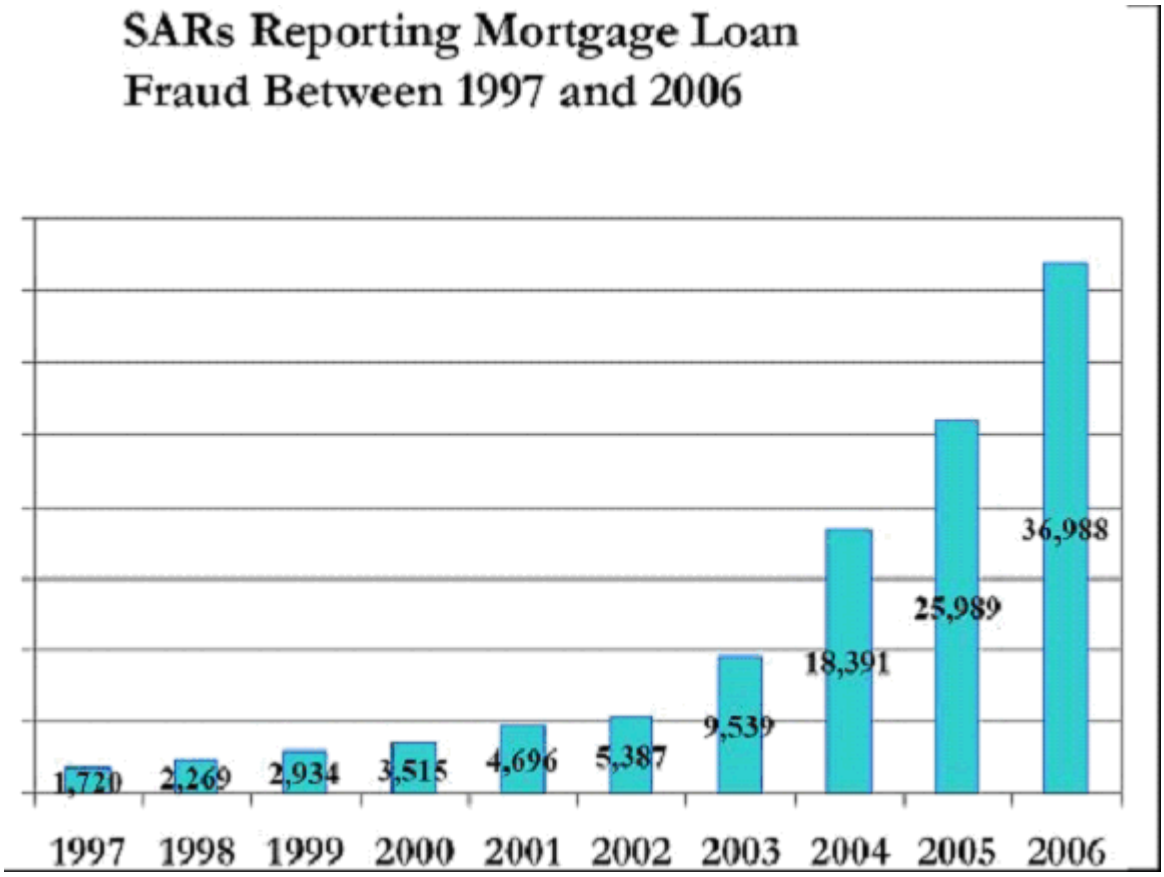

Figure 3 Growth of Occupational Regulation by State over time Using the Summated Rating Scale

