Optional risk sharing: avoiding ruthless behavior in the residential real estate market

Cynthia Rodriguez Cano
Georgia College & State University

Wesley Austin
University of Louisiana Lafayette

Renee J. Fontenot
Georgia College & State University

ABSTRACT

The residential real estate market is in a down cycle never before experienced in the United States. Faced with cash shortfalls during economic downturns, individuals must decide which asset(s) to abandon. Because real estate is a major investment and one for which equity accrues slowly, homesteads are more likely to be forfeited than other assets (e.g., automobile). A conceptual model is proposed that shifts risk (i.e., interest bearing) between lenders and homebuyers. Risk shifting allows homebuyers to accrue more equity earlier in the contract and provides a motive to avoid ruthless behaviors. The shift in risk allows lenders to buy insurance that lessens the effects (mitigate losses) of future business cycle downturns. Supported by agency theory and risk analysis, the proposed conceptual model suggests that there is an optimal risk allocation between lenders and homebuyers.

Keywords: risk sharing, real estate, foreclosures

INTRODUCTION

The United States is now experiencing one of the biggest financial crises in its history with the loss of wealth from the housing bust (Yang, 2008) following the biggest inflationary cycle (Colpitts, 2008). Plummeting real estate values have triggered a foreclosure episode that has brought forward a series of interest rates cuts by the Federal Reserve and Congressional legislation that attempt to halt the hemorrhaging market. It is forecast that before the end of the real estate crisis, home value will drop between 50% and 70% and will leave 20 million people with negative equity (Yang, 2008). The unprecedented real estate crisis suggests that traditional arrangements between lending institutions and homebuyers should be re-examined.

Although the current real estate crisis is partially a product of liberal credit policies by lending institutions, tightening of lending policies alone does not provide a mechanism that will lessen the effects (i.e., foreclosures) of future economic downturns. Faced with cash shortfalls during economic downturns, individuals must decide which asset(s) to abandon. Because real estate is a major investment and one for which equity accrues slowly, homesteads are more likely to be forfeited than other assets (e.g., automobile). Given that foreclosure is the least preferred and most costly method of resolving a problem loan (Capozza & Thomas, 2006), a new perspective that discourages ruthless behavior (i.e., default) is worthy of investigation.

It is proposed that a shift in risk (i.e., interest bearing) between lenders and homebuyers would provide incentives to deter ruthless behaviors. This risk shifting allows buyers to accumulate greater equity, and in-turn encourages behavior that reduces the probability of foreclosure and associated financial losses. From the lender's perspective, risk sharing is a means of buying insurance that would lessen losses from future business cycle downturns. Supported by agency theory and risk analysis, the proposed conceptual model suggests that there is an optimal risk allocation between lenders and buyers. The following discussion presents an investigation of the residential real estate market, theoretical foundation and relevant literature, conceptual model, and a closing discussion.

THE RESIDENTIAL REAL ESTATE MARKET

As the United States (US) economy slows, real estate values that traditionally follow the behavior of the economy are predicted to continue on a downslide. The interest rate reductions are not likely to remedy the situation completely, because of the weak US dollar among other factors (RealEstateabc.com, 2008). According to the US Census Bureau (Callis & Kresin 2011), homeowner vacancy rate in the fourth quarter 2010 reached 9.4%, an increase of 248% from the same quarter 2008.

Real estate statistics suggest upward movement as the US market emerges from the deepest recession in years (Mortgage Bankers Association, 2011). Although the average home sale price in 2010 of $220,000 was up 1.4% from the 2009 average of $216,900, the average 2010 home price is down 9.4% from 2008 ($242,700) (National Association of Realtors, 2011a). Similar trends are evident for real estate inventory (3,560,000 in 2010, 3,283,000 in 2009, and 3,700,000 in 2008) and home sales (4,908,000 in 2010, 5,156,000 in 2009, and 4,913,000 in 2008). This trend is expected to continue in 2011 and 2012 as presented in Table 1, Appendix 1 (National Association of Realtors, 2011b).

Recent foreclosures of conventional mortgages have increased at an extraordinary rate. Between 1953 and 1959 foreclosure rates ranged between .04% and .12%; peaking in 1966 to

.67% (Elmer & Seelig, 1998). Between the early 1980s and the late 1990s, these rates increased by more than 300% rising from .31% in 1980 to 1.04% in 1997, a nine-fold increase since the early 1950s. FHA foreclosure rates demonstrate similar patterns with rates eleven times higher than those of the 1950s (Elmer & Seelig, 1998).

