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Homeowner's Equity, Rental Cash Flow, and Recourse as Predictors of Default Mortgage Status

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This is to certify that the doctoral study by

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2018

Abstract

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by

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MBA, Bethel University, 2011

BA, University of Tennessee, 1973

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

In the aftermath of the Great Recession of 2007-2009, banking executives feared the impact of increased capital reserve requirements for losses from mortgage defaults. One reason was that home price declines during the Great Recession precipitated mortgage defaults, which increased the percentage of foreclosures as well as accelerated negative equity, and default. The purpose of this correlational study, grounded in Fishbein's expectancy of value and Vroom's expectancy theories, was to examine the relationship between the independent variables of homeowner's equity, rental cash flow value, and recourse, and the dependent variable, default mortgage status. Archival data comprised a sample of 408 single family residences in Alameda County, California, and Shelby, Fayette, and Tipton Counties in Tennessee. The results of the binary logistic regression model indicated the model was a good fit to predict a significant relationship between the variables ($\chi^2 = 3.490$, $p = 0.322$, $df = 3$). The findings did not reveal a significant relationship between homeowner's equity, rental cash flow value, recourse, and default mortgage status. Therefore, the independent variables did not predict mortgage default status. However, a minor relationship was found between homeowner's equity ($p = 0.215$), rental cash flow value ($p = 0.215$), and default mortgage status. A non-significant relationship between the independent variables and default mortgage status indicated that factors other than the study variables influenced default mortgage status. Advocates for fair housing laws may use study findings to encourage lenders to change lending policies to reduce the risk of default and increase stability in local communities, which may result in potential positive social change.

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Dedication

This dedication is for hard working, perceptive homeowners who may have discovered a weakness in the credit scoring model, developed a working strategy, and exposed a vulnerability in the mortgage system. In the years preceding the Great Recession, mortgage lenders engaged in strategies of remote underwriting, distant servicing, securitization, and centralized decisions while dictating terms and policies of inflexibility to borrowers without consideration for their needs or feelings. Strategic defaulters and, highly sought, high credit score borrowers might have discovered a way to equalize their power with lenders and work the system to their advantage while simultaneously limiting the negative impact upon their credit, waking the mortgage industry, and starting a movement.

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Section 1: Foundation of the Study

In the aftermath of the Great Recession, U.S. banks struggled to understand the interplay of the expectations of homeowners as they assessed the risk of losses from property defaults (Seiler, 2014). Variables owners consider in the event of a potential default include (a) the property market value compared to the purchase price and loan value, (b) the potential rental value of the property, and (c) the ramifications of walking away from the property and defaulting on the loan (Seiler, 2016). The value of the expectation assigned by the homeowner and bank align with the expectancy of value theory because organizations and individuals make decisions based on the amount of effort compared to the size of the reward (Fallis, 2013). Equity, liquidity, costs, and recourse affect the likelihood of mortgage default (Campbell & Cocco, 2015; Demiroglu, Dudley, & James, 2014). The purpose of this quantitative correlational study was to examine the relationship between homeowner's equity, rental cash flow value, recourse, and default mortgage status.

Background of the Problem

The over expansion of mortgage credit and downturn in the housing industry in late 2008 precipitated a decline in home values and home equity, an increase in mortgage defaults, and losses to banks which stressed the global financial system (Campbell & Cocco, 2015). At the time of purchase, lenders expected loan repayment, and borrowers expected home value appreciation (Frame, Wall, & White, 2013). In the context of Basel I and II requirements, lenders must manage credit, operational, and market risk and have procedures in place to mitigate losses, which affect liquidity and capital reserve

requirements (Nastase & Unchiasu, 2013). The Basel I and II Accords were a regulatory standard for bank capital adequacy, stress tests and market liquidity designed to improve bank capital requirements, liquidity and bank leverage (Gavalas, 2015).

Furthermore, in the aftermath of the Great Recession, bank executives confronted external risk in states where statutes permit recourse-related restrictions (Demiroglu et al., 2014). Recourse (determined by state law) is the right of a lender to collect on a mortgage debt by taking possession of the property in the event of default (Demiroglu et al., 2014). In the event of default in recourse states, state statute permits lenders to obtain a deficiency judgment for the outstanding balance of the mortgage (Demiroglu et al., 2014). State statute pertaining to recourse remains a major concern for bank executives because it specifies the course of action and the cost of foreclosure in the event of default (Demiroglu et al., 2014). A study of the variables of homeowner's equity, rental cash flow value, recourse, and default mortgage status may provide relevant information to senior executives, which they may be able to use to prevent losses and manage credit risks.

Problem Statement

Banking executives fear increased capital reserve requirements for losses from mortgage defaults (Guiso, Sapienza, & Zingales, 2013; Vousinas, 2015). Home price declines during the Great Recession precipitated mortgage defaults, which increased from 26.4% to 35.1% of foreclosures (Guiso et al., 2013). These price declines also accelerated negative equity, equity extraction, and default (Allen, Barth, & Yago, 2014). Modest home price gains did not cure negative equity by 2013, intensifying equity

extraction and default leaving the foreclosure inventory at 2.9% (Bricker & Bucks, 2016; Scire, 2015). The general business problem was that banking executives fear increasing losses from mortgage default caused by heightening borrower sensitivity to insufficient home price appreciation, declining home equity positions and the likelihood the mortgage default trend resulting in unstainable increases in capital reserve requirements. The specific business problem was that some banking executives do not know the relationship between homeowner's equity, rental cash flow value, recourse, and default mortgage status.

Purpose Statement

The purpose of this quantitative correlational study was to examine the relationship between homeowner's equity, rental cash flow value, recourse, and default mortgage status. The independent variables were homeowner equity, rental cash flow value, and recourse. The dependent variable was default mortgage status. I used a logistic regression model to examine the dependent variable, default, which was binary (0/1). State law in recourse states allowed banks to obtain a deficiency judgment for outstanding mortgage balances not included in foreclosure; state statute prevents deficiency judgments in nonrecourse states (Demiroglu et al., 2014). The targeted population was single family residential properties located in the geographical areas of Tennessee and California, which were similar except for recourse. Tennessee is a recourse state while California is a nonrecourse state (Quinn, 2014). Bank leaders could benefit from the comparative data from this study by identifying factors related to mortgage default and implementing procedures to prevent default, which may improve

profits. These changes may promote positive social change through increased stability in the housing market, stable property values, equity appreciation, and greater access to credit through flexible lending guidelines for homebuyers.

Nature of the Study

Developing an effective research method and research question requires the consideration of several factors. Researchers choose between qualitative, quantitative, and mixed methods based on the complexity of the research question, the appropriateness of the data set, or the best method to answer the research question (Raich, Müller, & Abfalter, 2014). Qualitative researchers explore a problem-based phenomenon through their interaction with participants in their setting, illuminating the *why* and *how* of a research question (Barnham, 2015). The qualitative research method was not appropriate for this study because the purpose of this study was to examine the relationship between variables. Descriptive data are not appropriate for determining statistical relationships (Delost & Nadder, 2014). Quantitative researchers focus on statistical analysis to identify relationships between variables (Yilmaz, 2013). Thus, the quantitative research method was appropriate for this study. Researchers using mixed methods use both descriptive and statistical data to analyze concepts and hypothesis within a sample (Landrum & Garza, 2015). Because I did not use a qualitative component and because I only required a quantitative component, I determined that a mixed method approach was inappropriate.

Quantitative designs include descriptive, experimental, and correlational (Bronson, 2013). Researchers use experimental designs to measure the influence or isolate the effects of the independent variable through manipulation on the dependent

variable (Plavnick & Ferreri, 2013). I did not manipulate variables; therefore, I rejected an experimental design. Researchers use descriptive designs to answer generalized questions related to *how* or *how much* (Groeneveld, Tummers, Bronkhorst, Ashikali, & Thiel, 2015). Researchers use a correlational design to identify relationships or patterns between variables (Bettany-Saltikov & Whittaker, 2014) or the significance of the relationship between variables (Ma, 2015). I used a correlational design in this study to examine the relationship between the variables of homeowner's equity, rental cash flow value, recourse, and default mortgage status.

Research Question

The overreaching research question was: What was the relationship between homeowner's equity, rental cash flow value, recourse, and default mortgage status?

Hypotheses

I tested the following hypotheses:

$H1_0$: There was no statistical relationship between homeowner's equity, rental cash flow value, recourse, and default mortgage status.

$H1_A$: There was a statistical relationship between homeowner's equity, rental cash flow value, recourse, and default mortgage status.

Theoretical Framework

The expectancy of value theory (Fishbein, 1963), economic theory, was an appropriate framework for this study because, according to the theory, individuals' decisions integrate expectancy, reward, and the value of the goal one was seeking (Cohen, Fishbein & Ahtola, 1972; Fishbein, 1963; Kermally, 2005). Fishbein (2013)

explained that attitudes about an object influenced the strength of the belief and the value of the reward. In developing expectancy theory, Vroom (1964) identified three elements: expectancy, instrumentality, and valence. The expectancy of value theory Fishbein was an economic theory and focused on expectation and value. In further developing expectancy of value theory, Ajzen (2012) added that overall attitude toward an object determined intrinsic evaluations, associated values, and strength of the associations. Furthermore, Holland and Garrett (2015) advanced that individuals and entrepreneurs make business decisions to continue an enterprise based on expectancy and the value of the result.

In the context of this study, the independent variables, homeowner's equity, rental cash flow value, and recourse, were financial options of homeowners. The interplay of the financial options of homeowners and their influence on the default mortgage status focused this study through the lens of the expectancy of value theory and the economic assessment of risk or reward. Furthermore, feedback that necessitated in-depth evaluation was likely to influence attitudes and beliefs about attributes and subjective value emphasizing the role of expectancy and value in decisions Ajzen (2012). Assessing the correlation between the variables of homeowner's equity, rental cash flow value, recourse, and default mortgage status may provide insight into influences on borrower decisions about defaulting on a mortgage.

Operational Definitions

Deed in lieu of foreclosure. Deed instead of foreclosure is a legal procedure where the borrower and lender agree to the surrender of the deed to the property in place of foreclosure proceedings (Demiroglu et al., 2014).

Deficiency judgment. Deficiency judgment is a legal preceding which allows lenders to obtain a portion of mortgage debt left out of foreclosure proceedings (Quinn, 2014).

Negative equity. Negative equity, also described as an underwater mortgage, occurs when the outstanding balance on the property exceeds the appraised value of the property (Duffy & O'Hanlon, 2014).

Opportunity cost. The opportunity cost of borrowing is the actual cost of all interest paid on a loan compared to all of the interest not received over the period of the loan (Seiler, 2016).

Quality home. A quality home is a home free of defects and meets building code requirements (VanderMeer, 2013).

Recourse. State statute determines the legal limits of a lender for recourse, which is the right of a lender to collect a mortgage debt by taking possession of the property in the event of default and foreclosure (Demiroglu et al., 2014).

Short sale. A short sale contract is the sale of a mortgaged property by the borrower in agreement with the lender, where the mortgage balance is greater than the value (Demiroglu et al., 2014).

Strategic default. Strategic default is when borrowers of means intentionally default on an affordable mortgage (Seiler, 2016).

Assumptions, Limitations, and Delimitations

Assumptions were unproven elements of the research the researcher believed were true (Lips-Wiersma & Mills, 2013). Further, assumptions provided clarity to research which ensures the accuracy of findings (Lips-Wiersma & Mills, 2013). Limitations, according to Brutus, Aguinis, and Wassmer (2013), are weaknesses in the study which are beyond the control of the researcher. Limitations represent threats to internal validity and external validity and impend the accuracy of the findings of the study (Brutus et al., 2013). Delimitations are boundaries of the study, which are set by researchers to focus the study on the research objective and research question and eliminate incorrect assumptions (Fan, 2013).

Assumptions

Assumptions are constructs believed by the researcher to be true but are unproven (Kirkwood & Price, 2013). Further, assumptions must be appropriate for the research method and could shape the findings (Kirkwood & Price, 2013). I made three fundamental assumptions. First, I assumed that public and proprietary data are accurate. Second, I assumed that historical data from 2006 to 2013 would be representative of true circumstances and contain variables sufficient for analysis. Third, I assumed that data from the state of Tennessee and the state of California would be complete, representative, and adequate for analysis in this study.

Limitations

Limitations are weaknesses or limits to a study which are beyond the control of the researcher (Fan, 2013). The scope of the study was the examination of the relationship between homeowner's equity, cash flow value, and recourse and default mortgage status. The first limitation of the study was that lenders might not have pinpointed the final reason for the default if it was strategic or from life circumstances. Lending and real estate professionals define the financial option of walking away from a mortgage as strategic default (Seiler, 2014). A second limitation of this study was that personal financial information from borrowers was not available and Federal privacy laws protected the information. The existence of a relationship or correlation does not determine causation; however, the credibility of the hypothesis diminished with zero correlation (Arrawatia, Misra, & Dawar, 2015). A third limitation related to the use of secondary data. Although cost effective and efficient, secondary data can be outdated, definitions for variables could change over time, and datasets could be incomplete, which limits the scope and accuracy of the research (Behringer et al., 2014).

Delimitations

Delimitations are bounds or guideposts established by the researcher (Fan, 2013). Use of mortgage data from the states of Tennessee and California limited the scope of the study. I focused on the correlation between the independent variables of homeowner's equity, cash flow value and recourse and the dependent variable, default mortgage status. The definition of variables could affected defaults in the framework of the study. How I defined variables bounded the study to the correlation between independent and

dependent variables. Also, my focus on the influence of the variables on the default mortgage status in Tennessee and California bounded the study. Other variables could affect the probability of default, e.g., investment, household wealth, and credit score, but these were not within the scope of this study (Guiso et al., 2013).

Significance of the Study

Bank leaders and homeowners could benefit from this study. First, bank leaders might be able to use study findings to identify factors related to mortgage default. Second, homeowners might benefit from the results of this study through increased stability in the housing prices. Furthermore, communities could see increased stability in communities because of reduced risk in mortgage financing.

Contribution to Business Practice

Bank leaders could benefit from the this study because its results might add to their understanding of the correlation between homeowner's equity, rental cash flow, recourse, and default mortgage status. A better understanding of the correlation between the independent variables and default status enable lenders to manage capital reserves more efficiently during times of distress and to continue lending instead of reducing it prematurely (Vousinas, 2015). Bank leaders, after the Great Recession, were concerned about how the effect of mortgage defaults, changes in Basel II requirements, increased flexibility, and fixed risk exposure influenced capital reserve requirements and profitability (Henderson & Jagtiani, 2013). Duffy and O'Hanlon (2014) stated that homeowner's negative equity position provided the financial incentives for borrowers to default on their mortgage. Banks executives weighed the preferences of borrowers to

preserve liquidity and purchasing power against the need to generate new business, remain competitive and profitable, and control risk (Andersson, Chomsisengphet, Glennon, & Li, 2013). Furthermore, bank executives must consider the change in borrower priorities, following the Great Recession, which emphasized liquidity in the form of available credit from credit cards (Andersson et al., 2013). The ability to buy goods and services with credit cards affected mortgage repayment decisions and the decision to default on the mortgage. The correlation between homeowner's equity, cash flow value, recourse, and default mortgage status provide a risk assessment tool to bank executives, which improved strategies to prevent mortgage default.

Implications for Social Change

Society could benefit from the results of this study because of the increased awareness of the variables, which affected defaults. The prevailing thought in the financial sector was borrowers had the ability and willingness to pay their mortgage and diminished financial capacity precipitated mortgage default and foreclosure (Das & Meadows, 2013). Society benefited from better risk assessment, and fewer losses by lenders, because increased capital reserves for lenders stimulated lending to small businesses, increase mortgage lending, lowered interest rates, spurred lending in underserved communities, and increased the number of affordable lending products. Further, improved capital reserves encouraged lenders to partner with community lending organizations to prepare borrowers for homeownership, and offered lending programs to improve financial literacy which helped borrowers remain in homes after purchase. Community lending created stable neighborhoods, reduced the negative effect of

foreclosure on the neighborhood and stimulated personal wealth creation through homeownership. The significance of the borrower's analysis of their financial position and the interplay of variables upon the decision to default could prevent losses to the financial system (Seiler, 2014). Further, increasing home values may accelerate the recovery of the housing industry, stimulate employment and a stable community.