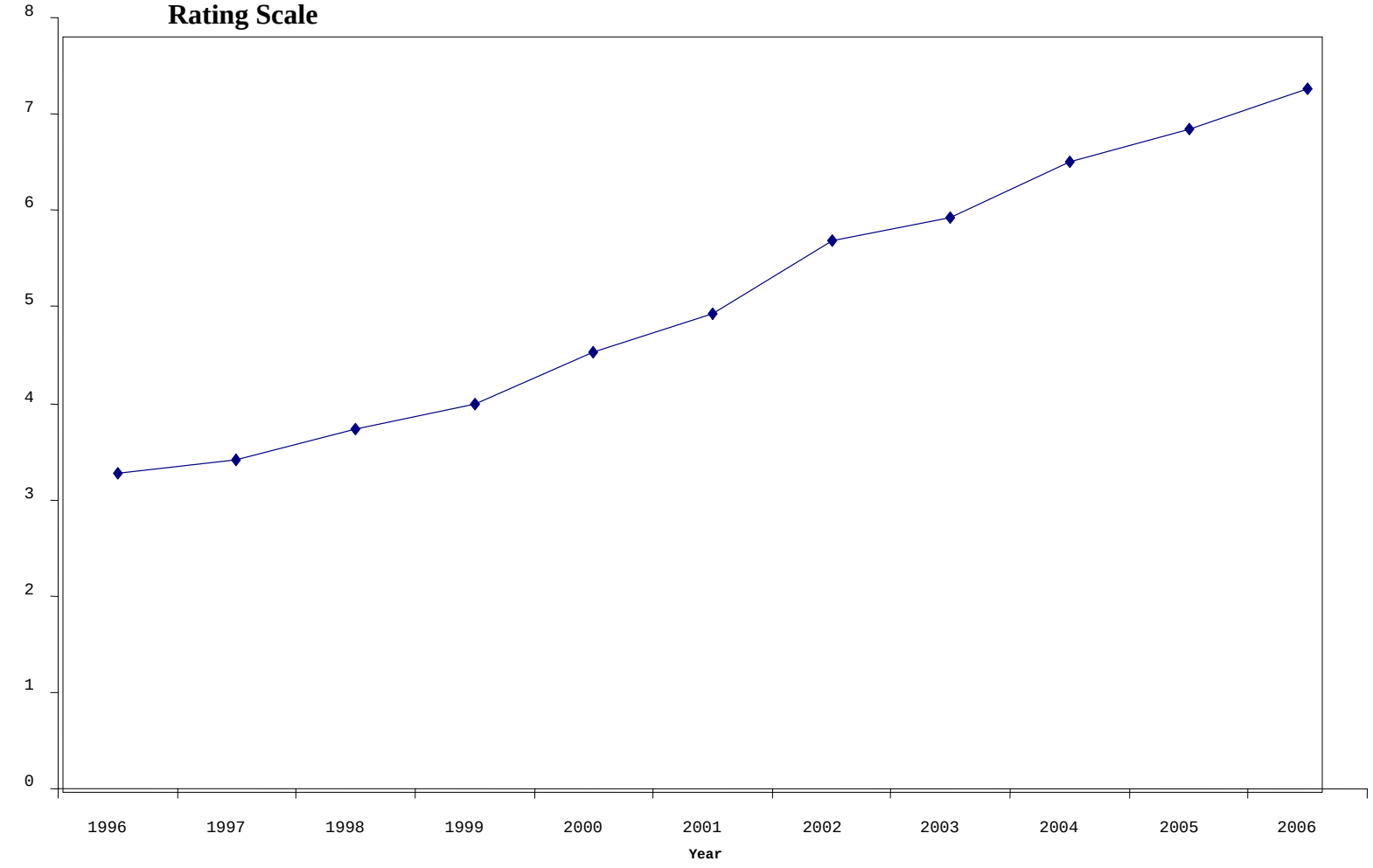

Table 1: Statutory Provisions for Regulating Mortgage Brokers: 1996-2006

Panel A: Provisions for Owners

SPECIFIC EXPERIENCE REQUIRED FOR MANAGING PRINCIPAL STATUS

EXAMINATION REQUIRED FOR MANAGING PRINCIPAL STATUS

CONTINUING EDUCATION FOR MANAGING PRINCIPAL

BOND REQUIREMENT FOR LICENSING/REGISTRATION

IN-STATE OFFICE REQUIRED FOR LICENSING/REGISTRATION

REGULATION OF BRANCH MANAGERS

SPECIFIC EDUCATION REQUIREMENT FOR BRANCH MANAGER STATUS

SPECIFIC EXPERIENCE REQUIREMENT FOR BRANCH MANAGER STATUS

EXAMINATION REQUIRED FOR BRANCH MANAGER STATUS

CONTINUING EDUCATION FOR BRANCH MANAGER

EMPLOYEES REGULATED

SPECIFIC EDUCATION REQUIREMENT FOR LICENSING/REGISTERING EMPLOYEE

Panel B: Provisions for Brokers

LICENSING/REGISTRATION OF ENTITIES, SOLE PROPRIETORS, AND INDIVIDUALS ACTING AS MORTGAGE BROKERS

EXEMPTIONS FROM LICENSING/REGISTRATION

SPECIFIC EDUCATION REQUIREMENT FOR LICENSING/REGISTRATION

SPECIFIC EXPERIENCE REQUIREMENT FOR LICENSING/REGISTRATION

EXAMINATION REQUIRED TO OBTAIN LICENSE/REGISTRATION

EXAMINATION REQUIRED TO OBTAIN LICENSE/REGISTRATION

NET WORTH REQUIREMENT FOR LICENSING/REGISTRATION

BOND REQUIREMENT FOR LICENSING/REGISTRATION

REGULATION OF MANAGING PRINCIPALS

SPECIFIC EDUCATION REQUIRED FOR MANAGING PRINCIPAL STATUS

SPECIFIC EXPERIENCE REQUIREMENT FOR LICENSING/REGISTERING EMPLOYEE