THEORETICAL FOUNDATION AND RELEVANT LITERATURE

Agency Theory

The proposed model utilizes agency theory as the major theoretical underpinning. The concept of agency theory is that risk-sharing problems arise when cooperating parties have different attitudes toward risk (Eisenhardt, 1989). Agency theory has been the cornerstone of organizational behavior research and seeks to resolve two problems: 1) the conflict that arises between the principle (company) and its agents (e.g., managers), and 2) the difficulty or expense required to monitor what the agent. Moreover, agency theory has been applied in a variety of settings ranging from regulatory issues to individual based contracts seeking to explain impression management, lying, and other expressions of self-interest (Perrow, 1986; Pfeffer, 1981).

In the US' free market system, individuals to a contract will negotiate an agreement that maximizes the benefits to both parties. In mortgage lending, the organization (i.e., lender) anticipates what is necessary to cover potential losses in determining the rate of interest applied to the loan. Borrowers seek to maximize their accrued equity to increase their net worth. Imperfect information on a variety of factors (e.g., interest rate movement, macroeconomic stability) prevents the execution of an optimal contract. The lack of an optimal agreement leads to losses for both lenders and buyers; buyers may default on the contract possibly losing their asset and lenders must foreclose incurring additional costs not allowed for in the original interest rate.

Relevant Literature

Although existing literature suggest several predictors of foreclosure activity, findings that support these intuitive explanations are mixed. For example, research shows that interest rates and house price appreciation influence ruthless behaviors (e.g., default) (Ambrose & Capone 1998; Ambrose, Buttimer, & Capone, 1997; Capozza & Thomson 2005, 2006; Phillips & Vanderhoff 2004). Homeowner equity, defined as loan-to-current value (LTV), is considered a useful predictor of foreclosure rate. This relationship is apparent in the 1970s and early 1980s, but fails to explain the rise in foreclosure rates during the relative stable LTV through most of the 1980s and 1990s (Elmer & Seelig, 1998). Unexpected events that impede homeowners from making timely debt obligations, such as unemployment are logically linked to mortgage foreclosures. However, this relationship is not consistent over time. High unemployment rates bear at best a weak relationship with foreclosures rates (Elmer & Seelig, 1998). Finally, the relationship between house prices and trading volume is not constant; decreases in house prices lead to lower trading volume, but an increase in house prices has no effect on trading levels (Clayton, Miller, & Peng 2010).

Research shows that financial motivation is of paramount importance in both prepayment and default behavior. A study by Deng (1997) found that individuals who choose low initial

payment-to-income level are more likely to default. Furthermore, individuals are motivated to default when the mortgage exceeds the value of the house. Pennington-Cross (2010) found that people exhibit ruthless behavior as to meeting mortgage obligations to fund other expenditure or for free rent. These findings are consistent with those of Ambrose and Capone (1998). Other conditions that are related to ruthless behaviors include a relatively high borrow credit score, a long history of delinquency preceding foreclosure, declining interest rates, divorce and property located in a state with power-of-sale foreclosure (Elmer & Seelig, 1998; Gupta, Tipoy, & Das 2009; Pennington-Cross 2010).

Support for the influence of unemployment, current and lagged LTV, and personal savings rates on foreclosures is significant prior in past centuries. However, this relationship does not hold for the 1980s and 1990s. For example, unemployment rates dropped dramatically during this period, yet foreclosure rate continue to rise (Elmer & Seelig, 1998). Furthermore, this model fails to provide a robust explanation of global trends (Elmer & Seelig, 1998, p. 14).

In summary, the US economy faces a period of inconsistencies between frameworks that explain ruthless behaviors (i.e., defaults) and actual market behaviors. A consistent element is the motivational value of financial incentives in predicting social behaviors. This common threat is the foundation of the conceptual model now presented.

CONCEPTUAL MODEL

The current study offers a preliminary model of risk sharing intended to motivate individuals, through financial incentives, to avoid ruthless behaviors (i.e., default). It is proposed that an optimal contract may be developed between the lender and borrower. The proposed model is consistent with traditional view that insurance is a means of spreading risk. Both buyers and lenders to a real estate contract share risk, defined as uncertainty in economic variables (e.g., interest rates, property values, employment, etc.), through the accruing of interest/equity by both parties during the term of the contract. The sharing of risk, or more specifically the shifting of risk between the contracting parties, should allow both to benefit during economic downturns. Specifically, the risk assumed by the borrower should instigate behavior by the borrower to maintain the asset (avoid default); lender avoids foreclosure and attenuated costs. Therefore, the optimal contract preserves both equity and net worth of the borrower and offers the lender insurance during economic downturns and a consistent rate of return over the long-term. The key to the optimal contract is establishing an interest rate that represents the "optimal risk sharing" for both parties to the contract (see Figure 1, Appendix 2).