A Review of the Professional and Academic Literature

The following section is a review of the literature for the research study. This review provides insight on scholars' studies of the impact of the Recession of 2007-2009 upon mortgage lending, default mortgage status, equity, cash flow value, property value, and loan features and their propensity to affect borrower decisions toward default. My study includes 184 references, of which 86% were from peer-reviewed sources and 86% were published within 5 years of my expected graduation. The total number of references in the literature review is 82, of which 86% from peer-reviewed sources and 86% published within 5 years of my expected graduation. References include dissertations, journal articles, government websites, and books.

The constructs of the expectancy theory were individual motivation and behavior, which influence a course of action toward a return for an expected result (Zhu, Nakata, Sivakumar, & Grewal, 2013). Both the expectancy of value theory and the expectancy theory were congruous throughout literature. The primary theory of the literature suggested the premise of a possible relationship between the variables or homeowner's equity, rental cash flow value, recourse and default (Duffy & O'Hanlon, 2014; Whitman & Milner 2013). It was unknown whether a relationship existed. The primary research

question was, What is the relationship between homeowner's equity, rental cash flow value, recourse, and default mortgage status? The literature review expands the knowledge of why borrowers pursued default, explores the influence of GSE activities upon capital and credit policies, and reveals how mortgage securitization and lending practices affected banks. In the literature review, I also reveal the variables that influence default status and consider their effect upon mortgage losses and threats to capital reserve requirements.

The data inquiry included the following databases: Business Source Complete, Academic Search Complete EBSCO, ProQuest, Sage Premier, and Thoreau. I also accessed government websites and statistical databases. Congressional testimony, Federal Reserve Bank databases, and American FactFinder database (U.S. Census Bureau) websites examined for relevant data. Search terms included *strategic default*, *mortgage*, *default*, *foreclosure*, *securitization*, *consumer credit*, and *borrower behavior.*

In order to identify what data were available, I explored the Fannie Mae Single Family database, Freddie Mac Single Family dataset, ProQuest statistical databases, the National Bureau of Economic Research (NBER) database, and Shelby County Assessor database. Similarly, supplemental searches in the Fayette County, Tipton County, and Alameda County California Assessor websites, Shelby County, Fayette County, Tipton County, and Alameda County Deeds of Record websites provided additional data. I obtained peer-reviewed literature sources and statistical data from these databases in order to garner the research, data, and views of scholars and experts in the financial and social science disciplines on the topic of mortgage default.

Expectancy of Value Theory

Fishbein (1963) explained expectancy of value management theory as encompassing behavior, expectancy, and the value of the goal one is seeking. Vroom (1964) postulated that the expectancy theory emphasized the expected reward, feelings of extreme pleasure, or pain actions which determined the behavior of individuals and the course pursued. The components of expectancy theory are valence and personal preference to achieve an outcome, instrumentality, and an individual's belief in an attainable outcome or reward (Ghoddousi, Bahrami, Chileshe, & Hosseini, 2014). Further, expectancy is an individual's confidence in his or her ability to accomplish a task or goal, which motivated the individual to achieve a desired outcome or result (Ghoddousi et al., 2014).

Individuals adjust their attitudes about their environment based on their expectations, assessments, and beliefs and feedback. Cohen et al. (1972) stated an individual's proclivity about an object strengthens from an appraisal about the purpose and the assessment of the belief. Jalil, Talukder, and Rahman (2014) utilized the expectancy theory in assessing customer perceptions in online banking transactions in Malaysia. Jalil et al. (2014) explained that the expectancy of value theory suggested that individuals orient their worldview toward their environment based on their expectations, assessments, and beliefs. Furthermore, Jalil et al. suggested that, per expectancy of value theory, if consumers' values and expectations of online banking were positive they would continue using online banking; if negative, they would discontinue using online banking systems. Further, expectancy is an individual's confidence in his or her ability to

accomplish a task or goal and the ability to adjust their attitudes about their environment based on feedback and their expectations.

Vroom expectancy theory. Researchers used expectancy theory to frame behavior, business psychology, and motivation in the business environment (Vroom, 1964). Holland and Garrett (2015) explained that the expectancy theory revealed the motivational factors of individuals in different situations. Furthermore, when individuals perceive the likelihood of achieving the desired outcome is high, individuals are more likely to choose the course of action that will produce the desired outcome (Holland & Garrett, 2015). Furthermore, a relationship exist in the workplace between desired outcome, reward and the selection of his/her work to achieve the desired outcome (Holland & Garrett 2015).

Organ, Proverbs, and Squires (2013) studied the Vroom expectancy theory and its effect on the motivation of owner-occupied homeowners to refurbish housing stock. Organ et al. suggested that an individual's valence, instrumentality, and expectancy or motivation were dependent on the individual's perception of the individual's capability to perform a job, the desirability of the reward, and the value of the reward. Fallis (2013) suggested that the demands of the global market create internal pressures on management to increase shareholder value, market share, and tighter control of expenses, forcing managers to consider the benefits of expectations management. Decisions based upon effort, the size of the reward, and the likelihood effort lead to reward encapsulates the expectancy theory (Fallis, 2013).

Global banks had an expectation of loan payment which was not certain. Banks faced a severe threat to solvency and capital with the passage of Basel I and Basel II regulations (Vousinas, 2015). The Basel Committee on Banking Supervision (BCBS) was established in 1974 by the Central Bank of Governors of the (Group of 10 or G-10) member countries and passed the Basel Accords in 1988 (Vousinas, 2015). The G-10 member countries are Belgium, Canada, France, Italy, Japan, The Netherlands, the United Kingdom, the USA, Germany, and Sweden (Vousinas, 2015).

The availability of capital retained by banks affected their competitive position and policy decisions. Osei-Assibey and Asenso (2015) stated that the availability of capital affected the maximum level of assets a bank retained and the amount and cost of capital, which ultimately affected its competitive position. Furthermore, high risk-based capital buffered against risk and could incentivize high-risk lending practices (Osei-Assibey & Asenso, 2015).

According to Vallascas and Hagendorff (2013), banks were required to maintain a capital ratio of 8%, regulatory capital divided by risk-weighted assets. Changes in the risk weight approach reduced the standard risk approach, which meant a reduction in the risk weight from 100% to 75% (Vousinas, 2015). Vallascas and Hagendorff (2013) explained that the Basel II regulations required financial institutions to identify losses from three risk factors: the probability of default, exposure at default, and loss given default (LGD) of risk portfolios.

Gavalas (2015) stated that the Basel III regulations of 2010 clarified the definition of regulatory capital, introduced the leverage ratio as a hedge for the risk-based capital

requirement, and improved risk coverage by enhancing the measurement of counterparty credit risk and liquidity. Financial institutions divided portfolios into three sections: retail, consumer loans, and credit cards; residential mortgages, and wholesale (commercial loans) and determined their exposure to losses to meet Basel II regulations (Jones & Sirmans, 2015). Basel II was a regulatory standard for bank capital adequacy, stress tests, and market liquidity, which improved bank capital requirements, liquidity, and bank leverage (Gavalas, 2015).

Purvis, Zagenczyk, and McCray (2015) suggested that strong expectancy beliefs caused individuals to act in specific ways. Individuals acted when there was a high probability circumstance met their expectations and delayed when expectations failed to meet goals (Purvis et al., 2015). Investment in a home and mortgage provided the borrower with an expectation of appreciation in value, throughout the term of the mortgage. A negative equity position led to a decline in expectancy beliefs and possibly underlying decisions about the mortgage (Andersson, 2013). When confronted by the adverse circumstances of the present, the desire for the future, the significance of the activity in the pursuit of goals was essential (Purvis et al., 2015).

Expectancy of value theory. The expectancy of value theory (Cohen, Fishbein, & Ahtola, 1972) (Cohen et al., 1972; Fishbein, 1963) postulated behavior was a function of expectancy, and the value of the goal one was seeking. Ajzen (2012) postulated the attitude toward the expected reward and subjective values associated with the reward determined the strength of the feelings, the decisions of individuals and the course pursued. The expectancy of value theory was an extension of the expectancy theory and

interrelated in business applications (Holland & Garrett, 2015). The expectancy theory was the underlying theory, and the expectancy of value theory was an extension of the underlying theory.

According to Ball, Huang, Cotten, Rikard, and Coleman (2016), expectancies of success and subjective task values were critical to persistence, choice, and motivation in academic work. The first construct of the expectancy of value theory was the individual's belief in their ability to perform a task immediately and in the future (Ball et al., 2016). The second construct of the expectancy of value theory was the value of the task. The individual's personal belief about the task and the value placed on the outcome of the task (Ball et al., 2016). Another important component was the belief the task would conclude well (Ball et al., 2016). Van-Tien Dao, Nhat Hanh Le, Ming-Sung Cheng, and Chao Chen (2014) theorized individuals evaluated attitudes associated with objects of value to individuals and responses correlated with the attributes connected to the object.

Expectancy theory and business application. With the expectancy theory framework, researchers explicated the motivation and behavior of individuals to pursue a course of action or task in return for an expected result (Zhu et al., 2013). According to Zhu et al. (2013), the motivation mechanism encompassed expectancy, the belief that perception of previous events resulted in expected results. Leach and Liu (2014) postulated the motivation to pursue lost customers depends on the belief the effort leads to a performance pay off. The performance leads to the desired outcome to the employee and the outcome is desirable to the organization (Leach & Liu, 2014).

The expectancy theory identified the relationship between employee motivation in the workplace, employee confidence in their ability to perform a job at a level conducive to reward, and reward systems within the business environment that benefit the employee and the organization (Yeheyis, Reza, Hewage, Ruwanpura, & Sadiq, 2016). Vroom (1964) adapted the expectancy theory to the business environment explaining performance was a function of motivational force and the ability of the worker to perform a job at a level sufficient for reward. The Vroom expectancy theory was easily adapted to the business model because of the relationship between individual effort, individual performance, and the attractiveness of rewards for high performers (Yeheyis et al., 2016). Further, complex management decisions require executives to consider the expectancy theory; sufficient employee motivation, the ability to perform at a high level conducive to reward, adequate reward systems that benefit the employee and the organization, adequate resources, and the quality of competition (Holland & Garrett, 2015).

Expectancy theory and stakeholders. Stakeholder's actions against organizations served to protect and their interest instead of the benefit of the organization, which threatens the organizational affiliation (Hayibor, 2012). Hayibor examined the conditions that cause stakeholder sanctions against affiliated organizations and found perceptions of inequity in the relationship initiates corrective action necessary to eliminate inequity (Hayibor, 2012). Guender and Wu (2012) used the expectations theory to evaluate interest rate structure before the founding of the Federal Reserve in 1915.

According to Purvis et al. (2015), valence measures the suitability or attractiveness of rewards obtained from specific outcomes. Nasri and Charfeddine (2012) examined the expectancy theory in motivating salespeople to participate in marketing intelligence activities. The factors examined were salesperson efforts to collect and transmit information from expectations from the field, instrumentality, and valence. Nasri and Charfeddine found salespeople are motivated to look for information in the area about competitors or customers (expectancy) if he or she feels the news is good, beneficial and a reward associated with the transmission of the information (instrumentality) and the reward of value (valence).

Rival and Alternative Theories

The equity theory. The equity theory (Adams, 1963, 1965) postulated individuals were satisfied when the perception of fair treatment existed in relationships with others. Researchers extended the equity theory beyond employer-employee relationships to any relationship where the consciousness of equity existed (Adams, 1965). Further, the equity theory expanded from traditional equity relationships to non-equity based relationships (Adams, 1965). The foundation of the equity theory predicated on the perception of fairness, social input and a reciprocal return on investment in non-social relationships; Retailer-consumer, or taxpayer-provincial relationships (Adams, 1965). The equity theory represents emotions in relationship to individual's perceptions of the amount of input and output compared to others (Ryan, 2016). Further, (Adams, 1963) posits an individual will seek to modify input, outputs or the comparison of others to achieve equity a feeling of equity in the workplace.

However, (Ryan, 2014) warns human motivation and behavior is complex and comprehensive and a single theory is inadequate to provide a comprehensive assessment,

The modified expectancy theory. The modified expectancy theory changes the components of the outlook to expectancy, extrinsic instrumentality, intrinsic instrumentality, external valence, intrinsic valence to better refine elements of performance and outcomes (Abadi, Jalilvand, Sharif, Salimi, & Khanzadeh, 2011). Thus, individuals make behavioral decisions based on the expectations and desirability of the reward and the reasonable estimation of attaining the result that produces the reward (Abadi et al., 2011). The modified expectancy of value theory and the equity theory, both rival theories, measured the outcome based on expectations, valence, and reward. The expectancy theory and expectancy of value theory align appropriately with the business problems by measuring the relationship between expectations, reward, performance and outcome.

Theory of reasoned action. The theory of propositional control posits intentions influence the individual's attitude toward the behavior of interest (Ajzen, 2012). Normative belief influences the individual's motivation to comply with intrinsic expectations. In contrast, the theory of reasoned action developed by Ajzen and Fishbein (1980) differs from the theory of proportional control in the assumption that individuals form normative beliefs about one or more individual or groups depending on the observed behavior of specific individuals, groups or organizations e.g. family, spouse, coworkers, and professionals (Ajzen, 2012). Further, the expectancy of value theory

contrasts the theory of reason behavior in attitude of behavior is a subjective norm determined by normative beliefs concerning expectation of important referents.

Major rival theory. The major rival theory is the modified expectancy theory where individuals make behavioral decisions based on the expectations and desirability of the reward (Abadi et al., 2011). Individuals make decisions based upon based upon the desirability of the reward. The theory components are expectancy, intrinsic instrumentality, intrinsic valence and situation relationship, a correlation between job performance, outcomes and strengths (Abadi et al., 2011). The modified expectancy model identifies relationships motivation, performance measurement and rewards systems within the business environment but limited industry specific research is available (Yeheyis et al., 2016). Individual's makes decisions and behavioral choices based on an anticipated reward or outcome and are measurable, however the decision to proceed depends the individual's perception the behavior will provide a reward or desired outcome (Abadi et al., 2011). The expectancy theory deals with the motivation for individual decisions and factors behind the decisions and is applicable to financial decisions (Ghoddousi et al., 2014).

The expectancy of value model illustrates the overall attitude to an object of interest and encompasses subjective values and evaluations with attributes associated with object objects of value, which are strengthened by the value attributed to the object (Ajzen, 2012). Accordingly, this study will examine the business problem through the theoretical lens of the expectancy of value and expectancy theories. The modified expectancy theory is not used. The business problem is the existence of default mortgage

status and the link to risk, which underscores the importance of the relationship between homeowner's equity, cash flow value, recourse, and default mortgage status to banks and their effect on the capital ratio and compliance with Basel I and II Accords.

Mortgage Loans: A Business Tool in Household Finances

The foundation of the mortgage system and purpose of forming government - sponsored enterprises (GSEs) was to expand access to mortgage finance and increasing homeownership by providing affordable mortgages and flexible terms, which guaranteed adequate funds for mortgages (Allen et al., 2014). Further, regulations for GSEs required uniform credit quality standards for conforming loans, jumbo loans, and non-conforming loans and allowed the purchase of securitized mortgages to replace capital in banks (Allen et al., 2014). Additionally, GSEs created a conduit that replenished currency to members of Federal Home Loan Banks (Frame, 2016). The FHLB System has comprised 12 regional Federal Home Loan Banks of which 7500 financial institutions are members (Frame, 2016).

Bernanke (2012) postulated negative equity affected borrower's ability to survive financial difficulties, preventing financial maneuvers to prevent mortgage default. Neuhauser (2015) explained the duration of high unemployment, negative growth in the economy and the inability of citizens relocate to accept new employment or sell their homes because of negative equity negatively affected the housing industry precipitating in the Great Recession of 2007-2009. Neuhauser stated the shock of an extended period of unemployment, and high unemployment rates affected the sales of homes, family mobility, the ability to relocate for a new job, made it difficult for borrowers to qualify

for a new mortgage, or sell existing homes to purchase new properties. Grinstein-Weiss, Key, and Carrillo (2015) studied the accumulation of household wealth through homeownership by examining the change in net worth of homeowners and renters during the Great Recession of 2007-2009.