EXAMINATION REQUIRED FOR LICENSING/REGISTERING EMPLOYEE

CONTINUING EDUCATION FOR EMPLOYEE

Table 2: Rankings of Top and Bottom Five Regulated States and Changes Using the Summated Rating Scheme by State

Top 5 regulated States 2004			
Florida	16		
Montana	14		
New Jersey	13		
Ohio	12		
Texas	12		
North Carolina	12		
Nevada	12		
Bottom 5 regulated States 2004			
Colorado	0		
Wyoming	0		
Alaska	0		
South Dakota	1		
Maine	2		
Top 5 States by change in regulation 1999-2004			
Montana	14		
Texas	12		
North Carolina	11		
Oklahoma	8		
Connecticut	7		
Nevada	7		
Utah	7		

Table 3: Summary Statistics for the Labor, Service Market, and Legal Provisions

State-Level Variables	**1999** Mean (S.D.)	**2004** Mean (S.D.)
Mean Hourly Wage (Loan Officers/Brokers)	$21.00 (2.74)	$27.42 (5.28)
Employment (Loan Officers/Brokers)	39, 208 (36,986)	57,269 (57,513)
Total Number of Loans	537,109.57 (679,999.52)	736,032.00 (880,192.82)
Loans in Foreclosure	6,214.27 (8,883.82)	8,580.52 (9,444.91)
State Population	5,471,375.84 (6,101,905.36)	5,757,977.29 (6,498,035.30)
Median Household Income	$58,574.57 (7,641.51)	$63,504.76 (10,326.91)
Licensing Index **(1996)**	2.33 (1.96)	
Licensing Index (2005)	6.84 (3.68)	

Table 4: Estimates of the Impact of Regulation on State Hourly Earnings of Lenders and Brokers Using Summated Rating and Rasch Indices and Random Effects (RE) and Fixed Effects (FE) Estimates, N=306, 1999-2004

