Discussion draft: Not for quotation

MORTGAGE BROKERS AND THE SUBPRIME MORTGAGE MARKET

Amany El Anshasy
George Washington University

Gregory Elliehausen
Credit Research Center, Georgetown University

and

Yoshiaki Shimazaki
George Washington University

May 2004

MORTGAGE BROKERS AND THE SUBPRIME MORTGAGE MARKET

I. Introduction

A mortgage broker is an intermediary that brings a borrower and a creditor together to obtain a mortgage loan. The broker takes the application, performs a financial and credit evaluation, produces documents, and closes the loan. The creditor underwrites, funds, and may service the loan. Mortgage brokers play a major role in the mortgage market. In 2003, about 44,000 mortgage brokerage firms originated about 65% of all mortgages (Schneider 2003).

That mortgage brokers originate over half of mortgages suggests that mortgage brokers might perform a useful function. Descriptive literature on the industry indicates that mortgage brokers may provide benefits for both borrowers and creditors.[1] Brokers typically deal with several different creditors. A broker may reduce borrowers' search costs and enable borrowers to obtain lower cost credit than they could find themselves. Similarly, creditors often deal with several different brokers. A broker may lower creditors' origination costs through economies of scale and specialization. And by using

considers pricing in areas with restrictive licensing requirements for mortgage lenders and mortgage brokers, which may raise entry costs and inhibit competition.

II. The Economics of Mortgage Brokerage

In a broker-originated mortgage transaction, the broker takes the application, performs a financial and credit investigation, produces documents, and closes the loan.[2] The broker may also conduct financial counseling with the borrower. Mortgage brokers' revenue comes from an origination fee paid directly by the borrower.[3] Brokers may also obtain revenue from the spread between retail and wholesale prices of loans.[4]

The creditor in a broker-originated transaction underwrites, funds, and may service the loan. The creditor bears the credit and interest rate risk. The creditor's revenue comes chiefly from the periodic payments of interest and principal. The creditor also may receive revenue from fees, such as late payment fees or prepayment penalties.

The role of the mortgage broker is simply that of a seller of mortgages. It obtains a mortgage for a buyer from one of several creditors with which it has an arms-length business relationship. They are not normally agents of either the borrower or the creditor. Mortgage brokers compete with other brokers and with retail creditors.

Descriptive literature on mortgage brokers suggests that brokers may help creditors reduce origination costs in several ways. Specialization and economies of scale may enable brokers to originate loans at a lower cost than creditors, enabling a creditor to economize on its own origination costs. Use of brokers may also enable a creditor to expand or contract mortgage lending more quickly and at a lower cost than would be possible using its own employees and offices. In addition, use of brokers may enable a

The creditor in a bBJ0.0f bro7ob own empeiblrs 28(peib.001 y6m)8eneen ema the periodic paym

3

Broker Efficiency

Theoretical analysis of the brokerage function indicates that brokers may indeed reduce buyers' and sellers' search costs. There is no theoretical model for mortgage brokerage *per se*, but there are a few general models, which have mainly been used to analyze the role of brokers in real estate and labor markets.[5] Yavas (1994) examined the role of brokers who match buyers and sellers in a market in which both buyers and sellers search for each other. Buyers' search for a seller is generally recognized, but it is also important to recognize that a seller must search for customers. A seller's search may involve telephone or mail solicitations or more generally advertising. Yavas assumed probability distributions to represent buyers' and sellers' reservation prices. A trade takes place when a buyer and seller meet, and the buyer's reservation price is greater than or equal to the seller's reservation price.

Both buyers and sellers face search costs. In the mortgage market, for example, buyers face search costs to identify creditors and learn their prices. Sellers incur marketing costs to attract borrowers. There is uncertainty whether a seller and a buyer will trade. The buyer's reservation price may be lower than the seller's reservation price. Moreover, when the price involves borrowers' uncertain promises to make future payments, borrowers must demonstrate their creditworthiness, and creditors perform credit evaluations to avoid unacceptably risky promises.

Sellers and buyers search if the expected gains from search exceed the costs. They use a

incentives from those of the creditor. In taking an application and performing the financial and credit investigation, a broker may be in a position to increase the likelihood of approval. That is, a broker may misrepresent a loan to qualify a marginal borrower in order to make a sale.

A broker has a greater incentive to contact borrowers about the possibility of refinancing

hypothesized that prepayment rates on third-party originations may be greater than those on creditor originations.

LaCour-Little and Chun used two sets of data to test this hypothesis: loan-level data from a single national mortgage loan-servicing firm and aggregate prepayment data from Mortgage Information Corporation (the former name of Loan Performance System). With the loan-level data, they estimated logistic regression models of the probability of prepayment as a function of the age of the loan, original loan size, the spread between the contract interest rate and the ten-year constant maturity Treasury rate, borrower income, and whether the loan was originated by a third party. Regression results indicated that loans originated by a third party were statistically significantly more likely to prepay than loans originated by a creditor for each of four types of mortgages analyzed. The third-party effect was quite large, moreover. Over all types of mortgages, third-party loans were about three times more sensitive to refinancing incentives than creditor-originated loans.