Grinstein-Weiss et al. (2015) described homeownership a fundamental of the American Dream home equity as an integral part of the household balance sheet. Levitin and Wachter (2013) stated the purchase of a home represented security, credit worthiness, and establishing roots within the community for families seeking the middle class. Further, Grinstein-Weiss et al. defined net worth as the total value of all assets owned by the family minus the outstanding debt. Results showed home equity remained the key component of the household balance and the principal instrument of wealth accumulation for homeowners (Grinstein-Weiss et al., 2015). Grinstein-Weiss et al. stated homeowner's loss an average 10% of net worth during the Great Recession and renters lost an average of 25% of net worth during the same period. Homeownership, according to Grinstein-Weiss et al., exposed borrowers to the loss of net worth but insulated them from overwhelming loss.

History of Mortgages

The mortgage in the U.S. connected the financial obligation to the purchase of a home, to ownership, citizenship, and respect, elevating the mortgage to status symbol (Grinstein-Weiss et al., 2015). The National Housing Act of 1949 established a quality home within a stable community as a model and homeownership as an advantage for all instead of the influential (Allen et al., 2014). Further, establishing homeownership

became a standard in the United States, a norm for social acceptance, wealth creation, and the American dream. Homeownership and financial stability through the mortgage led to wealth creation for families increasing purchasing power and consumption (Liao et al., 2014). Residential mortgages before 1949 were short-term, variable rate instruments requiring high down payments and renegotiation of terms at maturity (Allen et al., 2014).

The collapse of the housing industry in 2007, bank illiquidity, a freeze in capital markets, increasing debt, and regulatory oversight caused the economic collapse, which affected the overall economy (Wachter, 2014). Further, economic subsidence precipitated a decline in property value and an increase in the number of homes with mortgage balances greater than the value. According to *CoreLogic Equity Report Third Quarter* (2013), 20.4% or 48.9 million homes had less than 20% equity, reducing the financial options for refinancing, or sale of the property. The increase in the number of foreclosures continued because of the number of mortgages progressing to delinquency or foreclosure from a current position (*CoreLogic Equity Report Third Quarter,* 2013). Further, it was projected 6.4 million homes with negative equity and 2.4 million homes or 5% had a loan to value ratio greater than 125% of value (*CoreLogic Equity Report Third Quarter*, 2013).

However, Barakova, Calem, and Wachter (2014) stated the increased level of refinancing of mortgage loan debt, from historically low interest rates, and the extraction of equity by homeowners increased loan to value ratios to unstainable levels, both contributory to the mortgage crisis. The easing of lending and credit quality standards during the boom period had a mitigating impact on income and credit quality but did not

constrain wealth. Further, the increase in house prices in spite of lenient underwriting standards negatively affected homeownership during the boom period (Barakova, Calem &Wachter, 2014). The creation of private mortgage securitization within banks incentivized lenders to portfolio lower credit quality loans in-house, to securitize higher quality loans with GSEs. In exchange for a higher profit from the yield spread on mortgages, lenders had to accept higher risks, which proved costly during the housing industry collapse (Allen et al., 2014).

Government-sponsored enterprises. Government-sponsored enterprises GSEs, Federal Housing Administration (FHA), Fannie Mae, and the Federal Home Loan Bank (FHLB) formed in response to the collapse of the financial system, the Great Depression in 1930 and the need to expand the availability of mortgage credit (Golding, Szymanoski, & Lee, 2014). GSEs were vital to the secondary market by acting as a conduit between the mortgage market and capital markets (Allen et al., 2014). Further, GSEs differentiated the mortgage market into segments conforming, mortgage loans below the conforming limit, jumbo loans, non-conforming loans, which do not meet conforming guidelines, borrower or property characteristics (Allen et al., 2014).

GSE securities are exempt from regulations on bank held corporate debt and satisfy regulations that incentivize the retention of GSE debt; guaranteed by the U.S. government and will not default (Wachter, 2014). GSE debt is preferential because of the belief among investors the federal government guarantees their debt and special government-sponsored enterprise status protects GSE debt from default and lowers cost, which enhances its appeal (Wachter, 2014). After the financial disaster of the 1930s

(Allen et al., 2014), Congress authorized the Government National Mortgage Association (Ginnie Mae) as a department within the Department of Housing and Urban Development to purchase mortgages guaranteed by FHA and VA (Veterans Administration). The mission of FHA, Ginnie Mae, and VA is to stimulate housing and to a certain extent, enhance affordable mortgage financing for low and moderate income families (Allen et al., 2014). Importantly, the role of GSEs, as authorized by Congress, was to provide stable sources of funding for residential mortgages (Allen et al., 2014).

Government sponsored enterprises, chartered by Congress in 1934, expanded homeownership and ensured adequate funds circulated within the financial system, and precipitated the formation of Fannie Mae and Freddie Mac (Matthews & Driver, 2014). As noted by Matthews and Driver (2014), the agencies replaced the mortgage credit provided by the savings, loan industry, and facilitated the trading of mortgage-backed securities to expand mortgage capital and promote homeownership. Watt (2013) stated the Federal Home Loan Bank (FHLBs) was the third GSE formed by Congress in 1932 to assist member banks, credit unions and insurance companies in providing adequate funds for housing and mortgage services. Frame (2016) explained the Federal Home Loan Bank System (FHLBS), comprised of 12 regional Federal Home Loan Banks, were required to register one class of equity securities with the Security and Exchange Commission (SEC). Further, FHLBS differs from other banks since there was not a special board or management structure (Frame, 2016).

The Federal Reserve, according to Gorton and Metrick (2013) provided the primary source of funding for member banks and the Federal Deposit Insurance

Corporation (FDIC) guaranteed bank deposits. Gorton and Metrick stated the FHLBS became the lender of last resort during the Great Depression advancing funds to member banks via advances and guarantees with fixed and variable rates as quasi-government entities. Further, Gorton and Metrick stated the lender of last resort was the Federal Reserve, Central Liquidity Facility, Fannie Mae, Freddie Mac and the FHLB System.

Mortgage securitization. Jiang, Nelson, and Vytlacil (2014) postulated the business model changed to an intricate structure of mortgage-backed securities (MBS), secondary market, intermediaries, asset pools and shares to investors, which improved liquidity and benefited banks. Bessembinder, Maxwell, and Venkataraman (2013) suggested that MBS represent a claim on cash flows from mortgage loans and differ from commercial backed securities, secured by commercial real estate. Further, according to Bessembinder et al. (2013), agency securities issued by GSEs have an implicit government guarantee from the U.S. Treasury. However, according to Bessembinder et al. (2013), private label securities issued by private financial institutions had specific purposes, which provided credit to bond issuers. Trancing created highly rated pools of assets of low quality mortgages (Justiniano, Primiceri, & Tambalotti, 2015). Further, tranches purchased by institutional investors are restricted by regulations told hold only fixed-income securities with high ratings (Justiniano et al., 2015)

Matthews and Driver (2014) examined Lender Processing Services's (LPS) loan level data from residential mortgage servicers of prime and subprime loans and concluded banks sold low-risk loans to GSEs in the secondary market. Further, Levitin and Wachter, (2014) explained the strategy to sell low risk mortgage loans in the

secondary market and to maintain mortgages with the least likelihood of early prepayment in the portfolio was a profitable strategy for banks in 2007. Securitization focused lenders upon the enormity of prepayment in loan portfolios, and the necessity to originate new loans to replace the loans lost to refinance (Levitin & Wachter, 2014). However, instability in the markets, home sales, and home values forced lenders to transition to a new approach to retaining the high risk of default loans in the portfolio to retain the low risk of prepayment loans (Chan et al., 2014).

The transition in lender behavior and emphasis on originating mortgages to sell in the secondary market rather than originating mortgages to maintain until maturity was the result of securitization (Jiang et al., 2014). Mortgage defaults were low and the yield lower for mortgage-backed securities (Jiang et al., 2014). The percentage of top-rated securities sold into securitized pools was higher when a relationship existed between the lender and servicer of mortgage-backed securities (Jiang et al., 2014)). Mortgage securitization created distance between the originator and servicer and created short-term interest behavior for banks, which reduced incentives for banks to have skin in the game (Jiang et al., 2014)).

Effect of the Recession of 2007-2009 on the Mortgage Industry

Schwarcz (2013) suggested the mortgage crisis in the U.S. resulted from government pressure to originate mortgage loans to expand homeownership, and supplementary pressure on lenders to replace existing mortgages lost via the refinance bubble. Further, lenders relaxed lending guidelines, according to Schwarcz (2013), by

lending to borrowers with lower credit scores, insufficient income and high debt to income ratios, while banking on house-value appreciation to function as leverage.

Tatom (2013) noted a protracted recessionary cycle in conjunction with losses from mortgage-backed securities, and the increasing number of mortgages defaults, unstable capital markets, and bank failures, led to the Great Recession. Further, the failure of the firms, Bear Stearns, AIG, Lehman Brothers, Merrill Lynch, Washington Mutual and Wachovia Bank forced the Congressional legislation, AHRFPA (American Housing Rescue and Foreclosure Prevention Act) and the EESA (Emergency Economic Stabilization Act) in 2008 (Tatom, 2013). Tatom explained, the legislation provided $180 billion in loans and equity infusion to the markets. Neuhauser (2015) stated the financial crisis resulted from economic events, unsustainable house price appreciation, expansion of subprime lending, a shift in monetary policy precipitating historically low-interest rates, mortgage securitization allowing banks liquidity for additional loans, and global market volatility before the Recession of 2007. Tatum (2013) argued poor economic policy, temporary tax stimulus and government spending on a range of government programs and private sector stimulus contributed to a weak recovery and less than robust expansion. Mian and Sufi (2015) stated excessive mortgage debt, and the collapse of the housing bubble, eliminated family wealth, increased spending and the need for additional credit. Further, Mian and Sufi (2015) attributed the collapse in the mortgage industry to the fall of the banking segment.

In contrast, Ivanova (2013) explained the Great Recession ended in June 2009, and the following recovery cycle was slower and did not create prosperity for the

majority of the population. Mian and Sufi (2015) stated the decline in home values precipitated a decline in new construction in 2006, which lead to a decrease in consumption and durable good purchases, and investment in residential real estate. Further, Mian and Sufi stated an accelerated decline in home prices resulted in an increase in foreclosure sales at reduced prices creating "fire sale'' behavior in the lending community further depressing the housing market. The "fire sale" behavior of banks incentivized opportunistic real estate investors to purchase deeply discounted homes for rentals precipitating an increase in rental rates and investment property ownership (Mian & Sufi, 2015).

Ivanova (2013) postulated the last two-quarters of 2010 were sub-par regarding consumer spending, yet consumer consumption was 70% of GDP and a state of permanent unemployment for some emerged. Three years after the end of the Great Recession in 2009, according to Ivanova, the unemployment rate remained at approximately 8%. Dwyer, Devereux, Baier, and Tamura (2013) defined a banking crisis as the negative shock to financial intermediation. Philippon (2015) examined financial intermediation from the price spreads and fees earned by intermediaries from the flow of stocks and flow of financial assets and liabilities. Further, financial intermediaries earned compensation for the services provided (Philippon, 2015). This compensation, according to Philippon, represented the total of all spreads and fees paid by non-financial agents to financial intermediaries, which included the total of all profits and wages in the financial industry. Philippon concluded intermediation spreads increased over the past 30 years and had not declined with the adaptation of new technologies, the trend in other sectors,

which revealed the inefficiencies and rising cost caused by zero-sum trading activity and lax regulations. Dwyer et al. (2013) stated empirical research of data from 21 countries including the U.S. revealed a link to the banking crises to a decrease in GDP per capita the year of the crisis and the years following the crisis.

Borrower Behavior

Seiler (2015) examined the mimetic herding behavior of individuals to determine their effect on the decision to default based on the observed behavior of others. Further, mimetic herding behavior was the alignment of individual decisions with the decisions of peers. Borrowers defaulted strategically based on hypersensitivity to negative equity and the perceived behavior of others (Seiler, 2015). Seiler and Walden (2014) stated borrowers had no problem defaulting on a mortgage if the conduct of the lender was considered egregious, unethical, a mortgage modification request denied, or the lender received funds from economic stimulus legislation following the Great Recession. Seiler (2015) concluded the decision to default was complex but influenced by the individual's belief the lender would pursue legal recourse. Liao et al. (2014) concluded the negative relationship between wealth and risk aversion positively correlated with consumption and the changes in house value, which caused the housing wealth effect (HWE).

Andersson et al. (2013) explained borrowers default of the mortgage before defaulting on credit card debt when the combined equity decrease from $100,000 to 0$ or to -$100,000. Further, Andersson et al. explained the propensity to default on the mortgage instead of credit cards increased from 14% to 48% to preserve liquidity. Andersson et al. noted liquidity in the form of available credit from credit cards was

significant to decisions default on the mortgage because debt service issues forced mortgage repayment priorities to preserve purchase capabilities via credit cards. Affordability factors, the ability to buy goods and services with credit cards affected mortgage repayment decisions because the decision to default on the mortgage and maintain credit cards preserved purchasing capabilities more than defaulting on credit cards and maintaining the mortgage (Andersson et al., 2013).

Mortgage Default Prediction and Foreclosure

Alhammadi, Stanier, and Eardley (2015) noted banks provide a schedule of payments to the borrower. When a borrower fails to make a scheduled payment, lenders do not know whether the payment was delayed temporarily or permanently stopped (Jones & Sirmans, 2015). Delinquent mortgage loans are costly to lenders because of the negative effect on the value of the foreclosed property, effect the surrounding values of properties in surrounding neighborhoods, collection costs, property maintenance cost and the cost of foreclosure (Payton, 2016). Further, a mortgage lender considered a mortgage delinquent when a scheduled payment was delinquent, and the subsequent payment becomes due (Nadauld & Sherlund, 2013). When three or more scheduled payments remain unpaid, the mortgage progressed to defaulted mortgage status (Alhammadi et al., 2015). Curtis (2014) explained mortgage defaults, if not cured, proceed to foreclosure according to the terms of the deed of trust and state statute. Further, state law determines the procedure and timing of foreclosure (Curtis, 2014).

Liu and Sing (2013) examined the relationship between mortgage choice, mortgage characteristics, mortgage type, loan to value, and loan size, and budget

disbursements. Lin and Sing concluded a correlation existed between borrower consumption preferences and choice of mortgage type, loan to value ratio and house size. Further, Liu and Sing concluded a relationship existed between mortgage type, fixed rate mortgage, or adjustable rate mortgage, and default risks for borrowers.

Jones and Sirmans (2015) examined loss given defaults of residential mortgage loans from data from residential defaults in a U.K. bank to determine if the probability of default was predictable. Leow and Mues noted Basel II regulations using the advanced IRB approach required financial institutions to develop a model to identify losses from three risk factors, probability of default, exposure at default (EAD), and loss given default of risk portfolios. Regulations allowed financial institutions to divide portfolios into three sections; retail, consumer loans and credit cards, residential mortgages, and wholesale, commercial loans (Vallascas & Hagendorff, 2013). Further, Basel II regulations required financial institutions to retain a minimum reserve of funds for estimated losses resulting from mortgage losses capital exposure, losses from credit risks, market risks, and operational risks (Jones & Sirmans, 2015). Further compliance with Basel II regulations, required financial institutions to enumerate exposure to losses using the standard approach, or the IRB approach (Vallascas & Hagendorff, 2013).

Gangel, Seiler, and Collins (2013) argued disposition time have a greater impact on property values than a foreclosure discount. Gangel et al. (2013) concluded as the time a foreclosed property on the market increases beyond 2 to 13 months average, the greater the probability of market failure or no sale.

Brevoort and Cooper (2013) analyzed 330,000 anonymous credit profiles of borrowers in foreclosure between 1999 and 2010 to study the effect of foreclosure on credit scores. The credit scores of prime borrowers increased following the foreclosure because of post-foreclosure delinquencies on other types of credit (Brevoort & Cooper, 2013). Further, Brevoort and Cooper explained the credit scores of borrowers that experienced foreclosure before 2007 to 2009 improved slower after the foreclosure than the credit scores of borrowers experienced foreclosure from 1999 to 2000. Further, decreases in credit scores after foreclosure extended for several years (Brevoort & Cooper, 2013). Brevoort and Cooper stated house prices data was a better indicator of a borrower's equity position than solvency. Brevoort and Cooper cited the cause of mortgage delinquencies as decreased demand, and an increase in the supply of single family housing, which resulted from the loss of job, divorce, or health issues.

