

2015

Differences in Financial Performance and Risk Tolerance at Faith-Based Credit Unions

Bruce J. Toews
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Walden University

College of Management and Technology

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Bruce Toews

has been found to be complete and satisfactory in all respects,
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Walden University
2015

Abstract

Differences in Financial Performance and Risk Tolerance at Faith-Based Credit Unions

by

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MBA, Finance, California State University, 1991

BBA, Accounting, Pacific Union College, 1987

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Business Administration

Walden University

November 2015

Abstract

In the United States, faith-based and other small credit unions are vanishing at the rate of nearly a credit union each workday. The purpose of this causal-comparative study was to provide managers of faith-based credit unions with information about differences in financial performance and risk tolerance between faith-based and non-faith-based credit unions in order to improve their investment strategy and long-term sustainability. The study included a comparison of ratios measuring the financial performance and risk tolerance of randomly selected faith-based credit unions in the United States with the corresponding ratios of non-faith-based credit unions of similar size and location from 2003 to 2012. The data were collected from the National Credit Union Association, the U.S. government regulator of federally insured credit unions. The data analysis involved t tests and one-way ANOVAs to determine the differences in mean ratios of financial performance and risk tolerance between faith-based and non-faith-based credit unions. The findings demonstrated mixed support for the theoretical framework based on the Protestant ethic theory, which holds that certain traits associated with religion (e.g., thrift and debt avoidance) might influence financial performance and risk tolerance. The findings revealed significant differences between faith-based and non-faith-based credit unions in capital adequacy, liquidity risk, and credit risk, but not in profitability and interest rate risk. The implications for social change include the potential to strengthen the risk management and investment strategies for faith-based credit unions, thereby helping to ensure the continuation of vital financial services valued by members and their communities.

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Section 1: Foundation of the Study

From 2003 to 2012, small credit unions in the United States vanished at the rate of nearly one credit union per workday (Goddard, McKillop, & Wilson, 2013; National Credit Union Association [NCUA], 2013a). Faith-based credit unions, unlike other small credit unions, cannot easily merge with larger institutions because of restrictive, faith-based fields of membership. Within this challenging environment, the survival of small, faith-based credit unions depends, in part, on effective financial and risk management. According to Brimble, Vyvyan, and Ng (2013), religion influences financial and risk management choices. Dohmen et al. (2011) linked religion to risk aversion, and Renneberg and Spaenjers (2012) associated religion with financial thrift and debt avoidance. However, researchers have noted the lack of studies available on the impact of religion on corporate financial behavior and risk tolerance (Berggren & Bjornskov, 2011; El Ghoul, Guedhami, Ni, Pittman, & Saadi, 2012; Jiang, Jiang, Kim & Zhang, 2015; McGuire Omer, & Sharpe, 2012).

My goal for this study was to determine whether significant differences in financial performance and risk tolerance existed between faith-based and non-faith-based credit unions. Leaders of faith-based credit unions who lack information about any unique faith-based factors affecting financial performance and risk tolerance may fail to make adjustments in investment strategies required for long-term sustainability. Like all credit unions, faith-based credit unions are nonprofit, mutual cooperatives with memberships restricted to predefined common bonds, such as a common employer or religion (McKillop & Wilson, 2011). However, faith-based credit unions are one of the

few organizations in which the (a) owners, (b) managers, (c) board of directors, (d) customers, and (e) creditors belong to the same religious group. Leaders of faith-based credit unions may use the study results to compensate for, or capitalize on, any unique faith-based factors that affect successful strategies for long-term sustainability. The results of this study may supplement the sparse literature regarding the impact of religion on credit union financial performance and risk tolerance.

Background of the Problem

Small credit unions in the United States, including small faith-based credit unions, are rapidly disappearing (Goddard, McKillop, & Wilson, 2013). In the 2 decades leading up to 2012, the number of small credit unions (e.g., assets less than \$50,000) declined by nearly half (Goddard et al., 2013; NCUA, 2013a). From 2003 to 2012, an average of nearly one small credit union disappeared each workday (NCUA, 2013a). A similar trend occurred with small community banks (Gilbert, Meyer, & Fuchs, 2013). Most small financial institutions do not have the economies of scale necessary to absorb increasing regulatory and technology costs (Wheelock & Wilson, 2011). Faith-based credit unions, unlike many other small credit unions, have difficulty merging with larger institutions because of their restrictive, faith-based memberships. Within this environment, the viability of faith-based credit unions depends, in part, on effective financial and risk management.

Factors associated with religion influenced the financial and risk management choices of individual investors (Brimble et al., 2013; Dohmen et al., 2011; Renneberg & Spaenjers, 2012). However, researchers have noted the lack of studies available on the

impact of religion on corporate investment behavior and risk tolerance (Berggren & Bjornskov, 2011; El Ghouli et al., 2012; Jiang et al., 2015; McGuire et al., 2012; Tracey, 2012). The 2008 U.S. financial panic showed that a better understanding of financial risk taking is critical for sound decision-making at the individual, institutional, and national levels (Yao, 2011). Researchers are only beginning to understand the impact of religion on institutional investment behavior (El Ghouli, et al., 2012; McGuire et al., 2012; Tracey, 2012).

The purpose for this study was to determine if significant differences in financial performance and risk tolerance existed between faith-based and non-faith-based credit unions of similar size and location, thereby enabling managers to develop investment strategies to address any unique faith-based factors that may affect long-term sustainability. For faith-based credit unions, the financial values and attitudes of the membership should translate to the values and attitudes of credit union leaders who represent the members (Shu et al., 2012). Consequently, faith-based credit unions are ideal for a study of the influence of religion on financial performance and risk tolerance at the institutional level.

Credit union managers serve as financial intermediaries between savers with excess funds and borrowers with deficient funds (Madura, 2012). As such, credit unions absorb significant levels of financial risks, including liquidity risk, credit risk, and interest rate risk (Tiplea, 2011). Successful financial performance of credit unions depends, in large part, on effective management of financial risks (Madura, 2012).

The results of this study cover a deficiency in the literature regarding the impact of religion on financial and risk management at faith-based credit unions. Leaders of faith-based credit unions who become aware of differences in risk tolerance may develop investment strategies to address unique, faith-based factors that can influence financial performance and long-term sustainability. Understanding any differences in risk tolerance may help (a) managers, (b) directors, (c) advisors, and (d) policy setters develop informed policies for effectively managing risk and return (Breuer, Riesener, & Salzmann, 2012; Brimble, Vyvyan, & Ng, 2013; Gheysens & Gunther, 2012; Klonz & Britt, 2012).

Problem Statement

In the United States, faith-based and other small credit unions are disappearing at the rate of nearly one credit union each workday (Goddard et al., 2013; NCUA, 2013a). From 2003 to 2012, the number of small, federally-insured credit unions (e.g., assets less than \$50 million) decreased from 7,472 to 4,673, a 37% decline (NCUA, 2013a). The general business problem is that leaders of small faith-based credit unions may fail to ensure the long-term viability of their institutions without the implementation of targeted financial and risk management strategies. The specific business problem is that leaders of some faith-based credit unions lack the information needed to identify and assess differences in financial performance and risk tolerance between faith-based and non-faith-based credit unions in order to improve their investment strategy and long-term sustainability.

Purpose Statement

The purpose of this quantitative, causal-comparative study was to provide managers of faith-based credit unions with information about differences in financial performance and risk tolerance between faith-based and non-faith-based credit unions in order to improve their investment strategy and long-term sustainability. The independent variables were the type of common bond (e.g., faith-based) and the year (2003-2012). The dependent variables were five financial ratios measuring (a) earnings, (b) capital adequacy, (c) credit risk, (d) liquidity risk, and (e) interest rate risk. The scope of this study included all U.S. federally insured credit unions in existence from 2003 to 2012. Financial data for all U.S. federally-insured credit unions are available on the NCUA website. The implications for social change included the potential to strengthen the fiscal and risk management strategies for faith-based credit unions, thereby helping ensure the continuation of vital financial services valued by the credit union members and their communities.

Nature of the Study

Selection of an appropriate research method and design depends on the research question(s) and purpose (Cohen, Manion, & Morrison, 2011). The purpose for this quantitative, causal-comparative study was to determine whether financial performance and risk tolerance differed between faith-based and non-faith-based credit unions of similar size and location. Venkatesh, Brown, and Bala (2013) identified three broad methods of inquiry available to researchers: qualitative, quantitative, and mixed methods. Researchers use qualitative methods to understand a phenomenon through open-ended

inquiry, usually relying heavily on text and image data gathered from study participants (Slife & Melling, 2011). In contrast, under the quantitative approach, researchers use sample or experimental data to test hypotheses involving two or more quantitative variables (Slife & Melling, 2011). The mixed method, which involves a blend of qualitative and quantitative methods, allows researchers to benefit from the strengths of both the qualitative and quantitative approaches (Ihantola & Kiln, 2011).

The nature of this study aligned most closely with the quantitative method because the study focused on examining differences among quantitative variables. Credit union managers submit financial statements and other quantitative data once a quarter to a public, online database maintained by the NCUA. The variables for this study consisted of numerical ratios. Therefore, the qualitative approach was not appropriate. In addition, because the mixed method approach includes the qualitative method, it also was not appropriate for the goals for this study.

Quantitative studies consist of two broad forms: experimental designs and nonexperimental designs (Imai, Tingley, & Yamamoto, 2013). In experimental designs, researchers measure the consequences of manipulating variables within a controlled environment to establish cause and effect (Imai et al., 2013). In contrast, researchers in nonexperimental designs establish relationships or differences between variables, rather than prove causality (Cohen et al., 2011). In nonexperimental designs, such as observational or survey designs, researchers determine the extent of relationships or differences among variables through observation, rather than through exerting influence on the subjects (Cohen et al., 2011). Because the data in this study involved historical

financial information available on a government database, no manipulation or treatment of variables occurred in an experiment. Consequently, the study design was nonexperimental in nature. The appropriate nonexperimental design for this study was the causal-comparative design because the goal for the study was to determine whether differences in financial performance and risk tolerance existed between faith-based and non-faith-based credit unions. Without being able to conduct a true experiment, the results of this study cannot definitively prove cause and effect and thus warrant cautious interpretation. Any differences stemming from the findings in this study require further research to confirm causation.

Research Question

The principal research question for this quantitative, causal-comparative study was: To what extent did differences exist in financial performance and risk tolerance between faith-based and non-faith-based credit unions from 2003 to 2012? Two subsidiary research questions evolved from the main research question.

1. To what extent did financial performance (i.e. profitability and capital accumulation) of faith-based credit unions differ from financial performance of non-faith-based credit unions from 2003 to 2012?
2. To what extent did financial risk tolerance (i.e., liquidity, credit, and interest rate risks) of faith-based credit unions differ from financial risk tolerance of non-faith-based credit unions from 2003 to 2012?