The aggregate prepayment data representing many creditors provided evidence that prepayment rates were generally greater for third-party originations than creditor originations. Prepayment rates on loans originated between 1994 and 1998 were greater for third-party originations than for creditor originations. Prepayment rates for loans originated before 1994 were not.

In a preliminary working paper, Woodward (2003) examined the relationship of loan and borrower characteristics to the level of mortgage brokers' compensation at one creditor. The effect of shopping strategy was of particular interest. Her hypothesis was that consumers' lack of information and difficulty in assessing tradeoffs between interest rates caused "confusion," which resulted in brokers receiving higher compensation for loans when points were paid than when points were not paid.

Woodward argued that the easiest shopping strategy for the consumer is to roll all settlement costs into the interest rate and shop for the lowest interest rate and that the most difficult shopping strategy is to pay all settlement costs in cash and pay points to reduce the interest rate. Note that the easiest shopping strategy is not necessarily the optimal strategy. Creditors typically set the tradeoff between contract rate and points for a period considerably less than the full term to maturity.[7] A borrower who expects to repay the loan over a longer period of time than that assumed in the rate sheets may pay less if he pays points than if he does not.

Empirical results suggest that broker compensation varied systematically across different sets of mortgage terms and borrower characteristics. Higher broker compensation does not imply higher mortgage cost to the borrower, however. Higher broker compensation may be offset by a lower interest rate or other loan fees. Thus, Woodward's results do not provide evidence on the efficiency and agency issues discussed in the beginning of this section.

---

[7] Woodward found a seven to ten year expected term in rate sheets for 30-year mortgages for the creditor that funded the mortgages in her sample.

III. Empirical Analysis

This paper investigates whether subprime mortgages originated by brokers are more costly to borrowers than mortgages originated by creditors. A finding that mortgages originated by brokers are more costly would support the hypothesis that an agency problem exists. In contrast, a finding that broker-originated mortgages are no more or less costly than creditor-originated mortgages would support the hypothesis that competition forces brokers to share any efficiencies in originating mortgages with borrowers.

The paper also investigates broker pricing in minority and lower income areas and in states that have restrictive licensing requirements for individual mortgage originators. Because of a lack of resources, experience, and financial sophistication many consider minority and lower income market segments to be especially vulnerable to abuses. Restrictive licensing requirements for individual mortgage originators include pre-licensing education, testing, and continuing education. Such requirements may inhibit competition and thus pressure brokers to share origination efficiencies with borrowers by making entry or expansion slower and more costly.

Data

Our data are from the American Financial Services Association's (AFSA) subprime mortgage database for the first quarter of 2002. Ten large subprime mortgage subsidiaries of AFSA-member companies contributed to the database. The database includes all mortgages originated or purchased by these companies between the third quarter of 1995 and the first quarter of 2002. Staten and Elliehausen (2001) estimated that the AFSA's subprime mortgage database covered about 40% of subprime mortgage originations in 1998. The analysis in this paper includes all closed-end first and second mortgages.

Model

The dependent variable is the cost of the mortgage to the borrower as measured by the annual percentage rate. The annual percentage rate is an annualized discount rate that equates the actual amount of credit received by the borrower with the flow of periodic payments required to repay the loan. The annual percentage rate reflects all finance charges, which are defined as "… any charge payable directly or indirectly by the consumer to the creditor and imposed directly or indirectly by the creditor as an incident to or condition of the extension of credit (12 CFR Ch. II § 226.4 (a)." The finance charge also includes "[f]ees charged by a mortgage broker (including fees paid by the consumer directly to the broker or to the creditor for delivery to the broker) … even if the creditor does not require the consumer to use a mortgage broker and even if the creditor does not retain any portion of the charge (12 CFR Ch. II § 226.4 (a)(3)."

Explanatory variables are loan characteristics, property or borrower characteristics associated with credit risk, year of origination, and state. The loan characteristics include loan amount, whether the loan has a fixed or variable interest rate, term to maturity, and loan-to-value percentage (on first mortgages). The property and borrower characteristics

Behavior of Mortgage Brokers. The estimated coefficients for broker-originated mortgages are negative, indicating that broker-originated mortgages are less costly to the borrower than creditor-originated mortgages after holding other loan terms and borrower characteristics constant. The size of the estimated coefficients indicates that broker-originated first mortgages are 1.132 percentage points less costly than creditor-originated first mortgages and that broker-originated second mortgages are 1.973 percentage points less costly than creditor-originated second mortgages. These estimated differences may seem large, and would seem unrealistic for prime mortgages. However, large differences in annual percentage rates between broker and creditor-originated mortgages may not be unreasonable. The subprime market is quite heterogeneous and considerable variation in borrower risk, which is reflected in the range of annual percentage rates from near prime to 18-20% or more. Brokers may be able to shop from a larger set of loans than a single creditor and find a better match between borrower risk and annual percentage rate. Brokers also be better able than consumers shopping on their own to match borrower risk and annual percentage rate.