The assumptions of the proposed model are: 1) the interest rate is a proxy for risk, 2) the real estate market varies with the business cycle, 3) the transaction is made during a time of economic stability or growth (i.e., economy is not in a downturn), and 4) as time elapses, the probability of an economic downturn increases. The lender is the supplier ("Supply") of money in a given transaction. As time goes on, the probability of an economic downturn increases and lenders increase interest rates to compensate for losses; hence, the upward slope of the supply curve. Under the traditional real estate financing system, borrowers pay a higher interest rate (relative to the proposed model) at the conception of the contract, building very little equity ("Demand"). Towards the end of the contract, accrued interest decreases and equity accrues at an increasing rate. Therefore, during earlier periods of the real estate contract, borrowers have little incentive to retain the asset (property) when faced with the decision of which assets to forfeit during economic shortfalls.

It is proposed that to insure against future economic downturns, lenders are willing to accept a lower interest rate (i.e., less risk) and allow the borrower to accrue more equity as insurance against future losses (see "A" in Figure 1, Appendix 2). As the borrowers' equity increases, the probability of forfeiting the asset during an economic downturn diminishes, because the real estate represents a larger amount of their net worth, relative to the traditional risk sharing arrangement. The borrowers now share a greater portion of the risk (see "B" in Figure 1, Appendix 2). The lender is insured to some extent against losses due to foreclosure and related costs. From this perspective, the insurance helps to lessen not only the economic loss to the lender but also the severity of the economic downturn of the market.

In summary, imperfect information about economic variables prevents both parties to a real estate transaction from achieving the optimal benefit. Under the traditional financing arrangement, borrowers build little equity in the early years of a contract, and therefore, have little incentive to protect (i.e., not forfeit) the asset when faced with financial shortfalls. Lenders are not insured for such borrower behavior (i.e., foreclosure) and are faced with unexpected losses. These losses, cost of foreclosure and attenuated costs, negatively impact both the lender and the market. Under the proposed model, the lender buys insurance against future downturns by offering lower interest rates; buyers accumulate greater equity sooner making the asset relatively more valuable therefore the buyer is more likely to engage in behavior to prevent forfeiture of the asset. Based on the assumption herein set forth, the following is proposed.

P1: There is an optimal risk allocation that is not achieved in the traditional real estate financing market. The optimal risk allocation agreement reduces ruthless behaviors and lessens the economic loss in the real estate market during periods of economic downturn.

P2: In the optimal risk allocation agreement, borrowers accrue greater equity in the beginning of the real estate contact and less equity in the later stages. The more rapid accumulation of wealth deters ruthless behaviors (i.e., forfeiting the real estate) in time of financial shortfalls.

P3: In the optimal risk allocation agreement, lenders accrue less interest in the beginning of the real estate contact and more interest in the later stages. Lenders accept lesser interest rates as insurance against future losses due to foreclosures in times of economic downturns.

DISCUSSION

The American residential real estate market is just one symptom of a worldwide financial crisis (Warren, 2010). The world's economies now face financial failures not previously experienced by developed countries. These include, but not limited to, the United States' $700 billion Troubled Asset Relief Program (Slaughter, 2008), the United Kingdom's $55.1 billion bailout of the Royal Bank of Scotland (Munoz & MacDonald, 2008), and Germany's $665.8 billion bailout of German banking industry (Forelle & Perry, 2010). It is not likely that recovery is around the corner as investors lose faith in US stocks, a hallmark of the long market downturns of the 1930s and 1970s (Browning, 2008). The current paper does not attempt to address the current financial crisis, but offers a preventive perspective for addressing business cycle downturns and incentives to discourage ruthless behaviors. It is proposed that there is an optimal

risk allocation contract that benefits both borrowers and lenders in times of economic downturn. During business cycle downturns this optimal risk allocation agreement reduces the probability that borrowers will forfeit their real estate asset and in-turn lessens foreclosures and the associated losses incurred by lenders. For lenders, the goal is to mitigate the effect of a business cycle downturn; lenders are buying insurance against future market downturns.