Hypotheses

Hypotheses are clearly formulated statements reflecting certain asserted characteristics about a population (Weiers, 2011). Hypotheses come in two forms, null and alternative hypotheses, symbolized by H_o and H_a , respectively. The null hypothesis refers to the default position in which no difference or relationship exists. A researcher presumes that a null hypothesis is true unless sufficient evidence nullifies it (Weiers, 2011). The alternative hypothesis states that a significant relationship or difference does exist (Weiers, 2011). This study involved five specific hypotheses related to the two sub-research questions.

Hypotheses on Financial Performance

Financial performance refers to a general measure of a credit union's *overall* financial health. Two key ratios measure overall credit union financial performance (NCUA, 2012b). The first ratio is the return on average assets ratio (ROAA), defined as net income divided by average total assets before reserve transfers (Akhter, Raza, Orangzab, & Akram, 2011; Masruki, Ibrahim, Osman, & Wahab, 2011; NCUA, 2012b). ROAA determines how well credit union managers use assets to create profits (Wasiuzzaman, 2013). The second ratio is the capital ratio (CR), which measures net worth as a percent of average total assets, thus indicating the level of credit union leverage and capital accumulation over time (Wasiuzzaman, 2013; NCUA, 2012b).

H_{1o} : The return on average assets ratio for faith-based credit unions is not significantly different from the same ratio for non-faith-based credit unions of similar asset size and location from 2003 to 2012.

H1_a: The return on average assets ratio for faith-based credit unions is significantly different from the same ratio for non-faith-based credit unions of similar asset size and location from 2003 to 2012.

H2_o: The capital ratio for faith-based credit unions is not significantly different from the capital ratio for non-faith-based credit unions of similar asset size and location from 2003 to 2012.

H2_a: The capital ratio for faith-based credit unions is significantly different from the capital ratios for non-faith-based credit unions of similar asset size and location from 2003 to 2012.

Hypotheses on Financial Risk Tolerance

Financial risk tolerance is the maximum uncertainty acceptable when making decisions involving financial matters (Van de Venter, Michayluk, & Davey, 2012). In credit unions, three primary financial risks exist: liquidity risk, credit risk, and interest rate risk (NCUA, 2012b). Liquidity risk occurs when an insufficient buffer of cash fails to cover the timing gaps in cash receipts and disbursements (Ariffin, 2012). Credit risk, or default risk, stems from the possibility of borrowers defaulting on the promised payments (Arora, Gandhi, & Longstaff, 2012). Finally, interest rate risk stems from possible variations in returns of fixed-rate investments caused by fluctuations in market rates (Papadamou & Siriopoulos, 2014).

Hypothesis on liquidity risk tolerance. For depository financial institutions, liquidity risk is the chance of having insufficient funds to pay for withdrawals by depositors (e.g., a run on the bank), claims by other creditors, such as vendors and central

liquidity facilities, and obligations to meet loan demand (Ariffin, 2012; Drehmann & Nikolaou, 2013). The proper management of liquidity risk is of paramount importance to the operation and viability of financial institutions (Ariffin, 2012). A common measure of liquidity risk is the cash ratio, defined as cash plus short-term investments divided by total assets. Higher cash ratios indicate larger proportions of liquid assets to total assets, thereby minimizing the chance of having insufficient liquidity (NCUA, 2012b).

H3_o: The cash ratio for faith-based credit unions is not significantly different from the same ratio for non-faith-based credit unions of similar asset size and location from 2003 to 2012.

H3_a: The cash ratio for faith-based credit unions is significantly different from the same ratio for non-faith-based credit unions of similar asset size and location from 2003 to 2012.

Hypothesis on credit risk tolerance. Credit or default risk refers to the chance that assets will lose value or liquidate below recorded values (Arora et al., 2012). Higher asset quality aligns with lower credit risk. The two most prominent categories of credit union assets are loans to members, and loans to others (i.e. investments), such as loans to governments and financial institutions (Madura, 2012). A common ratio measuring the quality of loans to members is the delinquency ratio, defined as loans delinquent for at least 60 days divided by total loans (NCUA, 2012b). The higher the delinquency ratio, the more chance that loans will default (NCUA, 2012b). While loans to members are subject to significant credit or default risk, loans to governments (e.g., Treasury securities) and financial institutions (e.g., certificates of deposit) are typically

government-insured and thus not subject to significant amounts of credit risk (Madura, 2012). Consequently, this study I focused on loans to members and the delinquency ratio.

H4_o: The loan delinquency ratio for faith-based credit unions is not significantly different from the same ratio for non-faith-based credit unions of similar asset size and location from 2003 to 2012.

H4_a: The loan delinquency ratio for faith-based credit unions is significantly different from the same ratio for non-faith-based credit unions of similar asset size and location from 2003 to 2012.

Hypothesis on interest rate risk tolerance. Interest rate risk is a significant risk for financial institutions (Papadamou & Siriopoulos, 2014). Interest rate risk consists of two components: (1) the chance that assets will decline in value due to changing interest rates, and (2) the chance that rates earned on assets will not move in synchronization with rates paid on liabilities (Tiplea, 2011). Interest rate risk is a substantial problem faced by credit union leaders, especially in the United States, which is one of the few countries in which borrowers can lock into fixed rates for more than 10 years (Calza, Monacelli, & Stracca, 2013). Although several measures of interest rate risk exist, one of the most common measures is the net long-term asset ratio (NCUA, 2012b). The long-term asset ratio, defined as net long-term assets divided by total assets, measures the risk exposure and ability to respond to moving interest rates, with higher ratios representing increased risk (NCUA, 2012b). Long-term assets include loans that will not refinance, re-price, or mature within 5 years, and investments with remaining maturities of more than 3 years (NCUA, 2012b).

H5_o: The long-term asset ratio for faith-based credit unions is not significantly different from the same ratio for non-faith-based credit unions of similar asset size and location from 2003 to 2012.

H5_a: The long-term asset ratio for faith-based credit unions is significantly different from the same ratio for non-faith-based credit unions of similar asset size and location from 2003 to 2012.

Theoretical Framework

The theoretical framework in quantitative studies reflects the theories from the literature that provide a foundation for the research. Theories are a set of suppositions that connect new research to existing knowledge and help researchers explain and predict phenomena under an organized set of principles (Cohen et al., 2011). In this study, the theoretical framework helped frame the study and provide context for answering the research questions about the differences in financial performance and risk tolerance between faith-based and non-faith-based credit unions.

Although Adam Smith briefly addressed the connection between religion and economics (Smith, 1776), Max Weber was the first to bring the topic to the forefront of social science research in his seminal work *The Protestant Ethic and the Spirit of Capitalism* published in 1905 (Sanderson et al., 2011; Weber, 1905). Weber posited that the success of market-driven capitalism in the Western world was contingent on religious influences inherent in Christian Protestantism (Smith & Smith, 2011). The Protestant ethic developed from the reformation movement of the 16th and 17th centuries, when certain Protestant sects, such as (a) Calvinists, (b) Methodists, (c) Lutherans, (d) Quakers,

(e) Baptists, (f) Mennonites, and (g) Puritans, extolled the virtue of hard work and material success (Smith & Smith, 2011). In contrast to Karl Marx and other social philosophers of the time, Weber tied capitalism to certain traits associated with Protestantism (Smith & Smith, 2011). These traits included (a) personal responsibility, (b) productivity, (c) speculation-avoidance, and (d) risk aversion (Smith & Smith, 2011). Several subsequent studies confirmed that regions with high concentrations of Protestants experienced less risk-taking and less financial distress (Becker & Woessmann, 2009; Hess, 2012; Hilary & Hui, 2009).

The Protestant ethic theory diverges from rational choice theory. Originating in the Age of Reason, the field of economics incorporated human rationality as a critical presupposition (Hewig et al., 2011). The origin of rational choice theory is commonly associated with the English philosopher Thomas Hobbes, who published his main work *Leviathan* in 1651 (Epstein, 2013). According to rational choice theory, economic decisions require a rational tradeoff between perceived rewards and risks (Dietrich & List, 2011). However, an increasing number of economists, known as *behavioral economists*, disputed the claim that economic behavior is rational (Etzioni, 2011). Behavioral economists point to the wide range of irrational economic behaviors, including the reckless economic choices that led to the subprime mortgage and financial crisis (Etzioni, 2011). A growing body of literature shows that culture and religion influence a wide variety of economic behaviors affecting levels of risk taking, income, wealth, and economic growth (Beugelskijk, 2010; Callen et al., 2010; El Ghoul et al., 2012; Hess, 2012; [Jamaludin, 2013](#); York & Dutton, 2012).

If the Protestant ethic theory holds, religion and religious culture may influence the investment choices made by managers at faith-based credit unions. The Protestant ethic provided a theoretical foundation for hypothesizing that different levels of financial performance and risk-tolerance would exist between faith-based credit unions and non-faith-based credit unions. Specifically, key financial ratios measuring financial performance, credit risk, interest-rate risk, and liquidity risk, would significantly differ from the same ratios of non-faith-based credit unions.

Operational Definitions

Credit risk. Credit risk, or default risk, stems from the possibility of borrowers defaulting on the promised payments, or the chance that assets will liquidate or lose value below recorded values (Arora et al., 2012).

Culture. Guiso, Sapienza, and Zingales (2006) defined culture as the beliefs and values that ethnic, religious, and social groups transfer from one generation to another. Olusoji, Adediji, and Oluwakemi (2012) defined culture as the acquired knowledge used to interpret, experience, and create social behavior.

Financial risk tolerance. Financial risk tolerance is the maximum uncertainty acceptable when making decisions involving financial matters (Van de Venter, Michayluk, & Davey, 2012).

Interest rate risk. Interest rate risk stems from possible variations in returns on fixed-rate investments when market rates fluctuate (Papadamou & Siriopoulos, 2014). For example, an investment that promises a 3% fixed rate for a long period may lose

value as interest rates and inflation increase and cause the fixed rate to appear unattractive.

Liquidity risk. From an investor's perspective, liquidity risk stems from being unable to sell an investment for its fair value when the need for cash arises (Madura, 2012). From the perspective of a financial institution's leadership, liquidity risk occurs when an insufficient buffer of cash exists to cover the gaps in cash receipts and disbursements (Ariffin, 2012).

Protestant ethic. The Protestant ethic, or the Protestant work ethic, is a term first coined by German sociologist Max Weber (1864-1920) to refer to the attitudes of Protestant Christians toward work, business, money, and savings (Zulfikar, 2012).

Rational choice theory. According to rational choice theory, people make logical economic decisions that result in the greatest benefits and rewards, balanced against the costs and risks (Dietrich & List, 2011).

Religion. Religion is a formalized set of shared beliefs, values, practices, and institutions based upon the acceptance of a supernatural God (Jamaludin, 2013). This definition does not include highly individualistic or philosophical religions, such as certain sects of Buddhism (Jamaludin, 2013).