Guiso et al. (2013) explained borrowers default when they perceive they are better off with the decision to default compared to other options. Equity position was not the only factor in the decision to default, ability to pay, willingness to pay and equity affected the decision to default (Chan et al., 2014). According to Alhammadi et al. 2015, the unemployment was a major contributing factor in the Great Recession and the length of the recovery. When borrowers faced limited or no equity conditions with properties, the likelihood of default increases and enhanced by an extended period of high unemployment (Jones & Sirmans, 2015).

Independent Variables

Homeowner's equity. This variable is a virtual calculation, which captured the expectancy of a borrower related to the profitability of the property if the property sold. This variable captured the market appreciation, equity or loss of the property. The calculation of this variable is the tax appraisal value minus the cost, minus debt, equals the equity in the dwelling (Corradin & Popov, 2015). Duffy and O'Hanlon (2014) examined negative equity in the Irish housing market and estimated 116,000 borrowers were in a negative equity position at the end of 2009, 196,000 in 2010. Duffy and O'Hanlon (2014) determined while borrowers with negative equity position continued to make mortgage payments and were able to service mortgage debt without difficulty, negative equity increased the likelihood of default. Default increased if negative equity occurred while borrowers experienced the trigger events, cash flow problems, loss of job, or health concerns (Duffy & O'Hanlon, 2014). Additionally, Duffy and O'Hanlon noted borrowing the maximum mortgage amount affordable, to purchase a home in the maximum price range, with high loan to value, interest only loan and longer than traditional terms, precipitated the negative equity position, increasing the likelihood of default.

Campbell (2013) explained the difference in homeownership policies between the United States and other countries was fixed rate mortgages, dominant in the U.S. market, not-assumable, and issued for longer loan terms than in other nations. Conversely, in other nations adjustable rate mortgages were dominant, assumable, and reflected shorter terms. Campbell found mortgages in the U.S. not-assumable, collateral for a specific house, which required payment of the old mortgage before sale or transfer to the next

buyer. Further, Campbell stated the existence of a mortgage on the property had economic consequences; the homeowner must sell the property and clear the debt before moving to a new property, and the equity in the old property provided the capital for the move. Further, positive equity benefited the homeowner; negative equity negated the propensity to move and incentivized default (Campbell, 2013).

Campbell and Cocco (2015) examined negative equity in household decisions and the effect of loan type, loan to value ratio and mortgage affordability in mortgage default. Conversely, Campbell and Cocco suggested borrowers not default as soon as the equity position becomes negative, but wait to determine if home prices appreciate because mortgage default was an irreversible decision. The amount of negative equity necessary to initiate mortgage default, according to Campbell and Cocco (2015), related to the extent household borrowing power restrained.

Cash flow value (rental value). This variable captures the expectancy the property is rentable with an expected cash flow. Once the property is underwater, homeowners consider renting the property as an option. This variable is an important consideration in the decision-making process for homeowners whose property is underwater. The calculation of this variable does not mean the homeowner has acted but represents a virtual option. Bernanke (2012) defines cash flow value for investment property as the return derived from the annual rental income minus expenses. Applicable rental expenditures, according to (Bernanke, 2012), are leasing costs, maintenance expenses, taxes, management fees and rent loss from a vacant property. Cash flow value assumes rental costs of one month's rent, management fees equal to 8% of the monthly

rent and maintenance expenses of 2% of the property value (Bernanke, 2012). Further, rent loss from property vacancy assumes a one-month vacancy during the year (Bernanke, 2012). The profitability requires analysis of the capitalization rate, or the cap-rate the anticipated annual cash flows from renting the property compared to the rent the property earns in an occupied neighborhood (Bernanke, 2012). According to Bernanke (2012), approximately two-fifths of Fannie Mae's Real Estate Owned (REO) portfolio had a cap rate of 8 percent signaling the property rental would provide a better return than selling the property at a loss. Comparably, Pfnur and Armonat (2013) examined operational cash flows of real estate investments to improve the accuracy of forecasting real estate receipts and expenses to the quality of decisions.

Further, Pfnur and Armonat explained decision makers reported discrepancies in reporting of rental income of 47% to actual income over a ten year period. The examination of cash flows is critical to real estate investment decisions because of long payback periods and low net cash flows (Pfnur & Armonat, 2013). Additionally, Pfnur and Armonat suggested the accuracy of rental income and costs forecasts was relevant to an appraisal of investment alternatives by decision makers. Importantly, homeowners evaluate the cash flow value of properties in a negative equity position routinely as a tool to assess the viability of the option to rent the property as an alternative strategy. However, the review of the cash flow position of a dwelling in a negative equity position is virtual and does not mean the homeowner will initiate default.

Amedee-Manesme, Barthelemy, Baroni, and Dupuy (2013) examined cash flows using a stochastic approach to determine the accuracy of future cash flows in a real estate

portfolio. Further, the approach estimated risk included in cash flows generated by assets in the portfolios and the risk of pricing rentals (Amedee-Manesme et al., 2013). Amedee-Manesme et al. noted examined tenant behavior and impact on cash flows and the effect on the value of the portfolio.

Recourse. This variable captures the expectation of a borrower being able to walk away from a property with limited or no legal or tax ramifications. Whitman and Milner (2013) examined whether an entity pursuing a non-judicial foreclosure of a mortgage was required to establish whether it was entitled to enforce the promissory note the deed of trust it secured. Further, Whitman and Milner examined the right of entities to purse non-judicial foreclosures because of the increase in the number of defaulted mortgages progressing to the foreclosure stage during the mortgage crisis of 2007-2009. In the judicial foreclosure of a mortgage the foreclosing party must provide proof it had the authority to enforce the note. In a non-judicial foreclosure by a trustee with a deed of trust, the trustee acted as proxy for the judge for a judicial foreclosure (Whitman & Milner 2013). According to Whitman and Milner, in a non-judicial foreclosure the trustee or no one is obligated to verify the foreclosing party holds the note, and then the borrower is exposed. Li and Oswald (2016) examined the effect of Nevada legislation in 2009 which abolished deficiency judgments for purchase mortgage loans originated after October 1, 2009. Li and Oswald, concluded borrower loan applications did not increase, however lenders tightened lending guidelines, loan approval rates declined but borrower default decisions and lender foreclosure decisions remained unaffected by the new

legislation. However, in a non-judicial foreclosure by a trustee with a deed of trust, the trustee acts as a proxy for the judge for a judicial foreclosure (Whitman & Milner, 2013).

Sinha (2013) studied strategic default, contract renegotiations in residential mortgages, and the influence of lender recourse on the bargaining capability of borrowers, and the effect of incentives on debt repayment. A deficiency judgment, according to Sinha (2013), changed the shortfall between the value of a foreclosed home and the value of the mortgage debt into an unsecured loan, which provided access to the borrower's personal assets for repayment of the shortfall. According to Sinha (2013), pursuit of a deficiency judgment by the lender makes default less feasible and reduced occurrences of strategic default and foreclosure. Sinha (2013) argued lender recourse removes the option of the borrower to pursue foreclosure and increases the reservation-value of the bank in renegotiations. When recourse and contract renegotiations exist, default does not occur when negative equity exists, and when there is positive equity, the homeowner can sell the home (Sinha, 2013). Sinha (2013) concluded in recourse states where renegotiations were possible, mortgage rates were lower, default was lower, and equity was higher than in states without recourse.

Dependent Variable – Default Mortgage Status

This variable captures mortgage default after more than three payments remain unpaid, and the delinquent mortgage advanced from defaulted mortgage status to petition for foreclosure status, filed and recorded with the county clerk. A lender considered a mortgage delinquent when one scheduled payment was delinquent, and the subsequent payment becomes due (Nadauld & Sherlund, 2013). When three or more scheduled

payments remain unpaid, the delinquent mortgage progressed to defaulted mortgage status (Nadauld & Sherlund, 2013). Further, mortgage defaults, if not cured, proceed to foreclosure status according to the terms of the deed of trust and state statute (Nadauld & Sherlund, 2013). Cordell, Geng, Goodman, and Yang (2013) stated judicial foreclosure required the lender to petition the court to execute foreclosure by selling the property.

Cordell et al. (2013) noted in a statutory foreclosure the borrower executed at loan closing and signing of loan documents the right of the lender to foreclose and sell the property in the event of default, bypassing judicial review. Further, state legislation provided borrowers the legal right and period to cure the mortgage delinquency and redeem the property post-foreclosure (Cordell et al., 2013). Cordell et al. explained the length of the redemption period varied by state and legislation. Demiroglu et al., (2014) noted the classification for California was non-judicial for foreclosure and non-recourse for lenders and the category for Tennessee was non-recourse, and non-judicial. Borrowers sought bankruptcy protection frequently in states with strict lender recourse laws about wage garnishment, which shortened the time frame for lenders to initiate foreclosure proceedings and increased the cost of default (Demiroglu et al., 2014).

Conversely, Das and Meadows (2013) argued default result from the loss of employment, medical concerns, illiquidity, and the capacity to repay but unwillingness to repay the mortgage (Das & Meadows, 2013). Further, Das and Meadows explained if the ability to repay the mortgage existed the propensity to default was greatest when equity was negative or zero. In addition, when equity was negative or zero, according to Das and Meadows, the option to default and give the property back was at its highest value.

Das and Meadows argued a principal reduction or principal forgiveness by the lender, a rate reduction, or increase in terms reduce the value of the option to default, created value, equity in the property changing the propensity to default and leave to a propensity to stay. According to Das and Meadows, banks were reluctant to pursue a principal reduction or mortgage write-down because of the losses it would create, because of securitization they serviced the mortgage and did not own it, and did not have the legal authority to make changes. Accordingly, the traditional process of default, foreclosure and auction remained the course of action by lenders. Seiler (2015) analyzed the role of strategic default in the perspicacity of inequity and found borrowers, including real estate professionals, would engage in strategic default decisions because of the perceived attributes of their lender. Further, Seiler (2015) explained homeowners and real estate professionals fail to distinguish between the owner of the mortgage and the servicer of the mortgage, which was problematic.

Seiler (2015) explained borrowers were unwilling to sacrifice wealth via strategic default when an established relationship existed with a local bank instead of an unfamiliar online lender. Findings indicated, according to Seiler (2015), a borrower was likely to engage in default strategically previously experienced a denied loan modification or defaulted on a mortgage, had high positive net worth, was under age 45, and male. Seiler (2015) concluded an accurate perception of fairness of banks by borrowers, and lender advertising and lending practices were conservative and free of bailout throughout the mortgage crisis reduced the mortgage delinquency rates at banks.

Chan, Sharygin, Been, and Haughwout (2014) postulated mortgage default was less of a singular event than a process of unanticipated duration and varying outcomes. Further, Chan et al. (2014) noted borrowers have several options when served a legal notice of foreclosure; refinance or sell the property, modify the mortgage or offer the deed in lieu of foreclosure. However, the lender could force the sale of the dwelling at a foreclosure auction, remove the property from auction if the offer was below the lender's reserve price, or include the property in the lender portfolio of real estate owned (Chan et al., 2014). Chan et al. concluded there was a positive correlation between high loan amount, high loan to value, debt to income ratio greater than 45% and mortgage default and foreclosure. High loan to value loans was positively correlated to default, had a lower chance of going to auction because the cost of foreclosure, and balance owed made it advantageous for the lender to work with the borrower and collect payments even if less than agreed (Chan et al., 2014). Huang, Yates, Thrall, and Peiser (2013) examined the tipping point in neighborhoods in Los Angeles in 2006-2007 and intimated mortgage defaults, while detrimental to the lender, precipitated a cycle of disinvestment, deterioration in value and stability in surrounding neighborhoods.

Further, Huang et al. (2013) noted, as the resistance to defaulting on the mortgage decreased the likelihood of mortgage default increased precipitating a vicious cycle within the neighborhood. Huang et al. defined the tipping point as the rate which the resistance to mortgage default actually increased the likelihood of default. In addition, the tipping point for metropolitan Los Angeles was a mortgage default rate of 6%. In addition, neighborhoods with mortgage default rates in the 4% to 5% were approaching

the tipping point at which the resistance to default deceased precipitating increases in default and a cycle of deterioration of value, aesthetics and investment (Huang et al., 2013).

Methodologies

Corradin and Popov (2015) conducted a quantitative study using survey data to link home prices, home equity, home equity borrowing and entrepreneurship. In a qualitative study Grinstein-Weiss et al., (2015) examined survey data from the United States Census Bureau to determine the viability of home equity as a financial tool during the Great Recession. Jones and Sirmans (2015) used mixed methods methodology and examined 100 empirical studies to determine the impact of lender recourse, loan characteristics, negative equity, as determinants of mortgage default and early mortgage termination. Loan characteristics, home equity, loan to value ratios and negative equity as major contributors to mortgage default (Jones & Sirmans, 2015).

Seiler (2014) used survey data in a qualitative study, to determine the impact of strategic default upon borrower behavior, the community, and the economic and financial ramifications on the well-being of the community. Archer and Smith (2013) conducted a quantitative study using secondary data from local counties in the state of Florida to measure house price volatility, home appreciation, and loan data, to determine the relationship to mortgage default. House price appreciation and the economic factors associated with home price volatility were the dominant default mechanisms (Archer & Smith, 2013). Corbae and Quintin (2015) conducted a quantitative study using secondary data from purchase mortgages insured by FHA or purchased by GSEs with LTVs greater

than 97% to examine relationship between high loan to value mortgages originated prior to the Great Recession and foreclosures during the recessionary period. Tsai (2015) examined home foreclosure, health and mental health during the Great Recession using mixed methods and concluded mortgage default, foreclosure, had adverse effects on health and mental health in ethnic and minority populations. Researcher's examined the dependent variable default mortgage status using quantitative methodology, which represented borrowers with the greatest propensity for default, garnishment restrictions, no- recourse for lenders, 10% decline in housing prices and bankruptcy (Seiler, 2016). Results suggest fewer borrowers file bankruptcy when strategic default was available, large negative equity exists; state laws provide protection from recourse and garnishment (Seiler, 2016). Quantitative methodology measured the dependent variable default when the likelihood of default occurs from loan value changes and high loan to value (Das & Meadows, 2013). Quantitative methodology is useful in measuring the relationship between optimal strategic defaults when shareholder attempt to maximize equity shareholder in the context of anticipated returns from shareholder renegotiations (Favara, Schroth, & Valta, 2012). The quantitative methodology using secondary data is best for this study.

Transition and Summary

The purpose of this quantitative correlational study was to examine the relationship between homeowner's equity, rental cash flow value, recourse, and default mortgage status. The overarching research question of the study was: what is the relationship between homeowner's equity, rental cash flow value, and recourse with the

default mortgage status? In Section 1, I outlined the background, problem, purpose, and research question of the study. In addition, the content of Section 1 included a theoretical framework and comprehensive literature review. The content included in Section 2 included my justification for the chosen research methodology and design. I identified data collection procedures and outlined my data analysis. Section 2 also provided procedures necessary to maintain study validity. The focus of Section 3, was to present the findings, application to business practice and implications for social change.

Section 2: The Project

Many bankers struggle to understand the interplay of homeowner's expectations as they assess the risk of property default (Seiler, 2014). In this study, I examined three independent variables which could influence the expectations of homeowners (homeowner's equity, rental cash flow value, and recourse) and default mortgage status, dependent variable. The value of the expectation assigned by the homeowner and bank aligns with the expectancy of value theory because organizations and individuals make decisions that determine the value of effort, size of the reward, and likelihood of return (Fallis, 2013). Homeowner expectations and assessment change based on the likelihood that a return of value and reward will occur (e.g.,) in home values and mortgage interest rates; Wilcox, 2015). Equity, liquidity, costs and recourse affect the likelihood of mortgage default (Campbell & Cocco, 2015; Demiroglu et al., 2014). By researching the relationship between homeowner's equity, rental cash flow value, recourse and default mortgage status, this study may increase bank executives' understanding of the relationship between owners' financial options and the probability of default.

Purpose Statement

The purpose of this quantitative correlational study was to examine the relationship between homeowner's equity, rental cash flow value, recourse, and default mortgage status. The independent variables included homeowner equity, rental cash flow value, and recourse. The dependent variable was default mortgage status, which was binary ($0 = x$, $1 = y$), required the use of a logistic regression model. State law in recourse states allow banks to obtain a deficiency judgment for outstanding mortgage

balances not included in foreclosure; state statute prevents deficiency judgments in non-recourse states (Demiroglu et al., 2014). The targeted population was single-family residential properties located in the geographical areas of Tennessee and California, which are similar except for state statues on recourse. Tennessee is a recourse state while California is a nonrecourse state (Quinn, 2014). This type of comparative data may help bank leaders to identify factors related to mortgage default and implement procedures to prevent default, which may result in increased profits. The Positive social change could occur through increased stability in the housing financial market, stable property values, equity appreciation, and greater access to credit through flexible lending guidelines.