Panel A

Dependent variable: log of (real) mean hourly wage				
Variable	RE	RE	FE	FE
lag of summated index	0.013***	0.005*	0.014***	-0.002
	(0.0028)	(0.003)	(0.003)	(0.003)
lag of log state population		-0.086**		2.289***
		(0.038)		(0.281)
lag of log median household income		0.490***		0.074
		(0.082)		(0.096)
lag of state home ownership in %		-0.003		0.014***
		(0.002)		(0.004)
lag log total loans serviced in state		0.098***		-0.011
		(0.035)		(0.036)
_constant	3.159***	-1.747*	3.153***	-32.830***
	(0.025)	(0.921)	(0.015)	(3.852)
R^2	.02	.43	.006	.003

Note:
***indicates significance at 1% level
**indicates significance at 5% level
*indicates significance at 10% level

Panel B

Dependent variable: log of mortgage broker employment				
Variable	RE	RE	FE	FE
lag of Rasch index	0.010***	0.003**	0.009***	0.001
	(0.002)	(0.001)	(0.002)	(0.002)
lag of log state population		0.615***		3.698***
		(0.081)		(0.607)
lag of log median household income		0.465***		0.576***
		(0.172)		(0.212)
lag of state home ownership in %		0.009*		-0.013
		(0.005)		(0.008)
lag log total loans serviced in state		0.265***		0.142*
		(0.071)		(0.078)
_constant	7.912***	-10.187***	7.925***	-54.694***
	(0.127)	(1.941)	(0.015)	(8.301)
R^2	.02	.43	.19	.90

Note:
***indicates significance at 1% level
**indicates significance at 5% level
*indicates significance at 10% level

Table 5: Estimates of the Impact of Regulation on State Employment of Brokers Using Summated Rating and Rasch Indices and Random Effects (RE) and Fixed Effects (FE) Estimates

Panel a

Dependent variable: log of mortgage broker employment				
Variable	RE	RE	FE	FE
lag of summated index	0.039***	0.014**	0.037***	0.007
	(0.006)	(0.006)	(0.006)	(0.006)
lag of log state population		0.627***		3.619***
		(0.081)		(0.617)
lag of log median household income		0.464***		0.582***
		(0.171)		(0.212)
lag of state home ownership in %		0.008*		-0.013
		(0.005)		(0.008)
lag log total loans serviced in state		0.249***		0.138*
		(0.072)		(0.078)
_cons	7.789***	-10.181***	7.810***	-53.532***
	(0.127)	(1.933)	(0.031)	(8.445)
R2	.19	.91	.16	.90
Note:				
***indicates significance at 1% level				
**indicates significance at 5% level				
*indicates significance at 10% level				

Panel b

Dependent variable: log of mortgage broker employment				
Variable	RE	RE	FE	FE
lag of Rasch index	0.010***	0.003**	0.009***	0.001
	(0.002)	(0.001)	(0.002)	(0.002)
lag of log state population		0.615***		3.698***
		(0.081)		(0.607)
lag of log median household income		0.465***		0.576***
		(0.172)		(0.212)
lag of state home ownership in %		0.009*		-0.013
		(0.005)		(0.008)
lag log total loans serviced in state		0.265***		0.142*
		(0.071)		(0.078)
_constant	7.912***	-10.187***	7.925***	-54.694***
	(0.127)	(1.941)	(0.015)	(8.301)
R^2	.02	.43	.16	.90
Note:				
***indicates significance at 1% level				
**indicates significance at 5% level				
*indicates significance at 10% level				

Table 6: Influence of Mortgage Broker Regulation on Percentage of Subprime Loans in Foreclosure. Using Summated Rating and Raush Measures, N=357, March 1998-March 2006.
Panel a

Percentage of Subprime Loans in Foreclosure:(summated)

	Random Effects	**Fixed Effects**
lag summated index	0.004	-0.018
	(0.065)	(0.079)
lag of state home ownership in %	-0.048	**-0.29
	(0.044)	(0.11)
lag of state unemployment rate	**-0.64	**-0.69
	(0.163)	(0.19)
lag of state population	2.18E-08	-2.84E-07
	(5.14E-08)	(6.89E-07)
lag of median household income	**-0.0001	-0.00009
	(0.00004)	(0.00007)
_constant	**18.38	**35.12
	(3.45)	(7.04)
R^2	.04	.00