Religiosity. Religiosity is a measure of commitment or devotion to religious beliefs and practices (Jamaludin, 2013).

Assumptions, Limitations, and Delimitations

Assumptions

Assumptions are concepts that researchers accept as being true without empirical proof (Bryman & Bell, 2011). The first assumption in this study was that the financial information uploaded by credit union managers to the NCUA database was accurate and reliable. Because the credit union data consist of self-reported figures, the potential exists for mistakes and manipulations in the data. However, several mitigating controls exist. When credit union managers upload the data, the database performs a confirmation procedure to ensure the internal consistency of the figures (NCUA, 2013d). In addition, government and other external auditors regularly examine credit union reports for accuracy and consistency. When discrepancies occur, credit union managers submit corrected reports to the database in a timely manner (NCUA, 2013d).

Another assumption was that any economic behaviors or values of the individual members of a faith-based credit union can influence the economic choices made at the organizational level. For example, if most credit union members are financially risk-averse, the assumption is that the members will likely elect directors who mirror their financial conservatism and will correspondingly influence organizational decision-making and behavior. For credit unions with exclusive religious common bonds, the financial values and attitudes of the faith-based membership should translate to the values and attitudes of the credit union's management and board of directors who represent the members (Shu et al., 2012).

Limitations

Limitations are potential weaknesses identified, but not controlled, by the researcher that create threats to the internal validity of the study (Bryman & Bell, 2011). Several limitations are inherent in this study. The period under study (2003-2012) included the turbulent effects of the mortgage/financial crisis and the initial implementation of significant new regulation under the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010. These factors potentially caused abnormal variations in the financial performance and risk tolerance of credit unions during this period. However, a mitigating factor was that these pressures tended to have a broad-based, macroeconomic impact that affected all credit unions in a similar manner, both faith-based and non-faith-based credit unions. In addition, at least half of the years in the range covered by the study occurred outside the time-frame of the financial crisis.

A second potential limitation was survivor bias. Credit unions that did not exist during the full decade from 2003 to 2012 (e.g., due to startup, failure or acquisition) were not part of the sample because longitudinal data would be skewed if not based on a full decade of data. This exclusion created the potential for survivor bias, a form of selection bias arising when samples consist exclusively of surviving cases (Van Rein, Cannegieter, Rosendaal, Reitsma, & Lijfering, 2014). However, obtaining a list of credit unions that only existed for part of the decade under study was difficult because the publicly available database only included historical data for credit unions still in existence as of December 31, 2012.

Zucker and Darby (1999) posited that it was difficult for researchers to isolate the influence of religion on economic choices, especially when a tight regulatory environment exists. Government administrators heavily regulate and monitor credit unions for safety and soundness (Forker & Ward, 2012). Therefore, a third limitation was that regulation might prevent credit union managers from making what otherwise would be instinctive choices regarding financial risks and return. Consequently, the constraints of regulation may attenuate differences between faith-based and non-faith-based credit unions.

A fourth limitation was that the data came from quarterly call reports uploaded by credit union managers to the NCUA database. Credit union leaders self-report the financial data, which are, therefore, subject to errors and manipulations. However, upon submission of call reports, the NCUA database software performs a validation procedure to ensure the internal consistency of the figures (NCUA, 2013d). In addition, government and other external auditors regularly examine credit union call reports for compliance with accounting and reporting regulations. When discrepancies occur, credit union leaders must submit corrected call reports in a timely manner (NCUA, 2013d).

Ward and McKillop (2011) determined that retired people constitute a majority of the credit union board membership in the U.S. As people age, they tend to grow significantly more risk-averse in their investment choices (Yao et al., 2011). Consequently, a fifth limitation is that the investment behavior of faith-based credit union leaders may become more risk-averse because of the age of the directors and not because of their religious affiliation.

The population of this study was credit unions classified by the NCUA as having faith-based fields of membership exclusively. Although many credit unions have multiple common bonds, one of which may be faith-based, this study included only credit unions that had exclusively associational, faith-based common bonds. By excluding faith-based credit unions that have other common bonds as well, the size of the population from which the sample is drawn decreased. However, including faith-based credit unions with multiple common bonds in the sample would create the risk of tainting the sample with additional confounding factors.

Yet another limitation was the potential for members at faith-based credit unions to maintain simultaneous membership at non-faith-based credit unions. Credit union leaders are increasingly adopting multiple common bonds, which raises the possibility that a person may be a member of two or more credit unions at the same time (Robin & Wollan, 2012). If such were the case, an attenuation of the effect might occur when measuring the differences in variables between faith-based and non-faith-based credit unions located in the same geographic area.

A final inherent limitation in this study was the inability to identify and control for all significant confounding variables. As stated by Zucker and Darby (1999), isolating the influence of religion on economic choices is difficult because of myriad cultural and demographic factors possibly affecting economic choices. In this study, I controlled for credit union asset size and geographic location, two major factors affecting financial performance and risk tolerance at financial institutions (Alam, 2012; Rozzani & Rahman,

2013; Wheelock & Wilson, 2011). However, identifying and controlling for all potential confounding factors was difficult, if not impossible.

Delimitations

Delimitations are constructs, variables, or factors intentionally restricting the domain of the research that generate external threats or affect the generalizability of the study (Bryman & Bell, 2011). Delimitations are necessary to make the study feasible and manageable. Without the delimitations specifically identified in the study, readers may not understand the self-imposed boundaries or scope of the research (Bryman & Bell, 2011).

Although many credit unions exist around the world, this study involved credit unions chartered within the United States and its territories. In addition, I restricted the domain of this study to federally insured credit unions because the NCUA database does not include a common bond query for credit unions with non-federal insurance. Another delimitation of the study was that it covered only the decade of 2003 to 2012. Although the NCUA database contains over 3 decades of credit union financial data, limiting the time-frame to 1 decade was necessary because of limited research time and budget.

A final delimitation of the study was the causal-comparative design. The causal-comparative design was appropriate for this study because the goal was to determine if a significant difference in financial performance and risk tolerance existed between faith-based and non-faith-based credit unions. However, the purpose for a causal-comparative design is not to prove cause and effect (Boyko, 2013). Any differences in financial

performance and risk tolerance between faith-based and non-faith-based credit union determined from this study require further research to confirm causation.

Significance of the Study

Contribution to Business Practice

Little information exists on how religion may affect financial decision-making, especially at the organizational level (Berggren & Bjornskov, 2011; El Ghouli et al., 2012; McGuire et al., 2012). Understanding the intersection of religion with business management is one of the great, unexplored areas of management research (McGuire et al., 2012). However, during the last few years, the influence of religion on financial decision-making has become the focus of a growing body of research (El Ghouli et al., 2012; Guiso, 2006; McGuire et al., 2012).

Leaders of depository financial institutions, such as credit unions, seek to generate a return on the use of funds greater than the cost of funds, a difference known as net interest margin (Madura, 2012). The optimization of investment return requires a trade-off between reward, a desirable attribute, and risk, an undesirable attribute (Gilli & Schumann, 2011). A number of factors can affect investment performance and risk tolerance, including culture and religion (Dohmen et al., 2011; Renneberg & Spaenjers, 2012). Religious norms may simultaneously assist and detract from successful financial and risk management (Renneberg & Spaenjers, 2012). The early recognition of these factors by managers of faith-based credit unions may lead to effective ways of planning, measuring, and managing the impact of religion on organizational decision-making.

Although risk-taking by credit union managers increases the chance of large windfalls, it also increases the chance of huge losses, which may jeopardize credit union viability. Alternately, excessive risk aversion may result in the forfeiture of important opportunities for advancement and growth, which, in turn, may threaten the long-term success of the credit union (Madura, 2012). Consequently, credit union managers must regularly assess an acceptable level of risk tolerance and optimize the related return. Such assessment is vital for small credit unions, such as faith-based credit unions, which are rapidly vanishing in acquisitions and failures (Goddard et al., 2013).

Hilary and Hui (2009) maintained that studying the connection between religion and economics could augment economic research on multiple levels by: (a) creating a new awareness of an ignored part of nonmarket economics; (b) demonstrating how to incorporate values and attitudes into economic models; and (c) assessing the impact of religion on the economic behavior of individuals and organizations. The results of this study may supplement this literature regarding the impact of religion on credit union financial performance and risk tolerance. Understanding the influence of religion on financial behavior may help (a) credit union managers, (b) directors, (c) advisors, and (d) policy setters make informed decisions (Breuer et al., 2012; Klonz & Britt, 2012).

Other contributions to business practice include benefits to specific industries and the development of public policy. Gheysens and Gunther (2012) noted that because of the significant influence of religion on levels of risk tolerance, leaders in the insurance industry should consider the religious background of customers as a key factor in risk management models. Brimble et al. (2013) pointed to the importance of investment

managers understanding *how* religion affects investor preferences and attitudes.

Kooreman and Prast (2010) suggested that knowing how religion influences economic behavior could facilitate national policies on retirement savings and healthcare. Yao et al. (2011) contended that understanding how behavioral factors, such as religion, affect risk tolerance is critical to investment researchers and policy makers who have a responsibility to recommend appropriate investments. Effectively evaluating risk tolerance can prevent unnecessary investment losses, a lesson too many failed to heed during the mortgage and financial crisis (Yao, 2011). Finally, the results of this study cover a deficiency in the literature regarding the influence of religion on organizational decision-making, thereby advancing the understanding of management practice and theory for use by leaders of all faith-based organizations, including religious schools, hospitals, and other faith-based nonprofit organizations.

Implications for Social Change

Credit unions are member-owned organizations with missions for achieving the social and economic goals of their members and their wider communities (McKillop & Wilson, 2011). The original justification for the nonprofit, tax-exempt status granted to credit unions was the intent to serve people of modest means who had limited access to financial services at banks and other financial institutions (McKillop & Wilson, 2011). Today, faith-based credit unions continue to help foster financially independent communities. The implications for social change include the potential to strengthen the investment and risk management strategies for faith-based credit unions by identifying any unique faith-based factors that may affect long-term sustainability, thereby

maintaining and strengthening the essential financial services provided to members and the wider communities.

A Review of the Professional and Academic Literature

The purpose of this quantitative, causal-comparative study was to determine whether significant differences in financial performance and risk tolerance existed between faith-based and non-faith-based credit unions, by comparing financial ratios of faith-based credit unions with those at non-faith-based unions of similar size and location. Faith-based credit unions have memberships restricted to individuals who are part of a religious group or denomination. This unique faith-based membership provides an ideal basis for this study because few other industry subsets exist that consist entirely of (a) owners, (b) managers, (c) directors, (d) customers, and (e) creditors who belong exclusively to religious groups. The research questions and hypotheses of this study addressed the need by some credit union managers to understand whether faith-based credit unions have significantly different financial performance results and risk tolerance levels for credit risk, liquidity risk, and interest rate risk, compared to non-faith-based credit unions. Understanding the impact of religion on financial performance and risk tolerance may help (a) credit union managers, (b) directors, (c) advisors, and (d) policy setters make more informed investment decisions (Breuer et al., 2012).