Role of the Researcher

The role of the researcher in a quantitative correlational study is to examine available and appropriate data and develop research questions, hypotheses, and a proper sampling method (Yilmaz, 2013). Further, the researcher in a quantitative correlational study uses numerical models and statistical analysis to examine the relationships in data and report the findings (Yilmaz, 2013). I have over 20 years' experience in mortgage banking and finance. This experience helped me to interpret the data I collected from secondary sources. Therefore, the role of the researcher also involves identifying and addressing ethical problems, knowledge, and personal experience that may create bias (Krzywinski & Altman, 2013). In addition, a research is responsible for using suitable testing instruments and data analysis to ensure the integrity of findings (Krzywinski & Altman, 2013). Adhering to the three guidelines (respect, beneficence, and justice) in the Belmont Report (1979; see, also, Adams & Miles, 2013) can assist with this process. I

used secondary data for this study, which did not require the use of human data. Thus, the Belmont report requirements did not directly apply to my study. Therefore, the role of the researcher is to examine available and appropriate data and develop research questions, hypotheses, and a proper sampling method. Furthermore, the researcher is to identify and address ethical problems, use numerical models and statistical analysis to examine the relationships in data and report the findings.

Participants

There were no participants in this study. Publicly available archival data were the only data source for this study. I was not involved in data collection, and any contact I might have had with participants was incidental. Fleischhacker, Evenson, Sharkey, Jilcott-Pitts, and Rodriquez (2013) stated that the use of archival data is appropriate when it is cost-prohibitive and time-consuming to observe previously collected data. Further, Behringer, Omohundro, Boswell, Evans, and Ferranti (2014) explained that the use of secondary data is convenient and efficient and appropriate for analysis and presentation. Similarly, Pollanen, Abdel-Maksoud, Elbanna, and Mahama (2016) stated that the use of secondary data is an effective means of analyzing complex information. From examining secondary data, I was able to access the necessary data for determining how the independent variables (homeowner's equity, rental cash flow value, and recourse) interact with the dependent variable (default status). Archived data from public and proprietary secondary databases were the basis of my statistical analysis.

Research Method and Design

My chosen research method was quantitative, and my chosen design was correlational. The purpose of my study was to examine how homeowner's equity, rental cash flow value, and recourse relate to the likelihood of a defaulted mortgage. I examined historical archival data from public, proprietary and zip code databases.

Research Method

The purpose of this study was to determine the relationship between homeowner's equity, rental cash flow value, recourse, and default mortgage status. The focus of quantitative research is to examine the relationship between variables measured by numeric data and a binary dependent variable. Quantitative researchers examine specific phenomenon grounded in theory utilizing a mathematical model and statistical analysis of variables to measure numerical data (Barnham, 2015). Quantitative researchers examine the relationship between variables and build mathematical models to examine theory (McCuster & Gunaydin, 2015). The data for all variables used in this study were numeric. I concluded that the quantitative method was best to study the relationship between homeowner's equity, rental cash flow value, and recourse and with default mortgage status.

Qualitative researchers explore a problem based on the lived experiences of the participants within their setting, adding clarity and focus to the topic of study (Barnham, 2015). The theoretical root of qualitative research focuses on lived experiences and descriptions (the how and the why) of a phenomenon, rather than the analysis of numerical values (McCusker & Gunaydin, 2015). Qualitative researchers rely on

creative tools to gain an in-depth understanding of a problem (Madill, 2015). Furthermore, qualitative researchers use non-numeric data to explore a phenomenon (Madill, 2015). I concluded that the quantitative method was best to study the relationship between homeowner's equity, rental cash flow value, and recourse and with default mortgage status.

The mixed method approach involves a combination of qualitative and quantitative research components, which collectively provides a better understanding for the researcher than either component (Johnson, 2015). Mixed methods researchers use both qualitative and quantitative data to analyze concepts and test hypotheses within a sample (Landrum & Garza, 2015). The qualitative component of the mixed method approach did not align with the scope of this study. Qualitative researchers explore what, how, and why aspects of a phenomenon (Riazi & Candlin, 2014). The mixed methods approach is best suited for research in which both qualitative and quantitative methods are necessary to address exploratory and confirmatory questions within the same research (Zachariadis, Scott, & Barrett, 2013).

Other researchers have examined secondary data to identify the relationship between independent variables and the dependent variable, default mortgage status (Seiler, 2015; see also Sinha, 2013). Qualitative researchers do not use statistical analysis; instead, they use rigorous methodologies to explore the lived experiences of participants to determine the what, how, and why of a phenomenon (Riazi & Candlin, 2014; Stichler, 2016). The qualitative method was not appropriate for this study because I examined secondary data to determine the relationship between the variables.

Researchers using a mixed method design incorporate the qualitative method to address exploratory and confirmatory questions within the same research (Zachariadis et al., 2013). I relied exclusively on numerical data from secondary sources and did not supplement my research with qualitative elements. Therefore, qualitative and mixed methods were not appropriate for this study. Because the purpose of my study was to examine the relationship among data, I used a quantitative method.

Research Design

The quantitative research design may be (a) descriptive, (b) experimental, or (c) correlational (Barnham, 2015). Quantitative descriptive research is statistical research, which answers the questions of *how* or *how much* through an analysis of data and significance of findings (Stichler, 2016). Quantitative descriptive research answers the questions of *how or how much* through an analysis of data, observations, and significance of findings, and is not appropriate for this study because I examined secondary data to determine the relationship between independent and dependent variables. Experimental research designs required planning, the introduction, and manipulation of variables in research to determine a course of action (Quick & Hall, 2015). Quantitative experimental research design required replications of the experiment made in similar conditions are independent, and replications made for the control group (Stichler, 2016). The experimental research design was unsuited for this study because to answer my research question I do not need to manipulate data. My focus was to identify the extent of an existing relationship between independent and dependent variables.

A correlation design was appropriate for this study because I used secondary data and examine the relationship between variables. Researchers use a correlational design to measure the strength of the relationship between variables, and the trajectory of the change in the variables without implying causation (Delost & Nadder, 2014). Correlation interpolates the association between two or more variables (Curtis, Comisky, & Dempsey, 2016). The quantitative correlational research design was best for this study because it allowed me to identify the relationship between variables. The measurement of the prevalence of relationship between variables tests the hypothesis and predicts events from current data (Curtis et al., 2016).

The correlational analysis is acceptable to explore the relationship between variables, enables researchers to reduce mistakes, but not to infer a causal relationship (Curtis et al., 2016). I used a regression analysis and correlational analysis to analyze data. Researchers utilized the correlational research design because of a statistical technique that measures linear relationships between independent and dependent variables; however, the researcher cannot use the results to infer a causal relationship (Nimon & Oswald, 2013). Researchers use a correlation design to test hypotheses by measuring the relationship among variables (Landrum & Garza, 2015). A correlational design was appropriate where there is a relationship between two or more variables (Tonidandel & LeBreton, 2013). The correlational design was appropriate for this study. The purpose was to determine the relationship between three independent variables and a dependent variable. In this study, I examined the relationship between equity, rental cash flow value, and lender recourse with default mortgage status, the dependent variable.

Population and Sampling

The geographic population of the study was single family residential properties purchased from 2007-2010 in the states of Tennessee and California, similar except for recourse. The appropriate sample size and power is integral in linear regression models in determining the relationship between variables before elevating the Type 1 error rate (Durand, 2013). Landau and Stahl (2013) postulated the Monte Carlo approach was useful in research requiring intricate calculations of sample size and power when power formula is not available. According to Delost and Nadder (2013), there are two sampling typologies; probabilistic (probability) and non-probabilistic (non-random, non-probability). The probabilistic typology include random, stratified, systematic, and cluster sampling (Delost and Nadder, 2013). Random sampling is a procedure where each element of the population has an equal chance of selection (Delost and Nadder, 2013). Stratified sampling is a method where the researcher divides the target population into homogeneous parts (strata) and the researcher selects a random sample from each part (Shi, 2015). Saka, Elegunde, and Lawal (2014) utilized stratified sampling techniques in the analysis of secondary data because of the flexibility to manipulate a large dataset to research a problem requiring smaller sample subsets. Systematic sampling is a two-step process. First, the researcher makes a random selection of the first element. The researcher next picks a fixed interval and uses this interval to pick the remaining sample (Delost & Nadder, 2013).

Cluster sampling methods work best when randomly selected groups of the target population (clusters), and the aggregate element of the population remains intact (Delost

& Nadder, 2013). Cluster sampling is practical when the target population is large, geographically dispersed, and cost prohibitive (Delost and Nadder, 2013). Zmuk (2016) utilized cluster sampling to examine optimal value intracluster homogeneity with two or more variables to reduce survey costs. Cluster sampling provided the flexibility to allow adjustments of cluster design and size of clusters, weight, and error calculations. Vanfleteren et al. (2013) also utilized cluster samples with differing profiles, flexibility, to study comorbidities in systemic inflammations in patients with a chronic obtrusive pulmonary disease. Accordingly, the cluster sampling method is best for this study because elements are space-based, selected in aggregates at one time, occur naturally within the geographic population, and adaption (Delost & Nadder, 2013).

The purpose of this study was to examine how homeowner's equity, rental cash flow value, and recourse relate to the likelihood of a defaulted mortgage. Cluster sampling in the target population provides every element an equal chance of being selected (Delost & Nadder, 2013). The four clusters form a two-by-two matrix of default mortgage status - no default mortgage status and recourse-no recourse. See Figure 1 for the description of cluster samples in the target population.

	Recourse state Tennessee	Nonrecourse state California
Default	Cluster 1	Cluster 2
Non Default	Cluster 3	Cluster 4

Figure 1. Four cluster sampling in the target population.

I used secondary data obtained from a third party source. Secondary data provided factual statistics aid the researcher in studying a population (Fleischhacker et

al., 2013). The sampling included counties of Fayette, Shelby and Tipton of West Tennessee and Alameda County California and surrounding areas. The counties were similar in total population 1.1 million in West Tennessee counties, 1.5 million in Alameda County (U.S. Census Bureau, 2014a, 2014b, 2014c, 2014d). The number of housing units was similar, 440,424 in West Tennessee counties, and 587,822 in Alameda County California (U.S. Census Bureau, 2014a, 2014b, 2014c, 2014d).

Similarities existed in homeownership rates in West Tennessee and Alameda County California. The single-family homeownership rate was 61.7%, and the multifamily rate is 38.3% in West Tennessee Counties (U.S. Census Bureau, 2014a, 2014b, 2014c, 2014d). The single-family homeownership rate was 53.7%, and multifamily rate 38.1 % for Alameda County (U.S. Census Bureau, 2014a, 2014b, 2014c, 2014d). Further, similarities existed between the numbers of households 356,573 in West Tennessee counties, vs. 537,159 households in Alameda County California (U.S. Census Bureau, 2014a, 2014b, 2014c, 2014d). The median household income was $51,465 in West Tennessee counties and $71,516 in Alameda County (U.S. Census Bureau, 2014a, 2014b, 2014c, 2014d). The person per household statistic was 2.7 in West Tennessee counties, and 2.75 in Alameda County (U.S. Census Bureau, 2014a, 2014b, 2014c, 2014d). The percent of residents below the poverty line was 15.8 % in West Tennessee counties, and 12.0% in Alameda County and are similar (U.S. Census Bureau, 2014a, 2014b, 2014c, 2014d). The study of independent and dependent variables included public records, proprietary secondary data, and zip code data in Fayette, Shelby, and Tipton, counties of West Tennessee and Alameda County in California.

Tennessee law permits lender recourse, and California statute does not permit lender recourse to the power of attorney sales transactions and judicial foreclosures of one to four-unit single-family residences (Curtis, 2014). The greater the variability in the outcome, the larger the population observed the larger the sample size needed for accurate results for nonlinear results (Shi, 2015). Bell, Teixeira-Pinto, McKenzie, and Oliver (2014) suggested sample size calculations are sensitive to errors and small differences in parameters lead to substantial differences in the sample size. The selection of the sample population was random from data from secondary public and proprietary data.

Sample size calculations determined the size of the sample needed to measure accurately the effect (Bell et al., 2014). When a sample size is too small the effect might be indistinguishable, however if the sample size too large time money, and resources wasted (Bell et al., 2014). G*Power statistical software package (Version 3.1.9) was used to conduct an apriori sample size calculation (Lee, Kim, Park, & Alcabar-Bejerano, 2015). The utilization of G*Power (Version 3.1.9) statistical software package (Lee et al., 2015) determined the actual sample size for the study. However, an apriori power analysis, assuming a medium effect size ($f = .15$), a = .05, indicated a sample size of 102 homes per cluster to achieve a power of .80. A medium effect size of ($f = .15$) is acceptable for this study. The medium effect size, based on the analysis, reflects the independent variables, rental cash flow value, equity, and recourse were the outcome measurements and were considered representative.

Ethical Research

This quantitative correlational study design utilizes secondary data and does not require interaction with participants. However, as part of gaining an understanding of my ethical responsibilities during research I completed the NIH web-based training course, *Protecting Human Research Participants*. Previously collected data archived by public and proprietary database was the only data I used for this study. Therefore, I received IRB approval number 05-31-17-0343278 for this study. Using previously collect data limits potential researcher biases (Woodside, 2013). The interpretation of secondary data must meet ethical standards, and misinterpretation of data creates bias and threatens ethical research (Zachariadis et al., 2013). Data will be stored electronically on a computer system with password protection. At the end of a period no less than 5 years, data destruction will commence through the deletion of files from hard drives and back files and drives.

Data Collections Instruments

There were no instruments, such as surveys, in this study. Publicly available archival data was the only data source. Third parties collected the data I used for this study. When the sample under study is difficult or impossible to obtain, the size of the sample or location of the sample under study is inaccessible or cost prohibitive archival data is best (Pollanen et al., 2016). The data collection methods in this study involved collecting data from public and proprietary secondary data sources. Refer to Table 1, for a description of the variables included in the study. I did not have contact with public or

proprietary participants in the data collection process. Any contact with the homeowners is incidental.

The use secondary data sources in research applications is a benefit to researchers because it facilitates the study of data otherwise cost prohibitive if collected as primary data and expedites the examination of data not readily available to the public (Pollanen et al., 2016). The misinterpretation of archival data creates weakness and the susceptibility to errors in studies, which researchers must address (Pollanen et al., 2016). Tasse (2016) explained in a comparative analysis of legal and bioethical frameworks of the use of secondary data in research, secondary data allows the efficient use of available resources and reduces the cost of research. Secondary data sources provide access to data not readily available (Marwa & Aziakpono, 2016).

The third-party data sources included CoreLogic, County Assessor's offices in California and Tennessee, and Zillow. I used CoreLogic data for the default mortgage status and homeowner debt, the County Assessor's office for property value, and Zillow for the rental value. The data base from CoreLogic included address information I need to collect the address specific data from the County Assessor's office and Zillow. Data collected by CoreLogic, Zillow, and the County Assessor's office in California and Tennessee was readily assessable data. Table 1 includes a list and description of the variables included in the study.

Table 1

List of Variables

Variable	Type	Description of variable
Independent variables		
Homeowner's equity	Continuous	The County Assessor's value minus the total property debt equals homeowner's equity.
Rental cash flow value	Continuous	Rental cash flow value (Zillow Zestimate) minus total mortgage payment.
Recourse	Dichotomous	Recourse determined by state statue. California is a nonrecourse state. Tennessee is a recourse state.
Dependent variable		
Default mortgage status	Dichotomous	Did the mortgage default, yes or no? Default mortgage status defined as three consecutive payments, which were unpaid.

Secondary data collected from public and proprietary databases was integral to this study. Quantitative researchers used numeric data collected through, clinical trials, surveys, observing well-defined events, and secondary sources (Yilmaz, 2013). Zohrabi (2013) suggested multiple methods of collecting data can supplement each other and improve the validity and dependability of data. I used data collected from multiple sources including CoreLogic, County Assessor's offices in California and Tennessee, and Zillow.