Although optimal risk allocation agreements offer benefit for both lenders and homebuyers, the proposed model represents two challenges: 1) the model works when implemented during times of economic growth or stability, and 2) it is a non-traditional way of looking at mortgage lending. Americans, as a collective society, are short-term oriented (Hofstede, 2001). The concept of looking long-term and taking a preventive perspective is relatively foreign in American society. For the proposed model to be effective, banks, as well as investors must forfeit short-term gratification for long-term stability. This is quite a feat in an individualist society (Hofstede, 2001), where members of society focus on their benefit in lieu of the benefit to society. It may be that the severity of the current residential financial state and forthcoming commercial loan crisis (commercial borrows are expected to seek government assistance on short term loans) (Wie & Hilsenrath, 2008) will have a lasting impact on organizations and individuals allowing movement to a long-term mindset. However, changing the cultural fiber of US business is a difficult task at best.

In the future, research that test the propositions put forth in the current paper should be undertaken. This may be particularly important when considered the future of lending in the US. The degree (i.e., actual amount adjusted) of the interest rate of the conceptual model should be subjected to mathematical confirmation. The following questions should be considered for future investigations. What other factors might thwart ruthless behaviors? What are the various economic variables that might affect the amount of insurance lenders are willing to purchase? Can traditional insurance be considered with the optimal risk allocation agreement to future mitigate uncertainty in the real estate market.

As with all research, there are limitations to this paper. First, the current paper is conceptual in nature, and therefore, subject to empirical testing. Although an optimal risk sharing agreement is proposed, the precision by which that component may be determined is not part of the current study. Finally, government intervention that might change the landscape of the real estate financial market is not considered in this paper.

REFERENCES

Ambrose, B., Buttimer, R., & Capone C. (1997). Pricing mortgage default and foreclosure delay. *Journal of Money, Credit, and Banking,* 29 (3), 314-325.

Ambrose, B., & Capone, C. (1998). Modeling the conditional probability of foreclosure in the context of single-family mortgage default resolution. *Real Estate Economics*, 263 (3), 391-429.

Browning, E. S. (2008. December 22). Stock investors lose faith, pull out record amounts. *The Wall Street Journal,* p. A1.

Callis, R. R., & Kresin, M. (2011). Residential vacancies and homeownership in the fourth quarter 2010, U. S. Census Bureau News, U. S. Department of Commerce. Retrieved from http://www.census.gov/hhes/www/housing/hvs/qtr410/files/q410press.pdf**.**

Capozza, D., & Thomson, T. (2005). Optimal stopping and losses on subprime mortgages. *Journal of Real Estate Finance and Economics,* 30(2), 115-131.

Capozza, D., & Thomson, T. (2006). Subprime transitions: Lingering or malingering in default? *Journal of Real Estate Finance and Economics,* 33(3), 241-258.

Clayton, J., Miller, N., & Peng, L. (2010). Price-volume correlation in the housing market: Causality and co-movements. *Journal of Real Estate Finance and Economics,* 49, 14-40.

Colpitts, M. (2008). Lending on steroids triggers bigger bust. *House Predictor: Independent Market Forecasts.* Retrieved from http://housing predictor.com.

Deng, Y. (1997). Mortgage termination: An empirical hazard model with a stochastic term structure. *Journal of Real Estate Finance and Economics,* 14(3), 309-331.

Eisenhardt, K. M. (1989). Agency theory: An assessment and review. *Academy of Management Review*, 1 (1).

Elmer, P. J., & Seelig, S. A. (1998). The rising long-term trend of single-family mortgage foreclosure rates. *Federal Deposit Insurance Corporation Division of Research and Statistics, FDIC working paper 98-2.* Retrieved from http://www.fdic.gov/bank/analytical/working/98-2.pdf**.**

Forelle, C., & Perry, J. (2008, October 21). The financial crisis: Global fallout: Drawing on experience of past rescue, Sweden outlines bank-bailout plan. *The Wall Street Journal*, p. A5.

Gupta, R., Tipoy, C. K., & Das, S. (2009). Could we have predicted the recent downturn in home sales in the four U. S. census regions? *Journal of Housing Research,* 19 (2), 111-128.

Hofstede, G. (1991). *Culture's consequences: Comparing values, behaviors, institutions, and organizations across nations (2nd ed.).* Thousand Oaks, CA: Sage Publications.