An integral step in addressing the research question was examining the existing body of knowledge through a systematic review of the literature. A large majority of the references in this study (more than 85%) consisted of scholarly, peer-reviewed articles published within 5 years of the final approval date for this study. I obtained these articles

from online databases, such as Business Source Complete (EBSCO), ProQuest (ABI/INFORM), ScienceDirect, Emerald Management Journals, PsycINFO, and SAGE Premier. In addition, the literature review included some references from professional or industry journals and books. Key search terms included *faith, religion, or religiosity*, in conjunction with (a) *risk tolerance*, (b) *risk aversion*, (c) *risk preference*, (d) *risk management*, (e) *capital structure*, (f) *debt*, (g) *default*, (h) *speculation*, (i) *gambling*, (j) *thrift*, (k) *savings*, (l) *economics*, (m) *behavioral economics*, (n) *finance*, (o) *Protestant work ethic*, (p) *rational choice theory*, (q) *credit unions*, (r) *field of membership*, (s) *credit union boards*, (t) *banking*, (u) *financial performance*, (v) *credit risk*, (w) *liquidity risk*, and (x) *interest-rate risk*.

The literature review consisted of three primary areas. The first area starts with the historical progression of thought on behavioral economics, a growing area of research that rejects the idea that all economic behavior is rational. This area also contains a discussion of research connecting religion and economic behavior, especially the early work of Weber, which inspired many subsequent studies. Finally, I reviewed the literature about the relationship between religion and investment behavior, particularly (a) *risk aversion*, (b) *frugality*, (c) *economic growth*, and (d) *ethical financial management*.

The second area covers the historical background and special characteristics of credit unions. In this area, I evaluated credit union risk management and connected each type of risk to the related study hypothesis. The last area contains a discussion of the

impact of this study on business practice, and a review of the literature that supports the selected research method and design.

Rational Choice Theory

Developed in the Age of Reason, the field of economics included human rationality as one of its fundamental principles (Hewig et al., 2011). The origin of rational choice theory is commonly associated with the English philosopher Thomas Hobbes, who published his main work, *Leviathan*, in 1651 (Epstein, 2013). According to rational choice theory, people make logical economic decisions resulting in the greatest perceived benefit and reward, given the cost and risk (Dietrich & List, 2011; McKinnon, 2011). However, critics of rational choice theory have produced a large body of mainstream research, known as behavioral economics, which refutes the notion that all economic behavior is rational (Etzioni, 2011). For example, researchers have noted that the subprime mortgage and financial crisis was caused, in part, by reckless economic behavior and faulty models based on the presumption of rational economic efficiency (Etzioni, 2011).

Rational choices can only occur when individuals have sufficient relevant data, strong willpower, perfect cognitive facilities, and consistent inclinations. Yet these conditions seldom exist in reality (Dorn & Huberman, 2012; Kooreman & Prast, 2010). The nature of research in behavioral economics is seldom exact and precise, like math or engineering, but instead involves intangibles such as values, beliefs, and attitudes (Klontz & Britt, 2012). Such attitudes depend on background, culture, and religion at both the

individual and aggregate levels (Hilary & Hui, 2009; Jamaludin, 2013; Kobrich Leon, 2013; McGuire et al., 2012; Shu et al., 2012).

Because of the nebulous nature of culture and religion, the design of empirical tests is difficult, which is one reason for the reluctance of economists to consider culture and religion as determinants of economic behavior (Breuer et al., 2011; Guiso et al., 2006; Tracey, 2012). However, better data and empirical techniques have allowed economists to show that culture and religion heavily influence the values, beliefs, and attitudes that drive socioeconomic behavior (Beugelsdijk, 2010; Guiso et al., 2006). A growing interest in culture and religion by economists led to additional focus on how religion, a proxy for cultural values, affected a variety of socio-economic variables at the individual, organization, and national levels (Saroglou & Cohen, 2011; Tracey, 2012). Such variables include wealth and home ownership (Tahir & Brimble, 2011; York & Dutton, 2012), social trust (Daniels & Von der Ruhr, 2010), and risk aversion (Dohmen et al., 2011; Hess, 2012; Hilary & Hui, 2009; Kumar, Page & Spalt, 2011; Liu, 2010). These variables also include thrift and debt avoidance (Baxamusa & Jalal, 2010; Hess, 2012; Kobrich Leon, 2013; Renneboog & Spaenjers, 2012), financial self-control/self-regulation (McCullough & Willoughby, 2009), retirement savings (Jamaludin, 2013), and economic growth (El Ghouli et al., 2012).

Max Weber and the Protestant Ethic

In his seminal work, *The Protestant Ethic and the Spirit of Capitalism*, Max Weber (1905) conducted groundbreaking research into the connection between religion and economic behavior. While Adam Smith briefly mentioned the association of religion

and economics (Smith, 1776), Weber was the first to take the topic to a level of prominence in social science research (Hanna, Hill, & Perdue, 2010; Jiang et al., 2015). Weber's controversial thesis, commonly known as the Protestant ethic or Protestant work ethic, has incited one of the most heated debates in the social sciences (Sanderson et al., 2011).

Weber attempted to explain the psychological factors that led to the development of market-driven capitalism and economic growth (El Ghouli et al., 2012; LaPierre, 2013; Tracey, 2012). In contrast to Karl Marx and other social scientists of the time, Weber contended that capitalism was dependent on a number of traits or values associated with the Protestant religions of northern Europe, especially the Calvinists, Methodists, Lutherans, Puritans, and Mennonites (Schaltegger & Torgler, 2010; Tracey, 2012). Although Weber did not maintain that Protestantism was the sole cause of economic success (Zulfikar, 2012), he contended that certain traits favoring economic growth were more pronounced in areas with heavier concentrations of Protestants (Smith & Smith, 2011). These traits included (a) personal responsibility, (b) individualism, (c) self-interest, (d) hard work, (e) pragmatism, (f) thrift, (g) frugality, (h) prudence, (i) modesty, (j) capital accumulation, and (k) risk aversion, among others (Bouckaert & Zsolnai, 2012; Hilary & Hui, 2009; Zulfikar, 2012).

Despite Weber's influential work, sparse information exists in the literature about the impact of religion and culture on economic behavior (Berggren & Bjornskov, 2011; El Ghouli et al., 2012; McGuire et al., 2012). However, economists have revived Weber's thesis by focusing on the influence of religion on economic preferences and outcomes,

especially given the current economic divide between northern and southern European countries (Daniels & Von der Ruhr, 2010). Although many studies support parts of Weber's theories, many other studies refute Weber's claims (El Ghouli et al., 2012; Gundolf & Filser, 2013). While the purpose of this discussion is not to debate Weber's thesis but to present it as part of the historical, theoretical framework, a brief review of the evidence contradicting or supporting the Protestant ethic is nevertheless relevant to any discussion of religion and economics.

Smith and Smith (2011) contended that a number of distortions, biases, and factual inconsistencies existed in the interpretation of the Protestant ethic as a key construct of economic and management theory. Becker and Woessman (2009) concluded that religion served as a mask for the real underlying change agent in economic behavior, human or social capital. In addition, they found that the superior economic outcomes associated with Protestantism were due to an emphasis on Bible reading, which led to higher literacy rates and, in turn, increased human capital. Similarly, Schaltegger and Togler (2010) maintained that the superior economic success of Protestants was due to a more pervasive and effective educational system. Although a large number of studies showed that many non-Protestant countries experienced economic growth superior to Protestant countries, especially in the developing world, Weber never claimed that non-Protestant countries could not replicate the same economic results (Zulfikar, 2012). Zucker and Darby (2009) discussed the difficulty faced by Weber or any other researcher in isolating the impact of religion on economics from other factors, such as the legal

environment and public infrastructure. These researchers questioned the main premise of Weber's thesis.

Religion and Financial Behavior

The authors of several studies concluded that religion influences a variety of financial behaviors (Ferruz, Munoz, & Vargas, 2012; Jamaludin, 2013; Tahir, 2011). As the level of direct private investment escalates, due in part to an aging population and the growing prominence of self-directed retirement plans, understanding investment behavior becomes increasingly important (Brimble et al., 2013; Gough & Niza, 2011). Kooreman and Prast (2010) contended that knowing how religion influences investment behavior could inform national policies on a variety of issues, such as retirement planning and savings. Comprehending how religion affects investment behavior may help investors, advisors, fund managers, and policy setters make more effective investment decisions (Breuer et al., 2012; Klonz & Britt, 2012). For managers of faith-based credit unions, understanding the impact of religion on financial performance and risk tolerance may provide a necessary context to maximize credit union investment performance in a sustainable manner.

Religion and risk taking. A firm understanding of background factors affecting risk tolerance, such as religion, is critical to investment decision-making (Yao et al., 2011). Properly evaluating risk tolerance is an essential step in avoiding investment losses, a principle many failed to comprehend preceding the mortgage and financial crisis (Yao et al., 2011). An underlying tenet of the capital asset pricing model is the assumption that rational choices drive decisions regarding investment risk-taking and

reward-making (Breuer et al., 2012). However, Beugelsdijk and Frijns (2010) questioned the capital asset pricing model because of evidence that investors make decisions driven, in part, by behavioral scripts derived from their cultural and religious backgrounds. Nevertheless, even though religious backgrounds affect investment choices, financial return is still the most important factor in any investment choice (Brimble et al., 2013).

Wong and Hu (2011) defined risk as uncertainty about the future because of a possible loss or undesirable outcome. A large number of studies support the traditional risk-return tradeoff model in which investors balance the perceived risk against the perceived reward (Wong & Hu, 2011). After studying the financial behaviors of identical and fraternal twins, Barnea, Cronqvist, and Siegal (2010) concluded that genetics explained only about one-third of the risk preferences of individuals. Other remaining factors included upbringing, environment, experience, culture, religion, and personal characteristics. Different levels of perceived risk related to different personalities, feelings, attitudes, and values, which in turn were subject to cultural and religious influences (Wong & Hu, 2011). Malmendier and Nagel (2011) found that individuals who experienced macroeconomic shocks, such as the Great Depression, were less willing to take financial risk. Socialistic cultures with low levels of individualism exhibited a low tolerance for risk (Breuer, et al., 2012). Other demographic and behavioral factors associated with financial risk tolerance include occupation, education, income, wealth, age, gender, emotions, race, and home location (Booth & Nolen, 2012; Brimble et al., 2013; Hilary & Hui, 2009; Kuhnen & Knutson, 2011; Van de Venter et al., 2012; Yao et al., 2011).