Data Collection Technique

The use of secondary data applies to research when data is difficult or impossible to obtain, cost prohibitive in instances of privacy, enhances the use of large datasets, data collected by a primary source, and enhances alternate research in other disciplines

(Pollanen et al., 2016). The data collection methods used in this study involves collecting data from public and proprietary secondary data sources currently available. The use of secondary data sources in research applications is a benefit, but the misinterpretation of data creates weakness and the susceptibility to errors (Pollanen et al., 2016). Tasse (2016) explained in a comparative analysis of legal and bioethical frameworks of the use of secondary data in research, secondary data allows the efficient use of available resources and reduces the cost of research. Secondary data sources provide access to data not readily available in the geographic area of study (Marwa & Aziakpono, 2016).

Ridker, Mora, and Rose (2016) used secondary data in empirical research to measure the effectiveness of lipid- lowering agents in the reduction of LDL cholesterol following statin treatment. Kenyon, Meixell, and Westfall (2016) concluded in their analysis of secondary data in production outsourcing and operational performance, outsourcing reduced output, the effectiveness of equipment and on-time delivery. Bricker and Bucks (2016) analyzed negative home equity, economic insecurity, and household mobility during the Great Recession using secondary data and concluded, the relationship between negative home equity and mobility varied by household exposure to adverse external shocks e.g. loss of job or reduction in income. Data collection does not require special procedures. Data is publicly available from government entities e.g. tax assessors website, County Court Clerk for the states of Tennessee and California obtained. Federal Privacy laws restrict public access to private data however, this data is available from CoreLogic. Data collected in the American Housing Survey, U.S. Census Report, Fannie Mae, Freddie Mac, FHA and VA, GAO, FHFA, CoreLogic, and Zillow

were necessary to ensure validity and reliability of data. Original sales price, date of sale, mortgage debt, occupancy type, default status, and recourse was retrieved from CoreLogic. County assessor's value, mortgage payment, and tax data was collected from the County Assessor's office in California and Tennessee. The rental value (Zestimate) was collected from Zillow. Data for specific zip codes in California, a non-recourse state, and Tennessee, a recourse state, containing the property address, purchase price, starting mortgage balance, interest rate, loan term and default status, was retrieved from CoreLogic. Data request from CoreLogic will not begin until after receiving approval from IRB. I securely stored, for a minimum of 5 years, working and backup files in a password protected mode.

Data Analysis

The primary research question is what is the relationship between homeowner's equity, rental cash flow value, recourse, and default mortgage status? Based upon my research questions my quantitative study tests include the following hypotheses.

$H1_0$: There is no statistical relationship between homeowner's equity, rental cash flow value, recourse, and the default mortgage status.

$H1_A$: There is a statistical relationship between homeowner's equity, rental cash flow value, recourse, and the default mortgage status.

Multiple linear regression is a statistical analysis used to investigate a relationship between precisely defined predictor variables and dependent variables (Bronson, 2013). Multiple linear regression is a statistical technique in which the relationships of explanatory variables used to predict the outcome of dependent variables display a

straight line (Jung & Kim, 2014). Multiple linear regression models the relationship between explanatory variables and dependent variables by data plotted to a linear equation (Ardekani & Shadizadeh, 2013). The goal of multiple linear regression is to plot the relationship between predictor variables and dependent variables (Hampson & McGoldrick, 2013). In linear regression models, the value of the predictor variable x is the value of the dependent variable y and plotted in a straight line indicates a relationship exist between the variables (Weaver & Wuensch, 2013). Linear regression models examine the correlation, strength of the relationship, the influence of the independent variables upon dependent variables (Bok-Hee & SoonGohn, 2014; Jung & Kim, 2014). Linear regression models examine the relationship between several independent variables and a dependent variable (Ardekani & Shadizadeh, 2013).

Researchers use logistic regression models to determine the relationship between continuous independent variables and a binary dependent variable (1/0, yes, or no) with non-linear results (Dubovyk et al., 2013). Logistic regression models are appropriate when the when there is a dichotomous dependent variable. A logistic regression analysis is best when examining relationships between independent variables and a binary dependent variable (Ilkersakinc & Ugurlu, 2013). Researchers use logistic regression models when the model has a dichotomous dependent variable (Stoltzfus, 2011). A logistic regression analysis is best when examining relationships between independent variables and a binary dependent variable (Ilkersakinc & Ugurlu, 2013). Logistic regression analysis is suitable for this study because the dependent variable is dichotomous, 1/0, yes or no, (Dubovyk et al., 2013; Barton, Yeatts, Henson, & Martin,

2016). I used interval variables for my independent variables including homeowner's equity, cash flow value, recourse a dichotomous variable, and default mortgage status as the dependent variable. To test the hypothesis, I used logistic regression analysis to examine the relationship between the independent variables, equity, rental cash flow value, lender recourse and the dependent variable default is dichotomous.

Other regression techniques considered were hierarchical, stepwise, or bivariate regression. Hierarchical multiple regression is the analysis of the relationship between independent and dependent variables and the effect of the relationship to another group (Cano, Carazo, and Salmeron (2013; Newton & Teo, 2014). Stepwise multiple regression model evaluates the strength of independent and dependent variables for fitness based upon predetermined criteria (Elzamly & Hussin, 2014). Bivariate linear regression measures the strength or value of the relationship between two variables in which the relationship is linear (Dootson, Beatson, & Drennan, 2016). Hence, hierarchical, stepwise and bivariate regressions are inappropriate for this study.

I analyzed my collected data using SPSS® (Version 23) software. The SPSS® (Version 23) contains features and applications to address data errors e.g. chi-square fitness test and missing data (Fleischhacker et al., 2013). I analyzed three independent variables (homeowner's equity, rental cash flow value, and recourse or non-recourse) and one dependent variable, default determining the relationship between the variables and default mortgage status. Through the use of SPSS® (Version 23), I created datasets, coded variables, and created specific labels before analyzing the data. The relationship between the independent and dependent variables market value, equity, cash flow and

recourse will ensure accuracy. Upon completion of the input and analysis process, I examined assumptions, linearity, normality, and homoscedasticity and independence residuals conducted to determine the presence of outliers and multicollinearity.

Font, Sara Pasadas, and Smith (2016) suggested data cleaning process begins with eliminating data out of the scope of the study, eliminating non relevant information, and elimination non-eligible data. Thus I sorted data by single family residential addresses in the states of California and Tennessee. The sort excludes vacant property addresses, multi-unit property and commercial property addresses. Additionally the sort will include single property addresses of properties in default and foreclosed properties.

Researchers use descriptive analysis to better understand the relationships between variables. The statistical investigation, according to (Stichler, 2016) includes measurements of oblate and descriptive presentations of facts, determination of characteristics, explanations of hypothesis and testing of empirical data. Data, written analysis and findings in this study will align with the research question, hypothesis, and theoretical framework. The analysis of data allows researchers to explain data, trends and theories (Stichler, 2016).

Linearity, according to Stoltzfus (2011) in the logistic regression analysis for continuous independent variables represents a linear relationship between independent variables and dependent variables and outcomes. Importantly, normality in regression analysis represents the random error in the relationship between independent variables (Xu, Li, & Song, 2013). According to Xu et al. (2013), normality represents the assumption the there is a normal distribution of constant variables. In regression analysis

according to Cano et al. (2013), homoscedasticity is an error between the independent variables and dependent variables, which is consistent with the values of independent variables. Multicollinearity is an error indicating a high inter-correlation between independent variables and if present may suggest inaccurate statistical inferences and could signal an error in the use of binary variables.

Assumptions

Multiple linear regression requires the investigation of pertinent assumptions: (a) multicollinearity, (b) normality, (c) presence of outliers, (d) homoscedasticity, and (c) independence of residuals (Green & Salkind, 2013). Testing these assumptions was a critical part of my investigation. The following provides a description of these assumptions.

Multicollinearity. Multicollinearity is an error that indicates a high inter-correlation between independent variables and indicates statistical inferences are inaccurate in the use of binary variables (Cano et al., 2013). Multicollinearity may generate misleading standard error values (Zahari et al., 2014). When independent variables are too highly correlated multicollinearity exists (Yin et al., 2014). Hannigan and Lynch (2013) state problems associated with multicollinearity can be eliminated by removing one collinear variable from the model and testing the relationship between the remaining covariates using statistical software. Further, researchers should examine the relationship between covariates in a model regularly to avoid multicollinearity (Hannigan & Lynch, 2013). Hannigan and Lynch (2013) suggested the use of the Pearson correlation coefficient to determine the linear association between pairs of variables.

Dormann et al. (2013) states collinearity refers to non-independent predictor variables in regression models and is a significant problem in data from one region predicted another. I used the Pearson correlation coefficient to determine linear association between variables.

Normality. Xu et al. (2013) state normality represents the assumption there is a normal distribution of constant variables. Normality tests in regression models indicate if residuals are normally distributed (Krotov, 2016). If there is a violation of the normality assumption, according to West, Sakshaug, and Aurelien (2016), incorrect estimation of standard error could misrepresent the results. In a large sample linear regression technique is valid even if the dependent variable violates the normality assumption (West et al., 2016). I tested for normality using the Kolmogorov-Smirnov test (Ragan, Den Dekker, & Sijbers, 2014) to determine if the distribution is normal. If distribution is abnormal, I examined data sets for data subsets with different statistical properties. In the event of large errors, I examined data entry for errors, correct errors and retest data.

Presence of outliers. Outliers are samples with exceptional values which differ from the population of the data majority in the regression equation (Yin, Wang, & Yang, 2014). Identification and analysis of outlying values and the choice of method to detect are crucial steps in testing hypothesis because the presence of outliers can distort the value and may cause inaccurate standard error estimates (Raafat & Tolba, 2015). Raafat and Tolba (2015) argue discarding outliers and testing the remaining data yields invalid results regardless of the size of the sample. Rousselet and Pernet (2012) and Filzmoser et al. (2012) employed scatterplots to detect outliers in research on brain behavior and

geochemistry because outliers can introduce false correlations or conceal existing ones. I determined if outliers were present by using scatterplots.

Linearity. Yang, Novick, and LeBlond (2015) define linearity in regression analysis as the assumption a linear relationship exists between independent and dependent variables. Errors in linearity assumptions in regression models could result in inaccurate or skewed results (Shev, Hsieh, Beisner, & McCowan, 2012). Small deviations in assumptions do not affect in multiple regression models (Nguyen et al., 2014). The researcher should examine bivariate scatterplot graphs of variables to determine linearity and curvature of the regression model (Bennett et al., 2013). In this study, a test of the residuals using scatterplots graphs will determine the presence of a curvature relationship and whether transforming the variables, or an allowance is necessary for nonlinear components. I tested for linearity using scatterplot graphs.

Homoscedasticity. In regression analysis, according to Cano et al. (2013), homoscedasticity is an error between the independent variables and dependent variables, consistent with the values of independent variables. The homoscedasticity assumption is where dependent variables vary the same amount when the value of the independent variable is low and when the value of independent variables is high (Raafat & Tolba, 2015). Bamel et al. (2013) used a scatterplot graph to examine homoscedasticity of variables in research to synchronize resources in management processes and manager flexibility. I checked for homoscedasticity variations using scatterplot graphs.

Independence of residuals. Broberg, Salminen, and Kyttä (2013) noted in regression models independence of error is vital to ensure the magnitude of prediction

errors do not influence one another over time or exhibit autocorrelation. If a violation occurs, there is an increased chance of a Type I error and the sign of the correlation solely determine the validity of the test (Wiedermann & von Eye, 2013). Bercu, Portier, and Vazquez (2014) acknowledged the use of the Durbin-Watson test to reveal autocorrelations in residuals. Lee (2014) used the Durbin-Watson test for the difference in between errors and residuals in regression analysis and demonstrates the effects of serial correlations on three auto dynamic models. I used the Durbin-Watson test to detect autocorrelation.

Study Validity

This quantitative correlational study, I examined the relationship between homeowner's equity, rental cash flow value, and recourse and default mortgage status. In this study, an experimental design does not apply, and I did not anticipate threats to internal validity. However, potential threats to statistical conclusion validity exist.

External and Internal Validity

This study did not require the use of instruments. In this study, I examined the correlation between the independent variables and dependent variable default mortgage status, and congruence with reality, causation is beyond the scope of the study. Therefore, internal validity is not a concern (Zohrabi, 2013).

Statistical Conclusions Validity

Ihantola and Kihn (2011) stated threats to statistical conclusions are conditions causing Type 1 errors where the researcher inappropriately rejects the null hypothesis when it is true. Incorrect conclusions from data or errors in logic by the researcher cause

a threat to validity called statistical conclusion validity. Howison and Wiggins (2011) noted statistical conclusions depend on the close alignment of the assumptions with the procedures. Errors in data collection, analysis or synthesis of data lead to inaccurate findings and weaken validity.

The use of a regression model requires the verification of the data assumptions including normality, linearity, homoscedasticity, independence of residuals, the presence of outliers, and multicollinearity to ensure valid results. Collinearity statistics and collinearity diagnostics of independent variables tested multicollinearity. I examined outliers, normality, linearity, homoscedasticity, and independence of residuals using box plot graphs, the normal probability plot (P-P) of the regression standardized residuals, and the scatterplot of the standardized residuals.

Data assumptions. The validity of research depends on valid decisions and interpretations based upon the scores obtained from the instrument selected in the study (Schrodt, 2014). Quantitative research uses measurement and statistical analysis of numerical data to explain data (Schrodt, 2014). The regression method, according to (Schrodt, 2014) examines the premise that a straight line, the regression line disseminates the interrelation between instrument scores and norm scores. Accurate reporting of results from data by the researcher and careful analysis will mitigate threats to validity.

Sample size. The **s**ample size is the number, participants, or research units under study and required to answer the research question with a degree of confidence (Bell et al., 2014). An incorrect sample size might reflect incorrect discrepancies between variables, and too large a sample size could indicate that a small relationship exists

between variables and jeopardizes the validity of the results (Bell et al., 2014). A power analysis determines the appropriate size of the sample and eliminates threats to validity.

The sample size of the study consisted of 4 clusters (102 residences each cluster) of single family homeowner's residential properties in counties in Tennessee and California. The counties are similar except for recourse and utilize probabilistic simple random sampling that enhances external validity. External threats to the validity result from incorrect inferences from data, generalizations from the researcher or interpretations based on factors not included in the study or results are not generalizable beyond the current sample (Stoltzfus, 2011). However, the results may not be representative of the entire United States real estate market, which is a threat to validity. Thus, any findings may only be limited to the study due to the limitations of the sample size, homeowner's equity, rental cash flow value and recourse in the period chosen.

Transition and Summary

The purpose of this quantitative correlational study is to examine the relationship between homeowner's equity, rental cash flow value, recourse, and default mortgage status. In Section 2 I identified the role of the researcher, justified the methodology and design used in the study, determined the data collection techniques, and described the sample population. I used a correlation quantitative research design to examine the relationship between homeowner equity, rental cash flow value, recourse, and default status. The population and sampling technique align with the research question. I concluded my quantitative study in Section 3 with a presentation of my findings,

applications to professional business practice, implications for social change, recommendation for actions, and recommendations for further research.

Section 3: Application to Professional Practice and Implications for Change

Introduction

The purpose of this quantitative correlational study was to examine the relationship between homeowner's equity, rental cash flow value, recourse, and default mortgage status. The independent variables included homeowner equity, rental cash flow value, and recourse. The dependent variable was default mortgage status. Findings from the binary logistic regression model showed that the independent variables were not statistically significant and did not influence the dependent variable, default mortgage status. Therefore, the null hypothesis was accepted and the alternative hypothesis rejected.

Presentation of the Findings

The overreaching research question was, What was the relationship between homeowner's equity, rental cash flow value, recourse, and default mortgage status? In this section, the test of assumptions, descriptive and inferential statistics, an analysis of the results, and summary are provided in the context of management theory. The sample population included 408 homes from California and Tennessee, which were groups into four cluster samples.

Test of Assumptions

SPSS® (Version 23) software was a useful tool for testing the assumptions of multicollinearity, linearity, outliers, homoscedasticity, and the independence of residuals.

Multicollinearity. Multicollinearity was tested using collinearity statistics and collinearity diagnostics of independent variables. The terms multicollinearity and

collinearity were interchangeable in SPSS (Version 23). Collinearity is present when the eigenvalue of coefficients is close to zero (Dormann et al., 2013). As noted in Table 2, the eigenvalues of the coefficients were greater than zero; therefore multicollinearity was not an issue.