The estimated differences in annual percentage rates may not be attributable entirely to broker efficiencies that are shared with borrowers. There may be other loan terms and borrower risk characteristics not included in the model that are correlated with broker originations. There is also the possibility of a self-selection issue that influences the results. The general theoretical model discussed in the previous section of the paper suggests the possibility of self-selection based on search costs. In the case of mortgage brokers, however, selection may not be much of an issue if borrowers have difficulty distinguishing between mortgage brokers and mortgage bankers.

Mortgage Brokers in Selected Market Segments. Even if there do not appear to be problems in the subprime market overall, there may be market segments in which problems exist. To investigate this possibility, we estimated separate models for areas that have predominately minority populations or have relatively low incomes. We considered three market segments: (1) areas with 75% or greater black population, (2) areas with 75% or greater Hispanic population, and (3) areas with per capita income less than 75% of the state per capita income. The geographic areas were defined by zip codes. We choose these segments because many believe that minority and lower income borrowers are especially vulnerable to abuse because these populations have less credit experience and financial sophistication than the general population.

Table 3 presents estimated coefficients for the broker-origination dummy variable in these models. The results show that in each of the three market segments, broker-originated loans had relatively large, significantly lower annual percentage rates than creditor-originated loans. This is true for both first and second mortgages.[8]

---

[8] It is not useful to speculate about differences in coefficients between any of these groups and all mortgages because the models do not include all mortgage or borrower characteristics that influence annual percentage rates.

References

Charles Calomiris. "High Loan-To-Value Mortgages: Problem or Cure." *Journal of Lending and Credit Risk Management*

Woodward, Susan E. "Consumer Confusion in the Mortgage Market." Working Paper. (Sand Hill Econometrics, July 14, 2003).

Yavas, Abdullah. "Middlemen in Bilateral Search Markets." *Journal of Labor Economics*, 12 (July 1994): 406-429.

Yavas, Abdullah. "Marketmakers versus Matchmakers." *Journal of Financial Intermediation*, 2 (March 1992): 33-58.

TABLE 1
VARIABLE DEFINITIONS AND DESCRIPTIVE STATISTICS

		First mortgages		Second mortgages	
Variable	Definition	Mean	Std. dev.	Mean	Std. dev.
APR	Annual percentage rate, percent	12.27	1.82	13.78	2.51
BROKER	Broker origination, dummy variable	.24	.43	.59	.49
LNAMT	Loan amount, $thousands	88.85	52.37	35.41	19.74
VARIABLE	Variable interest rate, dummy variable				
TERM	Term to maturity, months	289.17	92.01	206.51	65.31
LTV 70	Loan-to-value dummy				

TABLE 1
VARIABLE DEFINITIONS AND DESCRIPTIVE STATISTICS (CONTINUED)

Variable	Definition	First mortgages		Second mortgages	
		Mean	Std. dev.	Mean	Std. dev.
S580-599	Risk score 580-599 dummy variable	.11	.31	.04	.20
S600-619	Risk score 600-619 dummy variable	.12	.33	.05	.23
S620-639	Risk score 620-639 dummy variable	.13	.33	.07	.26
S640-679	Risk score 640-679 dummy variable	.20	.40	.28	.45
S 680	Risk score 680 dummy variable	.12		.46	

_____

Notes:
1. Information for year and state variables are not shown.
2. … Variable not included in model.

TABLE 2
ESTIMATION RESULTS FOR ALL FIRST AND SECOND MORTGAGES

	First mortgages		Second mortgages	
	Coef-	Std.	Coef-	Std.
Variable	ficient	error	ficient	error
BROKER	- 1.132	.006 **	-1.973	.006 **
LNAMT	- .001	>0.001 **	- .007	>0.001 **

Table 3
Estimated Broker Coefficients for Minority and Lower Income Areas

Group	First mortgages	Second mortgages
75% or greater black population	-1.054	-1.899
75% or greater Hispanic population	-2.002	-2.380
Per capita personal income less than 75% of state average	-1.243	-1.089
All mortgages	-1.325	-1.973

Table 4
Estimated Broker Coefficients for States with Restrictive Licensing Laws

Group	First mortgages	Second mortgages
Licensing requirements for all mortgage originators	-1.254	-2.035
Licensing requirements for mortgage brokers	-1.289	-2.006
All mortgages	-1.325	-1.973