Evidence in the literature supports a positive correlation between religion and risk aversion, both at the individual and corporate levels (Dohmen et al., 2011; Hess, 2012; Hilary & Hui, 2009; Jiang et al., 2015; Kumar et al., 2011; Liu, 2010). For example, Jiang et al. (2015) studied over 4,000 family firms and concluded that firms owned by religious investors exhibited lower levels of debt and less financial risk than firms owned by nonreligious investors. Hess (2012) examined Gallup data from 10 metropolitan areas and found that individuals living in areas more heavily concentrated by religious people tended to show higher aversion to risk, better credit scores, lower credit card balances, and fewer foreclosures and bankruptcies. Kumar et al. (2011) concluded that religion, especially Protestantism, lowered the propensity to take financial risks. Benjamin, Choi, and Fisher (2012) found that Protestants, Catholics, and Jews were more risk-averse than were agnostics and atheists, and Catholics accepted more financial risk than Protestants.

Gheysens and Gunther (2011) observed a significant positive relationship between religion and levels of risk tolerance in rural villages in developing countries, a phenomenon that insurance companies should note in their risk management models. Beugelsdijk and Frijns (2010) claimed that cultural and religious factors partially explained why investors in some countries invested more heavily in risky stocks. York (2012) found that people with strong religious beliefs tended to use a conservative investment strategy, and, therefore, had less return and lower net worth but also incurred less financial trouble (York, 2012). Peifer (2011) discovered that religiously affiliated mutual funds experienced higher levels of stability resulting from risk-averse investment choices. Shu et al. (2012) showed that local religious beliefs significantly affected mutual

fund investment behavior and that, while Catholic and Protestant differed with regard to speculative risks, both groups had a shared aversion to pure risk.

Hilary and Hui (2009) concluded that individuals who regularly participated in religious services were more risk-averse than the general population. In addition, United States-based organizations located in counties with higher religiosity levels incurred lower risk exposure in terms of return on assets and return on equity volatility. With lower investment risk, such organizations also experienced lower growth rates over the long-term.

When distinguishing among religious groups, the effects of risk aversion were more pronounced in counties dominated by Protestants than Catholics, although both groups were more risk-averse than the general population (Hilary & Hui, 2009). Jiang et al. (2015) associated Western religions (e.g., Judaism, Christianity, & Islam) with increased risk aversion because of the belief in an afterlife (e.g., heaven or hell) controlled by an omnipotent god. The focus of Eastern religions, on the other hand, is not on salvation but on enlightenment; thus uncertainty is a more acceptable tenet of life.

In Muslim countries, stock returns during the holy month of Ramadan were significantly higher and incurred less volatility and risk, which demonstrated that religious practice influenced investment behavior (Bialkowski, Etebari, & Wisniewski, 2012). Furthermore, fund managers in Turkey exploited the Ramadan effect on markets by achieving superior returns compared to the rest of the year. This is an example of the value of investment managers and advisors understanding the connections between religion and investment behavior (Bialkowski et al., 2013). These researchers speculated

that the abnormal investment behavior during Ramadan resulted from a surge in optimism and positive feelings stemming from increased social interaction with family and fellow believers (Bialkowski et al., 2012). Tahir and Brimble (2011) observed a significant effect of Islam on investment decisions made by Muslims, especially devout Muslims who had high levels of religious participation. However, Jamaludin (2013) found no significant relationship between Muslim religious participation and investment choices for retirement funds. Similarly, Shahzad, Awan, and Qureshi (2014) concluded that no connection existed between Islam and the behavior of individual and institutional investors in Pakistan. Widayanto (2014) determined that no significant relationship between religion and risk taking in Malaysia existed.

One explanation for the association of Abrahamic religion with risk aversion is that scriptures of both Christian and Islamic religions encourage prudence, savings, and investment diversification, and discourage high levels of debt and get-rich-quick schemes (Hess, 2012). Examples include Psalms 37:21; Proverbs 13:22, 21:5, and 21:20; Ecclesiastes 11:1-6; Luke 14:28; Romans 13:7; and Quran 2:280. Albaity and Rahman (2012) surveyed 750 undergraduate business students in Malaysia and found that religious beliefs significantly influenced the respondents' levels of perceived risk taking. However, Liu (2010) contended that religious beliefs were not determinants of risk aversion; rather, risk-averse people naturally turned to religion to mitigate the uncertainty about the afterlife. Hilary and Hui (2009) purported that people sought religion to quell the anxiety of risk and uncertainty in their lives. Finally, Jiang et al. (2015) purported that fearful and risk-averse people use religion to quell their fears of the unknown.

Another explanation for the relationship between religion and risk preferences is that social trust, rather than religion, is the real underlying determinant of risk preferences. Albaity and Rahman (2012) found that a relationship existed between trust and investment risk taking. Noussair, Trautmann, Van de Kuilen, & Vellekoop (2012) suggested that religious people were more risk-averse because of social trust, rather than actual beliefs. Guiso et al. (2006) purported that religious beliefs significantly affected one's level of trust, which in turn affected risk preferences. El Ghouli et al. (2012) found an association between religion and lower equity financing costs, which implied that financiers in religious areas trusted firms more than in nonreligious areas.

Religion, thrift, and debt avoidance. Several researchers found that religion promoted thrift and capital accumulation (Barro & McCleary, 2003; Guiso et al., 2006; Jiang et al., 2015). Guiso et al. (2006) found that a culture of teaching children the concept of thriftiness caused an increase in the national savings rate comparable to other life-cycle factors. Guiso et al. contended that Catholics had stronger attitudes favoring thrift than Protestants, which somewhat counteracted the conclusions of Weber. Renneboog and Spaenjers (2012) and Kobrlich Leon (2013) found significant variances in savings behavior between religious and non-religious people, and between different religious groups. McCulloch and Willoughby (2009) concluded that religion promoted self-control, which encouraged higher levels of savings and lower levels of borrowings. Baumeister, Bauer, & Lloyd (2010) proposed that religion promoted a long-term perspective, which fostered self-control and a preference for delayed rewards, thereby promoting savings habits.

Several researchers studied the influence of religion on the level of debt financing. Baxamusa and Jalal (2010) found that U.S. firms located in Protestant-majority counties experienced less debt financing and shorter bond maturities than firms in Catholic-dominant counties. In addition, Hess (2012) observed that people living in areas with strong religious influences tended to have significantly higher credit scores and lower levels of debt, foreclosures, and bankruptcies, compared to people living in areas with weaker levels of religiosity. El Ghouli et al. (2012) concluded that the cost of equity financing in the United States was significantly lower in counties with high religious populations, due to lower leverage, stronger financial viability, and better corporate governance. Beck, Demircuc-Kunt, and Merrouche (2013) found that Islamic banks, compared to conventional banks, exhibited higher asset quality and higher capital ratios. Finally, Jiang et al. (2015) discovered a significantly lower leverage ratio among family firms with religious owners.

Religion and economic growth. El Ghouli et al. (2012) found that religion facilitated economic development. Barro and McCleary (2003) contended that the positive association between religion and economic growth appeared to operate most strongly through belief in the existence of hell, which might be a powerful motivator of behavior. Guiso, Sapienza, & Zingales (2003) found that Christian religions, in general, aligned closely with attitudes that promoted economic growth, while Muslim religions had an inverse correlation with economic growth.

Religion and ethical financial management. McGuire et al. (2012) found that firms located in religious areas experienced fewer incidents of financial reporting

irregularities. Grullon, Kanatas, and Weston (2010) discovered that corporations headquartered in counties with greater concentrations of religious people, especially Protestants, tended to have less ethical infringements as measured by fewer incidents of earnings management, backdating of stock options, and class action lawsuits of securities fraud. Similarly, Dyreng, Mayer, and Williams (2012) found that higher religiosity correlated with fewer financial restatements and better voluntary disclosure of negative announcements. Omer, Sharp, and Wang (2013) observed that the level of religiosity in the community surrounding the auditor's office affected the audit quality, which added to the growing body of research showing an inverse relationship between religion and financial reporting irregularities. However, Callen et al. (2010) found that religion did not significantly affect earnings management. In a literature review, Phipps (2012) cited a number of older studies that found a strong relationship between religion and ethical decision-making. Finally, El Ghouli et al. (2012) found that U.S. firms in religious counties experienced lower costs of equity capital, implying that religion facilitated stronger corporate governance.

Historical Development of Credit Unions

The credit union industry is one of the few in which a sub-set of organizations consists of (a) owners, (b) managers, (c) directors, (d) customers, and (e) creditors who belong to religious groups. Consequently, faith-based credit unions provide an ideal basis for a study about whether differences in financial performance and risk tolerance exist between faith-based and non-faith-based credit unions. In the early 19th century, farmers and tradesmen in Western Europe started the credit union movement in an effort to create

new sources of financing (Brannen & Ibrahim, 2010). The farmers called these early organizations cooperative credit societies or loan unions (Brannen & Ibrahim, 2010). As the Industrial Revolution took hold, these financial cooperatives became popular in Europe and helped foster economic growth (McKillop & Wilson, 2011). The movement eventually spread to Canada and then to the United States, where, in 1909, the first American credit union formed in New Hampshire (McKillop & Wilson, 2011). A year later, every U.S. state had chartered at least one credit union, and by 1932, some 1,700 state-chartered credit unions existed (Brannen & Ibrahim, 2010). The passage of the Federal Credit Union Act in 1934 allowed for federal charters, which fostered additional credit union growth (Noland & Sibbald, 2010). By the end of 2012, about 60% of U.S. credit unions had a federal charter (NCUA, 2013f).

In 1969, the number of credit unions in the United States reached its zenith at 23,866 (Reavis, 2012). However, by the end of 2012, the number fell to only 7,070 as cost pressures due to increased regulatory and technology burdens brought about credit union acquisitions and failures (CUNA, 2013; Wheelock & Wilson, 2011). Nevertheless, from the beginning, U.S. credit unions have experienced continuous growth in the dollar amount of assets/deposits and the number of members (Reavis, 2012). Globally, the growth in credit unions has undergone similar trends, resulting in nearly 56,000 credit unions with over 200 million members in some 100 countries by the end of 2012 (WCCU, 2013).

Credit Unions as Financial Institutions

A credit union is a depository financial institution similar to a traditional bank, with several key differences (Reavis, 2012). First, while stockholders own a bank whose depositors are its customers, a credit union is a nonprofit, mutual cooperative owned by its depositors who are also its customers and its creditors (Adusei, 2013; Wheelock & Wilson, 2012). To become a member of a credit union, the member acquires at least one share by making a small deposit, which entitles the member to vote at the annual meeting (Brannen & Ibrahim, 2010). Because credit union members are the owners, the deposit accounts, called shares, earn dividends, rather than interest. While a for-profit bank seeks to enhance shareholder wealth, a nonprofit credit union seeks to satisfy the savings, credit, and other financial needs its member-owners (Reavis, 2012). Credit unions consistently receive higher customer satisfaction ratings than bigger banks because their smaller size allows for better, personalized customer service (Reavis, 2012).