Mortgage Bankers Association (2011). Patches of lighter gray, but still overcast. Retrieved from http://www.mortgagebankers.org/NewsandMedia/PressCenter/75440.htm.

Munoz, S. S., & MacDonald, A. (2008, November 15). U. K. hands not silent in bailout. *The Wall Street Journal*, p. A21.

National Association of Realtors (2011a). Housing statistics. Retrieved from http://www.realtor.org/wps/wcm/connect/a33c7f80457a37d290b9d3342c47dc89/REL1012EHS.pdf?MOD=AJPERES&CACHEID=a33c7f80457a37d290b9d3342c47dc89**.**

National Association of Realtors (2011b). U. S. Economic Outlook: February 2011. Retrieved from http://www.realtor.org/wps/wcm/connect/4a44bc0045a7cb419010d3342c47dc89/February%2B2011%2BOutlook.pdf?MOD=AJPERES&CACHEID=4a44bc0045a7cb419010d3342c47dc89

Pennington-Cross, A. (2010). The duration of foreclosures in the subprim mortgage marketing: A competing risks model with mixing. *Journal of Real Estate Finance and Economics,* 40, 109-129.

Perrow, C. (1986). *Complex organizations.* New York, NY: Random House.

Pfeffer, J. (1981). *Power in organizations*. Marshfield, MA: Pittman.

Phillips, R. A., & Vanderhoff, J. H. (2004). The conditional probability of foreclosure: An empirical analysis of conventional mortgage loan default. *Real Estate Economics,* 32 (4), 571-588.

RealEstateabc.com (2008). Mortgage interest rate report – July. *Real Estate & Mortgage Resources.* Retrieved from http://www.realestateabe.com/rates2.htm**.**

Slaughter, M. J. (2008, November 20). An auto bailout would be terrible for free trade. *The Wall Street Journal,* p. A21.

Warren, A. (2010). Global real estate trends. *Scotiabank Group.* Retrieved from http://www.**s**cotiabank.com.

Wie, L., & Hilsenrath, J. (2008, December 22). Developers ask U. S. for bailout as massive debt looms. *The Wall Street Journal,* p. A1.

Yang, J. L. (2008). How bad is the mortgage crisis going to get. *CNNMoney.com.* Retrieved from http://cnnmoney.com**.**

APPENDIX 1

Table 1: Housing Indicators and Forecasts

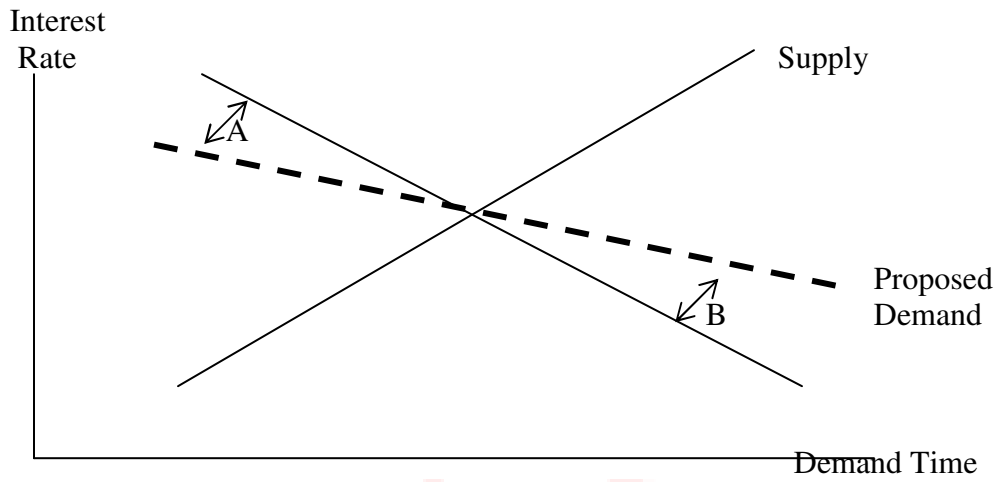| Indicator	2009	2010	2011	2012
Existing home sales	5,156,000	4,908,000	5,297,000	5,534,000
Percentage change year ago	4.9%	-4.8%	7.9%	4.5%
Median home sale	$172,500	$173,000	$173,800	$177,900
Percentage change year ago	-12.9%	0.3%	0.5%	2.4%

Source: National Association of Realtors

APPENDIX 2

Figure 1: Proposed Model of Optimal Risk Sharing