Note: standard errors in parentheses;
**** indicates significance at 5% level.**

Panel b

Percentage of Subprime Loans in Foreclosure: (Rasch)

	Random Effects	**Fixed Effects**
lag of Rasch index	0.012	0.002
	(0.017)	(0.021)
lag of state home ownership in %	-0.048	**-0.29
	(0.043)	(0.11)
lag of state unemployment rate	**-0.66	**-0.708
	(0.16)	(0.188)
lag of state population	1.54E-08	-3.28E-07
	(4.98E-08)	(6.87E-07)
lag of median household income	**-0.0001	-0.00009
	(0.00004)	(0.00007)
_constant	**18.47	**35.64
	(3.42)	(7.051)
R^2	.04	.00

Note: standard errors in parentheses;
**** indicates significance at 5% level.**

Table 7 Probit High Price Mortgage Estimates by Race Using HMDA Data Outside of the Community Redevelopment Area (CRA) for 2005) N= 440,300

WHITE HOME PURCHASE OUTSIDE CRA ASSESSMENT AREA

spread01	dF/dx
Regulation index	0.0012591
	(0.0015058)
income	-0.0000785**
	(0.0000396)
loanamt	-0.0003085**
	(0.0000384)
appsex	0.0260401**
	(0.002016)
unemrt	0.0017268**
	(0.0005782)
medage	-0.0020902
	(0.0011114)
medinc	-0.000000839
	(0.000000526)

Note: ** indicates significance at the 5% level

Probit included additional controls for: loan type, loan to income, credit score, ethnicity of applicant, over65, median age, percent minority, and MSA family income

AFRICAN-AMERICAN HOME PURCHASE OUTSIDE CRA ASSESSMENT AREA

spread01	dF/dx
Regulation index	0.0012635
	(0.0032559)
income	-0.0002291**
	(0.0000773)
loanamt	-0.0004934**
	(0.0001213)
appsex	0.0142477**
	(0.0055837)
unemrt	0.000362
	(0.0011412)
medage	-0.0038876**
	(0.0017932)
medinc	0.00000175
	(0.00000102)

Note: ** indicates significance at the 5% level
Probit included additional controls for: loan type, loan to income, credit score, ethnicity of applicant, over65, median age, percent minority, MSA family income

Table 8: Probit High Price Mortgage Estimates by Race Using HMDA Data for "Option One" a National Subprime Lender for 2005, N= 61,891*

WHITE HOME PURCHASE option one

spread01	dF/dx
Regulation index	0.0023367
	(0.0048321)
income	-0.00013
	(0.0000695)
loanamt	-0.00000598
	(0.0000673)
appsex	0.0066027
	(0.0052857)
unemrt	-0.0029341
	(0.0026648)
medage	-0.0006851
	(0.0018805)
medinc	-0.00000364**
	(0.000000723)

Note: ** indicates significance at the 5% level
Probit included additional controls for: loan type, loan to income, credit score, ethnicity of applicant, over65, median age, percent minority, MSA family income

AFRICAN-AMERICAN HOME PURCHASE "OPTION ONE"

spread01	dF/dx
Regulation index	-0.0044708
	(0.0035817)
income	-0.0004225**
	(0.0001745)
loanamt	0.0000456
	(0.0000792)
appsex	0.0133997**
	(0.0064907)
unemrt	-0.0008695
	(0.0013629)
medage	0.0071062**
	(0.0023395)
medinc	-0.00000197**
	(0.000000903)

Note: ** indicates significance at the 5% level

Probit included additional controls for: loan type,loan to income, credit score, ethnicity of applicant, over65, median age,percent minority, and MSA family income

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