The second key difference is that while any person can open an account at a traditional bank, credit union membership is restricted to people who belong to a predefined common bond or field of membership (McKillop & Wilson, 2011). The field of membership involves a common occupation, association, geographic area, or a combination thereof (Robin & Wollan, 2012). According to the NCUA (2013e), at the end of 2012, the different common bond classifications in the United States were as follows: 2,036 credit unions (29%) had a common residential area or community. Another 2,050 credit unions (29%) had a common occupation or employer. Only 488 credit unions (7%) had a common association, such as a common fraternity or faith. The

focus of this study is on faith-based credit unions with a common bond consisting of many Christian denominations as well as Islam and other faith-based associations. The remaining 2,496 credit unions (35%) had multiple common bonds in two or more categories. Because narrow common bonds constrict the ability to raise capital and achieve economies of scale, the credit union industry has sought to loosen membership restrictions. These efforts resulted in multiple legal challenges by bankers who view tax-exempt credit unions as government-subsidized competitors (Nolan & Sibbald, 2010).

Another key difference is that credit unions are exempt from federal and state income taxes while banks are subject to taxes (McKillop & Wilson, 2011). In 1937, toward the end of the Great Depression, an amendment to the Federal Credit Union Act exempted U.S. state and federally chartered credit unions from income tax in exchange for serving those who had limited access to financial services (Nolan & Sibbald, 2010). Today, bank managers claim that the original justification for the credit union tax exemption no longer applies and that credit unions form unfair, government-subsidized competition (Nolan & Sibbald, 2010). According to Reavis (2012), the tax exemption provides credit unions with an average 30-basis point competitive advantage in the interest rate offered on savings and credit products. The banking industry, which competes with credit unions, has hotly contested the tax exemption and initiated numerous legal attempts to revoke it (Nolan & Sibbald, 2010).

Other notable differences between credit unions and traditional banks are that regulations restrict the commercial or business loans granted by credit unions, resulting in loan portfolios dominated by vehicle, home equity, and other consumer loans. In

addition, credit unions are much smaller than banks, although a few very large credit unions exist, such as Navy Credit Union and Boeing Employees Credit Union (Wheelock & Wilson, 2012). Faith-based credit unions, in particular, are relatively small, even by credit union standards, because of a confined common bond.

Unlike banks that pay people to serve as directors, credit unions rely heavily on unpaid volunteers to serve on the board and various committees that set policy and strategy and monitor safety and soundness (Ward & McKillop, 2011). Because these volunteers must be credit union members, they must meet the common bond criteria (Ward & McKillop, 2010). Thus, the board of a faith-based credit union, which establishes strategy and policy and hires the managers, consists of members who belong to the same religious group as all the others members (Brannen & Ibrahim, 2010). Because organizations do not make decisions, but the people within organizations make decisions, the financial values and attitudes of the faith-based membership should translate to the values and attitudes of the organization's management and board (Shu et al., 2012).

A final difference between banks and credit unions is that credit unions have an entirely separate regulatory and deposit insurance structure. While officials at the NCUA, a federal agency, supervise, regulate, and monitor federally chartered credit unions, officials at state governments regulate state-chartered credit unions (McKillop & Wilson, 2011). Although deposit insurance for credit unions is similar to that of banks in terms of dollar limits and structure, the insurance system for credit unions is completely separate (NCUA, 2013b). All federally chartered and most state-chartered credit unions obtain

deposit insurance through the National Credit Union Share Insurance Fund, administered by the NCUA (NCUA, 2013b). Historically, compared to banks, credit unions experienced fewer defaults and required no government bailouts (NCUA, 2013b).

Evaluating Credit Union Financial Performance and Risk Tolerance

All financial institutions, including credit unions, serve as financial intermediaries between savers with excess funds and borrowers with deficient funds (Madura, 2012).

The goal of credit union managers is to provide the best rates possible to savers and borrowers while earning enough net profit to sustain sufficient levels of capital (Reavis, 2012). Thus, credit union managers must balance return to members with institutional safety and soundness, which reflects the traditional tradeoff between risk and return.

Evaluating credit union financial performance. While stockholders of banks can monitor the effectiveness of financial managers by looking at stock prices, owners of nonprofit credit unions must look instead to other criteria (Robin & Wollan, 2012). The most common ratio used to measure overall credit union financial performance is the return on average assets ratio (ROAA), defined as net income divided by average total assets before reserve transfers (Akhter et al., 2011; Masruki et al., 2011; NCUA, 2012b). The ROAA indicates how well a credit union uses its assets to create profits (Wasiuzzaman, 2013). A hypothesis of this study is that the ROAA of faith-based credit unions will significantly differ from the ROAA of non-faith-based credit unions because of the higher risk aversion associated with religious faith. Increased risk aversion should cause faith-based credit unions to experience different profit margins over time, in

conformity with the principles of risk and return as supported by the capital asset pricing model (Zabarankin, Pavlikov, & Uryasev, 2014).

Over time, profits from credit unions accumulate in the form of capital. Capital is the excess of assets over liabilities plus deposits; as such, it represents a buffer against future losses, thereby providing a measure of viability (NCUA, 2012b). Because undercapitalized credit unions are more likely to fail, regulators view sufficient capital as an important determinant of safety and soundness (McKillop & Wilson, 2011). Unlike bank managers, credit union managers cannot raise capital quickly because of their restricted fields of membership (Madura, 2012). Consequently, credit union managers must carefully balance the twin goals of developing sufficient capital and returning value to members. The most common ratio used to measure the overall financial condition of credit unions is the capital ratio, defined as net worth divided by average total assets (Wasiuzzaman, 2013; NCUA, 2012b). Islamic banks experienced significantly higher capital ratios than conventional banks (Beck, Demirguc-Kunt, & Merrouche, 2013). A hypothesis of this study is that the capital ratio for faith-based credit unions will significantly differ from the capital ratios of non-faith-based credit unions, due to potentially higher levels of risk aversion that lead to different levels of reserves.

Evaluating credit union financial risk tolerance. Like other financial intermediaries, credit unions accept deposits from members with excess funds and make loans to members with deficient funds (Madura, 2012). Individuals with excess funds could bypass financial intermediaries and make loans directly to needy individuals, but these loans would be fraught with investment risk (Tiplea, 2011). In such circumstances,

the lender's investment might be illiquid and subject to default, inflation, and interest rate risks. Therefore, in their intermediary role, credit unions absorb these risks on behalf of their members. The overall goal of risk managers is to optimize the risk-return ratio by maximizing profit while accepting reasonable levels of risk (Tiplea, 2011). Effective risk management is critical to an organization's financial performance and long-term viability (Madura, 2012).

Measuring liquidity risk. For depository financial institutions, liquidity risk is the chance of having insufficient funds to pay for withdrawals by depositors (i.e. a run on the bank) and claims by other creditors, such as vendors and central liquidity facilities, as well as to meet loan demand (Ariffin, 2012; Drehmann & Nikolaou, 2013; Madura, 2012). The proper management of liquidity risk is of paramount importance to the operation and viability of financial institutions (Ariffin, 2012). Credit union managers seek to optimize the amount of a cash buffer between incoming and outgoing funds, recognizing that too large a buffer ties up funds in low-return investments (Ariffin, 2012). As with other U.S. financial institutions, credit unions are subject to reserve requirements imposed by the Federal Reserve that require a minimum amount of liquid reserves in vault cash or on deposit with a central liquidity facility (U.S. Federal Reserve, 2013).

A common measure of liquidity risk is the cash ratio, defined as cash plus short-term investments divided by total assets. Higher cash ratios indicate larger proportions of liquid assets to total assets, thereby minimizing the chance of having insufficient liquidity (NCUA, 2012b). A hypothesis of this study is that the cash ratios will significantly differ between faith-based and non-faith-based credit unions. This hypothesis relates also to

financial performance because liquid assets typically generate lower rates of return (Masood & Ashraf, 2012; Wasiuzzaman, 2013).

Measuring credit or default risk. Credit or default risk refers to the chance that assets will lose value or liquidate below recorded values (Arora et al., 2012). Higher asset quality aligns with lower credit risk. The two most prominent categories of credit union assets are loans to members, and loans to others (i.e. investments), such as loans to governments and financial institutions (Madura, 2012). The most common ratio measuring the quality of loans to members is the delinquency ratio, defined as delinquent loans divided by total loans (NCUA, 2012b). The higher the delinquency ratio, the more chance that loans will default. A hypothesis of this study is that the delinquency ratio for faith-based credit unions will significantly differ from the same ratio for non-faith-based credit unions. While loans to members are subject to significant credit or default risk, loans to governments (e.g., Treasury securities) and financial institutions (e.g., CDs) are typically government-insured and thus not subject to significant amounts of credit risk (Madura, 2012). Consequently, the focus of credit risk in this study is on loans to members and the delinquency ratio.

Measuring interest rate risk. Interest rate risk is a significant risk for financial institutions (Papadamou & Siriopoulos, 2014). Interest rate risk consists of two components: (1) the chance that assets will decline in value due to changing interest rates, and (2) the chance that rates earned on assets will not move in synchronization with rates paid on liabilities (Tiplea, 2011). To illustrate these two components, suppose a credit union granted a 30-year, 5%, fixed-rate mortgage using funds from deposits (share

accounts) that paid, at the time, a 1% variable rate. This situation created a comfortable 4% net interest margin, which is the difference between the 5% interest income on the mortgage loan and the 1% interest expense on the share accounts. Suppose that rates on share accounts jumped by 400 basis points, from 1% to 5%. In this unfortunate situation, the net interest margin disappeared entirely (5% interest expense entirely offsets the 5% interest income), leaving the credit union with zero interest income to fund operating expenses. Furthermore, if the credit union attempted to sell the mortgage, which no longer brought in a relatively attractive return, the credit union would incur a substantial loss due to the decline in value of the mortgage.

Interest rate risk is a substantial risk faced by credit union leaders, especially in the United States, which is one of the few countries in which borrowers can lock into fixed rates for more than 10 years (Calza, et al., 2013). Interest rate risk was a major contributing factor to the banking and savings and loan crisis of the 1980s (Madura, 2012). Especially in today's low interest rate environment, interest rate risk constitutes a severe threat to financial institutions that face rising interest rates over the next few years (Delis & Kouretas, 2011; Maddaloni & Peydro, 2011).

Effectively managing interest rate risk, often called asset/liability management, is difficult because of numerous moving variables (Gulpinar & Pachamano, 2013). Financial institutions dedicate entire departments or committees to monitor, analyze, and predict interest rate risk. Integrated models that analyze the duration and gap between rate sensitive assets and liabilities undergo shock analysis to determine the financial impact of various interest rate scenarios (Madura, 2012; Tiplea, 2011).