Table 2

Collinearity Diagnostics

Variables	Eigenvalue	Homeowner's equity	Rental cash flow	Recourse
Constant	2.7920	0.039	0.007	0.025
Homeowner's equity	0.749	0.719	0.000	0.117
Rental cash flow	0.437	0.241	0.039	0.0370
Recourse	0.025	0.001	0.954	0.488

Note. The dependent variable was default mortgage status.

The second test of collinearity in SPSS® (Version 23) is the VIF value for variables. A value of less than 5 does not indicate collinearity. As shown in Table 3, the VIF values of the coefficients were less than 5; therefore, collinearity was not present.

Table 3

Collinearity Coefficients

	Collinearity statistics	
Variables	Tolerance	VIF
Homeowner's equity	.977	1.023
Rental cash flow value	.655	1.527
Recourse	.662	1.510

Note. The dependent variable was default mortgage status.

Outliers, normality, linearity, homoscedasticity, and independence of residuals. Outliers, normality, linearity, homoscedasticity, and independence of residuals were examined using box plot graphs, the normal probability plot (P-P) of the regression standardized residuals, and the scatterplot of the standardized residuals. However, to ensure the appropriate sample size outliers were rechecked, deleted, and replaced. Outliers were present in two independent variables, homeowner's equity and rental cash flow value. In analyzing data conducted with and without outliers, I determined that the presence of outliers did not influence results. Refer to Table 4 (with outliers) and Table 5 (without outliers). The influence of independent variables on homeowner's equity, rental cash flow value, and recourse was not significant at 95% CI in either model. The lower and upper range of the variables homeowner's equity and rental cash flow value was identical at 1.000 and 1.000 in both models. However, as noted in Table 4, the significance of homeowner's equity was 0.215 and recourse was 0.401 in the model with outliers, as noted in Table 5, 0.142 and 0.369 respectively in the model without outliers.

Table 4

Variables in the Equation with Outliers

							95% CI for Exp(B)	
Variables	B	S.E.	Wald	df	Sig.	Exp(B)	Lower	Upper
Homeowner's equity	0.000	0.000	1.535	1	0.215	1.000	1.000	1.000
Rental cash flow	0.000	0.000	1.541	1	0.215	1.000	0.999	1.000
Recourse	-0.208	0.248	0.707	1	0.401	0.812	0.500	1.319
Constant	0.668	0.492	1.848	1	0.174	1.951		

Note. Variables in the equation were homeowner's equity, rental cash flow value, and recourse.

Table 5

Variables in the Equation without Outliers

							95% CI for Exp(B)	
Variables	B	S.E.	Wald	df	Sig.	Exp(B)	Lower	Upper
Homeowner's equity	.000	.000	2.155	1	.142	1.000	1.000	1.000
Rental cash flow value	.000	.000	1.536	1	.215	1.000	.999	1.000
Recourse	-.225	.251	.807	1	.369	.798	.489	1.305
Constant	.710	.503	1.989	1	.158	2.033		

Note. Variables in the equation were homeowner's equity, rental cash flow value, and recourse.

Raafat and Tolba (2015) argued that discarding outliers and testing the remaining data yields invalid results regardless of the size of the sample. After outlier data were replaced with new data, the model was recalculated to ensure a CI of 95% and the appropriate sample size of 408 homes.

Figure 2 illustrates the normal probability plot (P-P) for the dependent variable, default mortgage status.

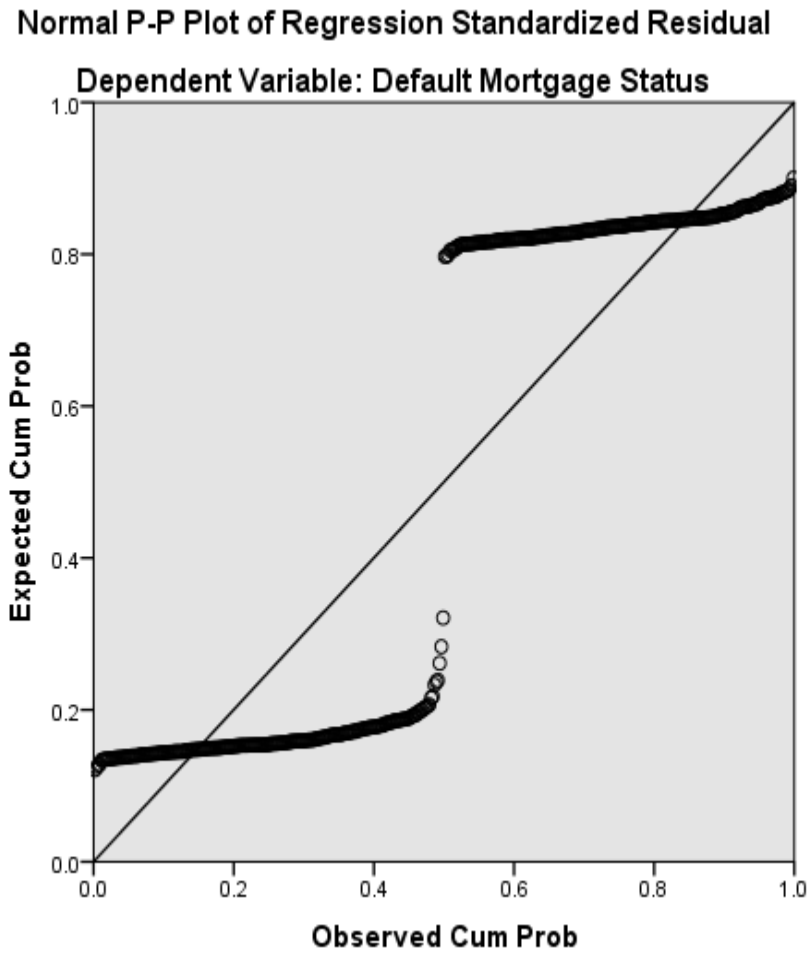

Figure 2. Normal probability plot (P-P) of the standardized residuals.

The residuals do not lie in a straight line against the predicted value and violate the assumption of normality of the dependent variable, which is acceptable in a large sample (West et al., 2016). The line for the residuals for the dependent variable does not connect because the variable was dichotomous. Figure 3 showed a scatterplot of standardized residuals of the dependent variable.

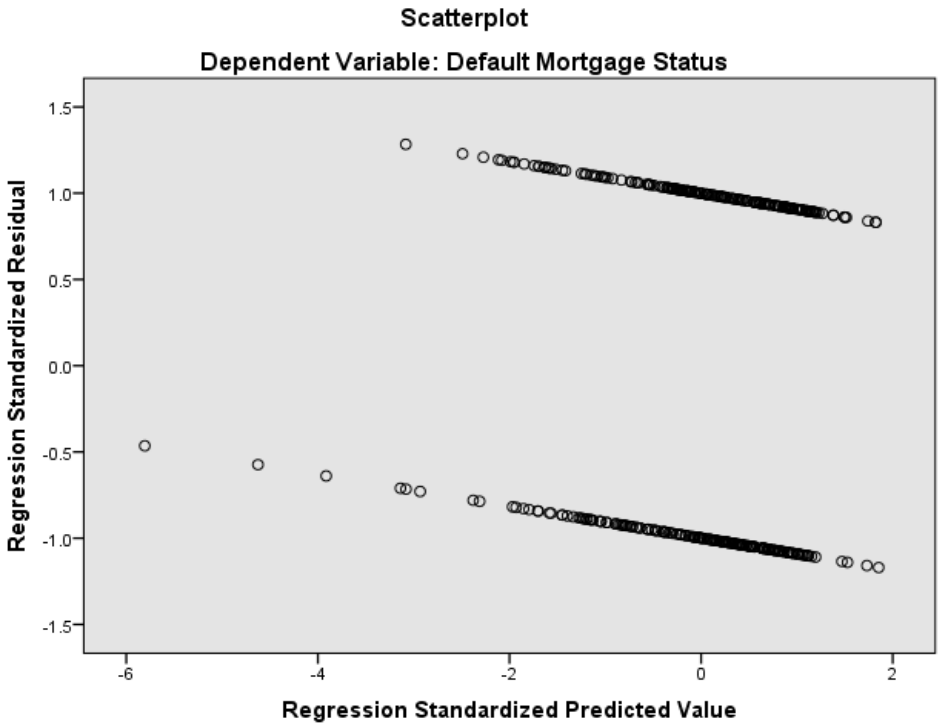

Figure 3. Scatterplot of standardized residuals.

The residuals cluster forming two lines similar in slope, lie higher on the left side than the right and slope downward toward the right side of the graph, which suggested consistent variations and a trend from negative to positive value. The model did not violate the assumptions of homoscedasticity.

Descriptive Statistics

Archival data selected from Alameda County California and Shelby, Fayette, and Tipton Counties in Tennessee comprised the sample population of 408 properties. As noted in Table 6, for the descriptive statistical values for the variables of this study.

Table 6

Mean and Standard Deviation for Quantitative Correlational Study Variables

Variables	Min.	Max.	Mean	Std. Error	Std. Dev.
Homeowner's equity	-184749.000	325033.000	43922.297	3983.14	80455.483
Rental cash flow value	1100.000	5456.000	2375.137	36.960	746.561
Recourse	0.000	1.000	0.5000	0.025	.0501
Default mortgage status	0.000	1.000	0.5000	0.025	0.501

Note. N=408

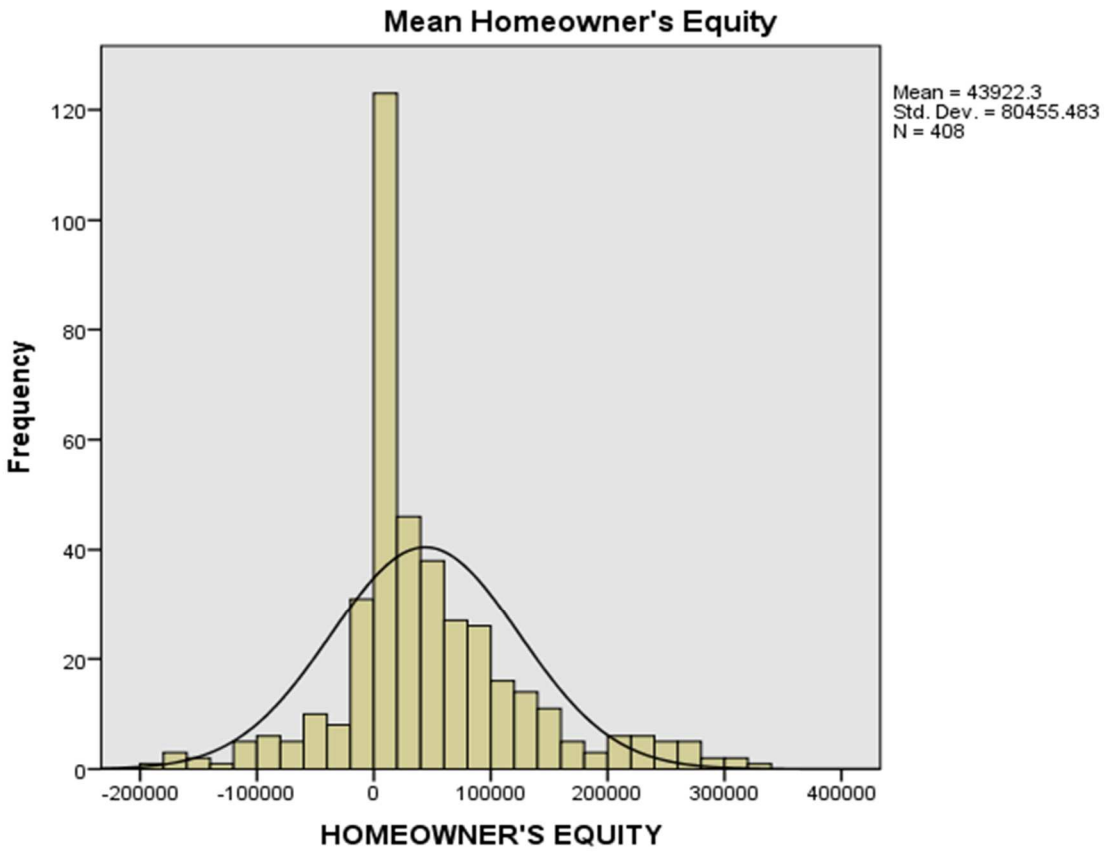

Figure 4. Histogram of mean homeowner's equity. The mean homeowner's equity for California and Tennessee was 43,922.297, and the standard deviation was 80,455.483. The distribution of data trended slightly left of the normal distribution curve. The distribution of homeowner's equity increased significantly between 10,000 and 50,000.

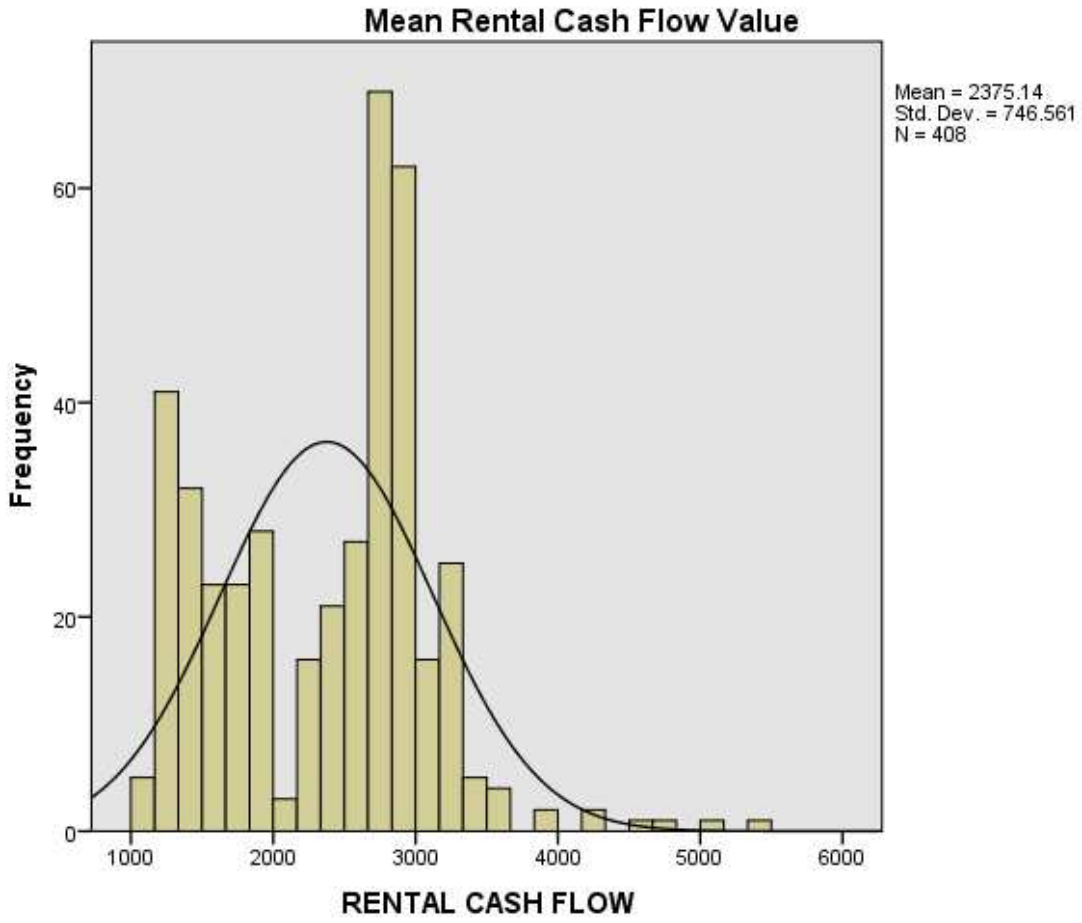

Figure 5. Histogram of mean rental cash flow value. The mean rental cash flow value for California and Tennessee was 2375.137, the standard deviation was 746.561. Values on the left side of the distribution curve represent Tennessee data, values on the right side of the distribution curve represent California. The distribution of data was toward the left of the distribution curve and displayed two peaks left differentiating California and Tennessee on the normal distribution curve. Mean rental cash flow value was significantly higher in California than mean rental cash flow value in Tennessee.