Although several measures of interest rate risk exist, one of the most common measures is the net long-term asset ratio (NCUA, 2012b). The long-term asset ratio, defined as net long-term assets divided by total assets, measures the risk exposure and ability to respond to moving interest rates, with higher ratios representing increased risk (NCUA, 2012b). Long-term assets include loans that will not refinance, re-price, or mature within 5 years, and investments with remaining maturities of more than 3 years (NCUA, 2012b). A hypothesis of this study is that the long-term asset ratio will significantly differ between faith-based and non-faith-based credit unions.

Improving Business Practice

The goal for this study was to determine whether a significant difference in financial performance and risk tolerance existed between faith-based and non-faith-based credit unions. Little information exists on how religion affects financial decision-making, especially at the organizational level (Berggren & Bjornskov, 2011; El Ghouli et al., 2012; McGuire et al., 2012; Tracey, 2012). Understanding the intersection of religion with business management is one of the great, unexplored areas of management research (McGuire et al., 2012; Tracey, 2012). However, during the last few years, the influence of religion on financial decision-making has become the focus of a growing body of research (El Ghouli et al., 2012; Guiso, 2006; McGuire et al., 2012).

Leaders of depository financial institutions, such as credit unions, seek to generate a return on the use of funds greater than the cost of funds, a difference known as net interest margin (Madura, 2012). The optimization of investment return requires a trade-off between reward, a desirable attribute, and risk, an undesirable attribute (Gilli &

Schumann, 2011). To create sustainable net interest margin, credit union managers must carefully balance desired investment return against potential risks, such as (a) credit risk, (b) liquidity risk, and (c) interest rate risk (Madura, 2012).

A number of factors affect investment risk tolerance, including culture and religion (Dohmen et al., 2011; Renneberg & Spaenjers, 2012). Although risk-taking by credit union managers increases the chance of a large windfall, it also increases the chance of a huge potential loss, which jeopardizes credit union safety and soundness. Alternately, excessive risk aversion on the part of credit union leaders may reduce the potential for large losses but it may lead to low returns and low growth, which jeopardize the long-term success of the credit union (Madura, 2012). For example, if credit union managers invested funds exclusively in risk-averse U.S. Treasury Bills from 1926 to 2012, the funds would have grown some 20-fold, barely beating inflation (Morningstar, 2013). However, if credit union managers invested in long-term U.S. Treasury Bonds over the same period, the funds would have grown some 113-fold, nearly six times more (Morningstar, 2013). Consequently, successful credit union managers must regularly assess an acceptable level of risk tolerance and optimize the potential return accordingly.

If managers at faith-based credit unions were aware of differences in financial performance and risk tolerance between faith-based and non-faith-based credit unions, they could adjust fiscal and risk management practices accordingly. For example, if leaders at faith-based credit unions were to adopt an overly conservative investment strategy because of religious norms, an understanding of the results of this study may assist leaders in finding a more effective balance between risk and return. Specifically, in

avoiding interest rate risk, managers at faith-based credit union may forgo a variety of opportunities, such as providing higher-rate, long-term home loans to members. In avoiding liquidity risk, managers at faith-based credit unions may incur the opportunity costs associated with an overly large amount of low-interest cash and near-cash investments. In avoiding credit risk, managers at faith-based credit union may forgo the opportunity of credit cards and business loans, both of which could serve the interests of credit union managers and its members. Optimizing the balance between risk and return is an essential responsibility of credit union managers (Madura, 2012).

Small credit unions, such as faith-based credit unions, are rapidly vanishing in a surge of acquisitions and failures (Goddard et al., 2013). Consequently, it is imperative that managers of faith-based credit unions have the information needed to maximize credit union performance in a sustainable manner. Managers of faith-based credit unions may use the results of this study to understand how the religious association may affect financial performance and risk tolerance, thereby providing the context necessary for appropriate adjustments in sustainable fiscal and risk management strategies.

Hilary and Hui (2009) maintained that studying the connection between religion and economics could augment economic research on multiple levels by: (a) creating a new awareness of an ignored part of nonmarket economics, (b) demonstrating how to incorporate values and attitudes into economic models, and (c) assessing the impact of religion on the economic behavior of individuals and organizations. The results of this study may append to the literature regarding the impact of religion on credit union financial performance and risk tolerance. Understanding the influence of religion on

financial behavior may help (a) credit union managers, (b) directors, (c) advisors, and (d) policy setters make informed decisions (Breuer et al., 2012; Klonz & Britt, 2012).

Gheysens and Gunther (2012) noted that because of the significant impact of religion on levels of risk tolerance, leaders in the insurance industry should consider the religious background of customers as a key factor in risk management models. Brimble et al. (2013) pointed to the importance of investment managers understanding how religion affects investor preferences and attitudes. Kooreman and Prast (2010) suggested that knowing how religion influences economic behavior could facilitate national policies on retirement savings and healthcare. Yao et al. (2011) contended that understanding how behavioral factors, such as religion, affect risk tolerance is critical to investment researchers and policy makers who have a responsibility to recommend appropriate investments. Effectively evaluating risk tolerance can prevent unnecessary investment losses, a lesson too many failed to heed during the mortgage and financial crisis (Yao, 2011). In addition, the results of this study may cover a deficiency in the literature regarding the influence of religion on organizational decisions affecting financial performance and risk management, thereby advancing the understanding of management practice and theory for use by leaders of all faith-based organizations.

Transition and Summary

A clear understanding of the various factors affecting financial decision-making is critical for managers of faith-based organizations to make a proper assessment of risk and return (Yao et al., 2011). Researchers linked religion with several key financial behaviors, including risk aversion (Dohmen et al., 2011), financial thrift, and debt

avoidance (Renneboog & Spaenjers, 2012). The purpose of this quantitative, causal-comparative study was to determine whether significant differences in financial performance and risk taking existed between faith-based and non-faith-based credit unions, by comparing key financial ratios of faith-based credit unions with non-faith-based credit unions of similar size and location. The study results cover a deficiency in the literature regarding the impact of religion on credit union financial performance and risk tolerance, thereby assisting leaders at faith-based credit unions in making informed decisions about investment return and risk (Breuer et al., 2012).

The first section of this study covered its foundation, including the study (a) purpose, (b) significance, (c) background, (d) research questions, (e) hypotheses, (f) limitations, and (g) literature review. The next part of the study, Section 2, includes a detailed description of the research method and design, data collection and analysis, and the reliability and validity of the study. Finally, Section 3 contains the results and conclusions of the study and includes recommendations for further study.

Section 2: The Project

This section of the study includes a detailed description of the doctoral study project. The section begins with a restatement of the study purpose, followed by a summary of the role of the researcher. Next is a description of the research method and design, followed by a discussion of the (a) sampling plan, (b) data collection process, and (c) data analysis procedures. Finally, this section concludes with a review of reliability and validity assurance issues for this study.

Purpose Statement

The purpose of this quantitative, causal-comparative study was to provide managers of faith-based credit unions with information about differences in financial performance and risk tolerance between faith-based and non-faith-based credit unions in order to improve their investment strategy and long-term sustainability. The independent variables were the type of common bond (e.g., faith-based) and the year (2003-2012). The dependent variables were five financial ratios measuring (a) earnings, (b) capital adequacy, (c) credit risk, (d) liquidity risk, and (e) interest rate risk. The scope of this study included all U.S. federally insured credit unions in existence from 2003 to 2012. Financial data for all U.S. federally-insured credit unions are available on the NCUA website. The implications for social change included the potential to strengthen the fiscal and risk management strategies for small faith-based credit unions, thereby helping ensure the continuation of vital financial services valued by the credit union members and their communities.

Role of the Researcher

My role as a researcher in this quantitative study was to establish the appropriate research design, and determine the procedures for (a) collecting, (b) organizing, (c) analyzing, and (d) explaining the data. The data consisted of historical, numerical, financial information of credit unions available from an online database maintained by the NCUA, the U.S. government agency whose administrators regulate and supervise federal credit unions (NCUA, 2013e). After recording the data from the database in Microsoft Excel (2013) spreadsheets, I performed statistical procedures using IBM SPSS Statistics (Version 21), including *t* tests, to measure the statistical significance of the differences between the variables. Finally, I interpreted and explained the results of the statistical tests, and determined whether the results supported or rejected the null hypotheses.

To ensure that the study proposal was in accordance with ethical standards, Walden University's Institutional Review Board (IRB) approved the research proposal before data collection occurred (IRB approval number 01-23-15-0289713). In this study, I used historical credit union financial information available from a public, online database; therefore, the research involved no human participants. Consequently, measures to protect participants, such as obtaining consent forms, confidentiality agreements, and letters of cooperation were not necessary.

My association with faith-based credit unions stems from several decades of volunteer work as treasurer, supervisory committee chair, and chair of the board of directors at two different faith-based credit unions. During this time, I observed a number

of factors connected to religious traditions and values that appeared to influence financial management practices and acceptable levels of risk tolerance. Managers and directors of other faith-based credit unions reported observing similar phenomena in personal conversations with me. In addition to direct involvement with credit unions as a volunteer, I studied the credit union industry in conjunction with my position as a teacher of courses in finance and banking.

Participants

The study involved no human participants. Rather, the credit union data consisted of historical, financial information available from an online database of the NCUA, the administrators of which regulate and supervise federal credit unions. The study involved financial information dating from 2003 to 2012 for federally insured credit unions with faith-based common bonds, and an equal number of *matched* credit unions without faith-based common bonds. Federally insured faith-based credit unions exist in all 50 states, Puerto Rico, and the District of Columbia.

Research Method and Design

Selection of an appropriate research method and design depends on the research question(s) and purpose (Cohen et al., 2011). Venkatesh, Brown, and Bala (2013) identified three broad methods of inquiry available to researchers: qualitative, quantitative, and mixed methods. The qualitative method is appropriate when studying a phenomenon through open-ended inquiry and qualitative case studies, relying heavily on text and image data gathered from study participants (Slife & Melling, 2011). In contrast, the quantitative approach consists of testing hypotheses that involve two or more

quantitative variables (Slife & Melling, 2011). The mixed method uses a blend of qualitative and quantitative methods, thus providing the benefits of both approaches (Ihantola & Kiln, 2011). However, because of its dual approach, the mixed method involves more complexity, time, and resources (Venkatesh, Brown, & Bala, 2013).

Method

The goal of this study was to determine whether significant differences in financial performance and risk tolerance existed between faith-based and non-faith-based credit unions by comparing financial variables. Credit union managers submit financial data once a quarter to an online, public database maintained by the NCUA, a government agency (NCUA, 2013d). The relevant information in the NCUA database is in numeric form only. Slife and Melling (2011) noted that the most appropriate approach to investigate relationships and differences among numerical variables is the quantitative method. In addition, the quantitative method is associated with the empirical, positivist worldview (Mengshoel, 2012) which most closely aligns with the research philosophy undergirding this study.