Inferential Results

The binary logistic regression model was conducted to investigate the relationship between homeowner's equity, rental cash flow value, and recourse and default mortgage status $\alpha = 0.05$ to determine significance. The independent variables were homeowner's equity, rental cash flow value, and recourse. The dependent variable was default mortgage status. The null hypothesis was there was no statistical relationship between homeowner's equity, rental cash flow value, recourse, and default mortgage status. The alternate hypothesis was there was a statistical relationship between homeowner's equity, rental cash flow value, recourse, and default mortgage status. The appropriate analyses completed identified violations of the assumptions multicollinearity, outliers, normality, linearity, homoscedasticity, and independence of residuals. The analysis identified violations of the assumptions.

The model was not able to predict a significant relationship homeowner's equity, rental cash flow value, and recourse and default mortgage status. The logistics regression model measured the odds ratio or likelihood independent variable influenced the dependent variable. A value greater than 1 indicated the likelihood the independent variable influenced the dependent variable. The logistics regression equation was:

$$\text{logit}(p) = log\left[\frac{p}{1-p}\right] = ln\left[\frac{p}{1-p}\right]$$

Further, when the dependent variable was a dichotomous variable, default mortgage status, the predictor adds range between 0 and infinity. Refer to Table 7, when the value in the Exp(B) column was 1, the odds of the independent variable influencing the

dependent variable increased. If the value in the Exp(B) column was less than 1, the odds of the independent variable influencing the dependent variable decreased.

Thus, the odds of the independent variables influencing the dependent variable were not significant. As seen in Table 7, the Hosmer-Lemeshow goodness-of-fit was significant ($p < 0.05$) indicating the model fit for the data examined. Additionally, the results indicated (*chi square* = 3.490, $p = 0.322$ *with df* = 3), *-2 log Likelihood* = 562.118 and the *Nagelkerke R squared* = 0.011. Refer to Table 7, the model resulted in the independent variables homeowner's equity, rental cash flow value and recourse not significant ($p > 0.05$). The unstandardized $B = 0.000$, $SE = 0.000$, *Wald* = 1.535, $p > 0.05$ for homeowner's equity. The unstandardized $B = 0.000$, $SE = 0.000$, *Wald* = 1.541, $p > 0.05$ for rental cash flow value. The unstandardized $B = -0.208$, $SE = 0.248$, *Wald* = *0.*707, $p > 0.05$ for recourse. Therefore, in the logistic regression analysis none of the predictor variables contributed to the model.

Table 7

Variables in the Equation (Final)

Variables in the Equation	B	S.E.	Wald	df	Sig.	Exp(B)	95% CI for Exp(B) Lower	Upper
Homeowner's equity	0.000	0.000	1.535	1	0.215	1.000	1.000	1.000
Rental cash flow value	0.000	0.000	1.541	1	0.215	1.000	0.999	1.000
Recourse	-0.208	0.248	0.707	1	0.401	0.812	0.500	1.319
Constant	0.668	0.492	1.848	1	0.174	1.951		

Note. Variables in the equation were homeowner's equity, rental cash flow value, and recourse.

Cluster Analysis

The four clusters used in this study form a two-by-two matrix of default mortgage status - no default mortgage status and recourse-no recourse. Cluster sampling in the target population provides every element an equal chance of being selected (Delost & Nadder, 2013). The four cluster sample selected was consistent with the population, sample, and type of variables selected for this study. As noted in Figure 6, and the two-step cluster analysis revealed a cluster quality rating of good and a score of silhouette = 0.70. The silhouette range was -1 to 1, values close to 1 indicated cluster assignments, and cohesion and separation were good.

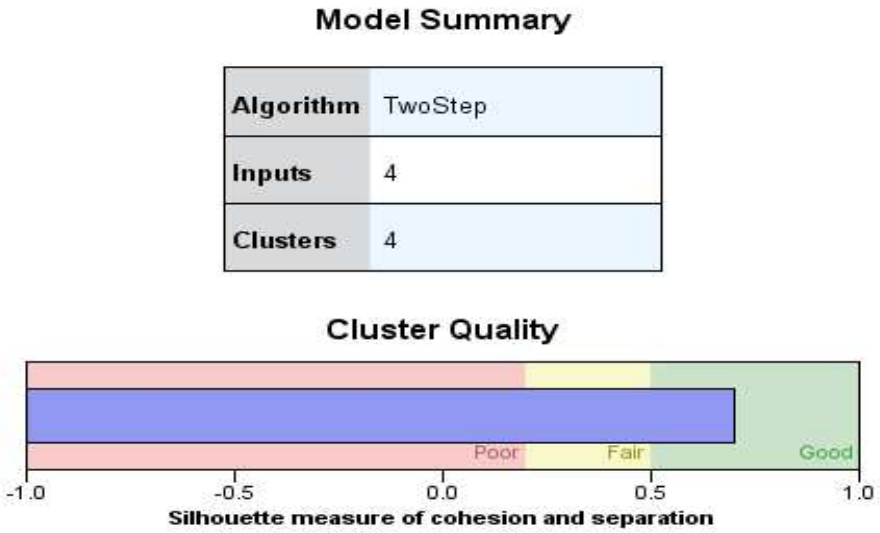

Figure 6. Cluster analysis measurement

Analysis summary. The purpose of this study was to examine the relationship between the variables homeowner's equity, rental cash flow value, recourse and the dependent variable default mortgage status. The assumptions tests for outliers, normality,

linearity, homoscedasticity, and independence of residuals revealed the presence of outliers as the only violation. Although outliers were recognized, data verified, errors corrected and presumed accurate. The conclusion of this study was homeowner's equity, rental cash flow value, and recourse was not statically significant in influencing default mortgage status.

Theoretical discussion of findings. The findings of this study were not consistent with the findings of other researchers. Duffy and O'Hanlon (2014) stated default increased if negative equity occurred while borrowers experienced the trigger events, cash flow problems, loss of job, or health concerns. The results of the study did not support this theory. However, Duffy and Hanlon (2014) mentioned some borrowers decide not to enter default and continue repayment of the mortgage regardless of their equity position. Conversely, Campbell and Cocco suggested borrowers not default as soon as the equity position becomes negative, but wait to determine if home prices appreciate because mortgage default was an irreversible decision.

The results of this study revealed rental cash flow value was not statistically significant to the dependent variable and did not influence default mortgage status. Bernanke (2012) defined rental cash flow value as a return on derived from annual rental income and consideration in the decision-making process of investment property owners. The influence of rental cash flow value on default mortgage status was not significant and contradicts the Fishbein expectancy of value theory which states behavior, and the expectation of value determined the value of the goal one was seeking. Further, the

Vroom expectancy theory asserted the expected reward, feelings of extreme pleasure or pain, actions, determined the behavior of individuals, and the course pursued.

The findings of this study did not confirm recourse was statistically significant in influence on default mortgage status. Recourse, determined by state statute, was the right of a lender to pursue a deficiency judgment for the outstanding mortgage balance after foreclosure. Whitman and Milner (2013) explained the expectation of a borrower being able to walk away from a property with limited or no legal or tax ramifications would entice borrowers into foreclosure. Accordingly, the right of the lender to pursue a non-judiciary foreclosure shortened the time required to take possession of the property. Sinha (2013) argued lender recourse removed the option of the borrower to pursue foreclosure.

Fishbein (1963) explained the expectancy of value management theory as behavior, expectancy, and the value of the goal one was seeking. Vroom (1964) postulated the expectancy theory was the expected reward, feelings of extreme pleasure or pain actions, which determined the behavior of individuals, and the course pursued. The findings of this study on the relationship between homeowner's equity, rental cash flow value, and recourse and default mortgage status were not significant and contradicted the expectancy of value and expectancy theories.

Applications to Professional Practice

The findings of the study showed the relationship between homeowner's equity, rental cash flow value, and recourse, were not significant in predicting default mortgage status, collectively. However, the relationship between homeowner's equity, rental cash

flow value, and default mortgage status was of practical significance. Bank leaders must balance the risks from losses from mortgage defaults, changing borrower preferences and capital reserve requirements. The findings of the study did not show a statistical significance between the independent variables and default mortgage status, but inferentially a correlation between homeowner's equity, rental cash flow value, and mortgage default mortgage status was evident, ($p = 0.215$) and ($p = 0.215$) respectively.

The logistics regression model revealed a prediction rate of 50.1%. Observations from the data showed a significant number of defaulted mortgages with high loan to value, properties with zero equity or negative equity in the population, and properties with first, second, and in many instances, third mortgages and defaults occurred in the early years of the mortgage term. Once a foreclosure occurred on a property, subsequent foreclosures occurred on the same property, volatility in the sales price occurred, and the property history revealed multiple foreclosures. First, bank executives need to identify and monitor all properties in the early years after origination. Second, bank executives need to monitor all loan requests, servicing requests, e.g., mortgage extensions, request for payment date changes, escrow analysis, loan requests and denials for opportunities to offer value-added service with each contact with loan servicing.

The results of the study revealed the relationship between homeowner's equity, rental cash flow, and recourse was not significant in influencing default mortgage status. Therefore, other factors influenced default. Third, bank executives should limit the type of financing available on foreclosed properties to traditional fixed rate mortgages and terms, prohibit alternative lending products, e.g., purchase money second mortgage and

adjustable rate mortgages, to qualify stable borrowers and stabilize the value of the property and the neighborhood. Fourth, the bank should provide incentives, e.g., free appraisal review, enhanced servicing, value override to approve loans or lines of credit for loans for property improvements to improve the value of the property and bank image with borrowers.

Bank incentives, birthday cards, holiday cards, build loyalty with the bank and endear the customer to the bank, allow communications with the customer, which has not heard from the bank since loan closing. Enhanced service will provide lenders with opportunities to establish relationships, identify opportunities for new products, maintain a positive image with customers, offer value-added service through exceptions, prevent foreclosures, reduce mortgage loan losses, and identify opportunities for new business. The balance of preventing foreclosures, opportunities for new business, and improved customer awareness will offset the tendency to reduce products, increase interest rates and tighten lending policies to restrict mortgage credit.

Implications for Social Change

The findings of the study did not reveal a significant relationship between homeowner's equity, rental cash flow value, recourse, and default mortgage status. However, the results reveal a non-significant relationship between homeowner's equity, rental cash flow value and default mortgage status, which means other factors in addition to the variables of this study influenced default mortgage status. Society could benefit from the results of this study because the increased awareness of the variables, which affected defaults prevents additional increases in interest rates, tightening of credit policy

guidelines and increased borrower investments. The prevailing thought in the financial sector was borrowers had the ability and willingness to pay their mortgage, and diminished financial capacity precipitated mortgage default and foreclosure (Das & Meadows, 2013).

The findings of the study do not contradict this axiom. Society benefited from the findings of the study because homeowner's equity was not the driver of mortgage default. Lender requirements for more significant down payments and stricter underwriting guidelines resulted in stringent credit requirements, higher down payment requirements and higher private mortgage insurance premiums were barriers to homeownership. Additionally, tighter credit restrictions reduce the number of qualified buyers in the market and restrict entry into the market for first-time homebuyers, forcing rental of apartments and creating a society of renters instead of homeowners. Further, the results of this study contradict traditional thinking on the cause of mortgage default, which provides pertinent information to lenders and encourages the use of improved capital reserves to partner with community lending organizations and agencies to prepare borrowers for homeownership. The results of this study would invite the community to approach lenders and agencies to soften affordable lending practices, implement flexible, affordable lending products, which improve the opportunity for borrowers to purchase new homes and remain in their homes after closing.

Revising the lending guidelines on REO properties, created stable neighborhoods, reduced the adverse effect of foreclosure properties on the community, and stimulated personal wealth creation through homeownership. The findings of the study provided

valuable insight for the borrower's analysis of their financial position, eliminated misinformation on the actual cause of default, encouraged borrowers and lenders to communicate and work through difficulties and find solutions that benefit each other. Further, active borrower-lender communication provided an opportunity for stable home values, increased homeownership, fewer foreclosures. Stable home values and fewer foreclosures are incentives for lenders to work with borrowers, encourage them to stay in their property, improve values, create stable communities, accelerate the recovery of the housing industry, and stimulate employment.

Recommendations for Action

The findings of this study are essential to bank leaders, community leaders, and agency executives. Bank leaders may use the results of this study examine to realign the guidelines to focus on borrowers and properties in the early years after origination, establish procedures to interact with borrowers and on a continuous basis, respond to requests from borrowers and make exceptions when appropriate. Further, down payment guidelines based on equity requirements and other barriers to homeownership require revision and implementation of more flexible guidelines and products, which stimulate homeownership. Community leaders should partner with bank executives to restore affordable housing lending programs to encourage homeownership to moderate-income borrowers. Scholars and practitioners may use the findings from this doctoral study to examine traditional lending policies to understand where it contradicts existing research. I intend to publish the results of this doctoral study in the ProQuest/UMI dissertation

database, present the findings at conferences, and work toward publication in academic journals.

Recommendations for Further Research

In this doctoral study, I examined the relationship between homeowner's equity, rental cash flow value, recourse, and default mortgage status from 2006 to 2010 in Alameda County CA and Shelby Fayette, Tipton Counties in TN. The recommendation for further research includes identifying variables for examining the relationship between loan features, general credit profiles, and defaults. Further, I recommend for new research identifying variables to explore and predict the trigger point for default. Additionally, I would recommend research that identifies variables to study that examine default mortgage status utilizing a different type of analysis.

This doctoral study has limitations on the use of secondary data. Secondary data for this doctoral study, obtained from CoreLogic and presumed to be accurate required a cross-check against reliable public and private sources for accuracy. It was cost prohibitive to travel to the Assessors' Office in Alameda County California to examine documents to authenticate the dataset and cost prohibitive to order the actual court documents for examination. Further, a limitation of this study was personal financial information from borrowers was not available and protected by privacy laws. The existence of a relationship or correlation did not determine causation; however, the credibility of the hypothesis decreased with zero correlation (Arrawatia et al., 2015). Further, the independent variable recourse and the dependent variable default mortgage status were dichotomous, provided a binary choice, yes/no, and not ordered. I

recommend further research to examine if the use of a different type of variables would offer findings beyond the scope of this study.

Reflections

My experience with this DBA Doctoral Study process at Walden University was very challenging, took longer than anticipated, and ultimately very rewarding. The goal of this doctoral study was to determine if there was a relationship between homeowner's equity, rental cash flow value, and recourse and default mortgage status. My initial impression, based on the literature review and peer-reviewed studies, was homeowner's equity, rental cash flow value, and recourse, could influence default mortgage status. The findings from this doctoral of the study revealed no statistical relationship between homeowner's equity, rental cash flow value, and recourse, and default mortgage status. The variables homeowner's equity and rental cash flow value showed practical significance but were not statistically significant.

The secondary data files used in this study, obtained from CoreLogic, required cross-checking, which necessitated the use of the assessor's offices in Alameda County California and the assessor's offices in Shelby and Fayette Counties in Tennessee as well as the Zillow, Trulia, Redfin, and Realtor.com websites for additional data. The initial dataset from CoreLogic identified a population of properties in California and Tennessee necessary to determine the sample and clusters. The initial dataset included foreclosure resale properties but failed to provide mortgage data on the foreclosed mortgage, which necessitated the purchase of an additional foreclosed property dataset. Once I collected the necessary data for 204 foreclosed properties in California and Tennessee, I was able

to compute the results using SPSS® (Version 23) using percentages, ratios, and decimals. This process took two months. The process was difficult and challenging. Overall the process was cost-effective and appropriate for this study. Therefore, I was able to complete the study and get the results without a violation of assumption.

Conclusion

The relationship between homeowner's equity, rental cash flow value, recourse, and default mortgage status encompassed a 10 year period ending in 2016. The independent variables were homeowner's equity, rental cash flow value, and recourse. The dependent variable was default mortgage status. The null hypothesis was there was no statistical relationship between homeowner's equity, rental cash flow value, recourse, and default mortgage status. The alternate hypothesis was there was a statistical relationship between homeowner's equity, rental cash flow value, recourse, and default mortgage status. During 2007 to 2009 the U.S. financial market experienced a severe economic downturn known as the Great Recession, causing a constriction in capital markets, bank failures, sales price volatility, decline in house prices, which precipitated a significant increase in mortgage defaults, and foreclosures.

The findings of the study from a logistic regression model were that homeowner's equity, rental cash flow value, and recourse not statically significant and did not have a significant relationship with default mortgage status. However, the presence of a non-significant relationship between homeowner's equity ($p = 0.215$), rental cash flow ($p = 0.215$), recourse and default mortgage status revealed additional factors influenced

default status that was outside the scope of this study. The findings of this doctoral study were inconsistent with expectations or current research.

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