The qualitative approach is appropriate when investigating the meaning that individuals or groups ascribe to human or social problems by gathering text and image data from human participants through oral or written inquiry (Slife & Melling, 2011). However, this study involved testing the differences among historical, quantitative variables of credit union financial data. Therefore, the qualitative method was not suitable for the purpose of this study. In addition, because the mixed method approach includes the qualitative method, it also would not achieve the goals for this study. As a result, the

quantitative method was the most appropriate approach for a study of this nature because it aligns with the research questions and hypotheses that focus on relationships or differences among quantitative variables (Cohen et al., 2011).

Research Design

Quantitative designs consist of two broad forms: experimental designs and nonexperimental designs (Imai et al., 2013). In experimental designs, researchers measure the consequences of manipulating variables within a controlled environment to establish cause and effect (Imai et al., 2013). In experiments, researchers randomly assign subjects to experiment and control groups exposed to different treatments to isolate and measure the results of such treatments (Charness, 2012). In contrast, nonexperimental designs establish relationships or differences rather than prove causality (Cohen et al., 2011). In nonexperimental designs, such as observational or survey designs, researchers determine the extent of relationships or differences among variables through data analysis rather than exerting influence on the subjects (Cohen et al., 2011). Because the data in this study involved historical financial information available on a government database, no manipulation or treatment of variables occurred. Consequently, the study design was nonexperimental in nature.

Two common forms of nonexperimental, quantitative designs are correlational and causal-comparative designs. Researchers employing correlational designs focus on the direction and magnitude of relationships between variables within one group, while causal-comparative designs involve a comparison of variables between groups of existing data, often referred to as *ex post facto* (Boyko, 2013; Kyalo & Chumba, 2011). Although

both types of designs involve relationships or differences between variables, any relationships or differences do not suggest causation. The challenge in causal-comparative research is to determine if a relationship or difference is due to a causal association by identifying and controlling for confounding variables (Boyko, 2013). However, any causal inference is typically more conjectural than proven because control over variables cannot exist outside of true experimental research (Boyko, 2013; Kurt et al., 2012). The appropriate design for this study was causal-comparative because the goal of this study was to determine whether significant differences in financial performance and risk tolerance existed between faith-based and matched-pair non-faith-based credit unions. However, without an experiment, the results of this study cannot prove cause and effect and require cautious interpretation. Any differences I identified in this study require further research to confirm causation.

Population and Sampling

Population

At the end of 2012, more than 50,000 credit unions existed around the world (WCCU, 2013). However, the population in this study was limited in four important ways. First, the population of this study was limited to the 7,070 credit unions chartered within the United States and its territories on December 31, 2012 (CUNA, 2013). Second, the population of this study was limited to only the 6,819 of those credit unions that were federally insured because the NCUA database does not include a query for credit unions with non-federal insurance. Without such a query, I would have faced significant additional effort and expense to obtain the necessary data from various states. Given that

federally insured credit unions constitute the vast majority (over 96%) of credit unions in the United States, my inclusion of only federally insured credit unions should not invalidate the results.

Third, the population of this study was limited to credit unions holding a charter on December 31, 2012 with a field of membership classified by the NCUA as associational faith-based (i.e. NCUA category 01). According to the NCUA (2013e), on December 31, 2012, the different NCUA common bond classifications were as follows: 2,036 credit unions (29%) had a common residential area or community; another 2,050 credit unions (29%) had a common occupation or employer. Only 488 credit unions (7%) had a common association, such as a common fraternity or religious denomination. The remaining 35% of chartered credit unions on December 31, 2012 had multiple fields of membership spread among two or more of these categories. Included in this last group are 71 credit unions with multiple fields of membership that included a faith-based common bond, among others. I excluded multiple-bond credit unions from the study because of difficulties in separating the influence of the members not belonging to the common faith from that of the members belonging to the common faith.

Lastly, the population of this study was limited to federally insured credit unions in existence for the entire decade ending December 31, 2012. The study included 10 years of data in order to mitigate the effects of the mortgage/financial crisis, which could distort financial trends for several of the years in that period. Although nearly 3 decades of information is available, capturing more than 10 years was difficult given the limited research budget and time-frame. On December 31, 2012, the NCUA classified 205

federally insured credit unions as having a field of membership based exclusively on a common religion (NCUA, 2013e). Credit unions that did not exist for the full decade from 2003 to 2012 (e.g., due to failure or acquisition) were not part of the sample because their exclusion would skew the longitudinal average if based on fewer than 10 years of data. This exclusion created the potential for survivor bias, a form of selection bias arising when samples consist exclusively of surviving cases (Van Rein et al., 2014). However, obtaining a list of credit unions that only existed for part of the decade under study was difficult because the publicly available database only includes historical data for credit unions still in existence on December 31, 2012.

Sampling

This study involved two, *matched-pair* samples that were comparable with each other because the selection process for one related to the selection process for the other (Weiers, 2011). The random sample included faith-based credit unions matched with non-faith-based credit union of similar size and location. The analysis of two dependent samples, also referred to as matched-pairs or paired observations, involves just one critical value, the recorded differences between each matched pair (Li, Chan, Tang, Tian, & Tang, 2014). The hypotheses for the matched pairs in this study involved two-tailed tests. Because of an increased chance of Type I error associated with multiple *t* tests, I adjusted the significance levels using a Bonferroni adjustment (Shi, Pavey, & Carter, 2012). Matched pair *t* tests for dependent samples have relatively high statistical power and robustness due to smaller variances between groups (Weiers, 2011). In addition, the

matched-pair approach allowed for control of several confounding factors (Weiers, 2011).

In this study, the two most important covariates were credit union asset size and regional socioeconomic variances, both of which can significantly affect measures of credit union financial risk and performance (Alam, 2012; Rozzani & Rahman, 2013; Wheelock & Wilson, 2011). A credit union that has \$500 million of assets is not comparable with a credit union that has \$5 million of assets. The stratification of credit unions by asset size is a fundamental principle used in the industry for the development of peer ratios and other comparison data (Alam, 2012; NCUA, 2012a, 2012b; Rozzani & Rahman, 2013; Wheelock & Wilson, 2011). In addition to asset size, regional differences in unemployment, housing values, and other socioeconomic factors may significantly affect credit union financial performance and risk tolerance. To control for these two confounding factors, I used a sampling plan for two dependent samples with analysis of the recorded differences between each matched pair in a paired t test, using a Bonferroni adjustment to reduce Type I error (Shi, Pavey, & Carter, 2012).

The sample size for this study was 134 units consisting of 67 faith-based credit unions and 67 non-faith-based credit unions of similar size and location. I used the matched-pair test of the statistical program G*Power (Version 3.1.9.2; Faul, Erdfelder, Land, & Buchner, 2009) to generate a sample size of 134 under the following assumptions: (a) two-tailed tests, (b) power level of .8, (c) alpha of .01 (.05 divided by five hypotheses as required by the Bonferroni adjustment), and (d) medium effect size of .3. Alpha (α) is the probability of making a Type I error by rejecting a true null

hypothesis and the power of the test is the probability of rejecting a false, null hypothesis ($1-\beta$; Weiers, 2011). The use of a medium effect size is a common assumption by statisticians (Fritz, Morris, & Richler, 2012).

I selected a random sample of 67 faith-based credit unions from a list of all federally insured credit unions with exclusive, faith-based common bonds at December 31, 2012, per the NCUA database. To generate the sample, I used random number tables. For each faith-based credit union in the sample, I used the NCUA query to find a non-faith-based credit union of similar size and location. The average asset size of the non-faith-based credit unions differed by no more than 2% from the average asset size of the corresponding faith-based credit union. I selected the nearest non-faith-based credit union within the specified asset size range by using the NCUA database query function, which allows sorting by city, postal zip code, state, and region. In addition, the NCUA website provided a lookup function in which the location of all credit unions within a specified distance showed on a Microsoft Bing map. Although this type of matched-pair sampling plan reduced the degrees of freedom (compared to nonpaired samples), it allowed for control of some confounding factors and has relatively high statistical power and robustness due to smaller variances between groups (Weiers, 2011).

Ethical Research

For research to be useful in advancing knowledge, the public must be certain of the ethical rigor and integrity of the researchers. Ethical standards apply to every stage of research, including responsible selection of research design, protection of participants, and objective analysis of the data (Wester, 2011). To ensure that researchers comply with

ethical standards, institutional review boards approve all research proposals before data collection can occur. To ensure that the study proposal was in accordance with ethical standards, Walden University's Institutional Review Board (IRB) approved this study before data collection occurred (IRB approval number 01-23-15-0289713).

To test the hypotheses, I acquired historical credit union financial information from a public, online database of the NCUA, the government regulator and supervisor of federal credit unions. For this reason, this study involved no human participants. Consequently, measures to protect participants, such as obtaining consent forms, confidentiality agreements, and letters of cooperation were not necessary. Because the raw information I used in this study is publicly available on the NCUA database, neither confidentiality nor retention of the data was a concern. However, for the purpose of future research, I will preserve the data in Microsoft Excel (2013) spreadsheet for 5 years on three, password-protected data drives.

Data Collection

Data Collection Instruments

The data for this study consist of historical financial information available on an online database maintained by the NCUA, the federal oversight agency for credit unions. Consequently, data collection instruments, such as surveys, were not applicable to this study. Each quarter, credit union managers upload financial information to the database in the form of a *call report* (NCUA, 2013d). The database includes data since 1990 for individual credit unions as well as aggregate and peer group data. In addition, the database provides analytical information through Financial Performance Reports (FPRs),

which contain financial statements and ratios for individual credit unions and peer groups (NCUA, 2012b). The data for the study included Financial Performance Reports for each credit union in the sample for the 10-year period from 2003 to 2012. The Financial Performance Reports contained financial ratios, using the ratio scale of measurement.

Because credit union managers self-report the financial information in the NCUA database, the information is subject to mistakes and manipulations; however, several mitigating controls exist. Upon submission of the call report, the NCUA software performs a validation procedure to ensure the internal consistency of the figures (NCUA, 2013d). In addition, government and other external auditors regularly examine credit union call reports for compliance with accounting and reporting regulations. When discrepancies occur, credit unions submit corrected call reports to the NCUA in a timely manner (NCUA, 2013d).

In this study, the results of the data analysis appear in summary tables. The raw data consisted of thousands of data fields and thus were too numerous to reproduce on paper. However, preservation of the raw data will occur for the purpose of future research and be available upon request. In addition, the NCUA database containing the raw data is accessible to the public at any time.

Data Collection Technique

I obtained the data for this study from the NCUA database by downloading the Financial Performance Reports for credit unions in the sample over the 10-year period ending December 31, 2012. The Financial Performance Reports come in two forms, a PDF file immediately available, or a Microsoft Excel (2013) spreadsheet automatically

emailed by the database program. In this study, I utilized the latter approach because the Microsoft Excel (2013) spreadsheets contain substantially more data than the PDF files. Although conducting a pilot study can increase the feasibility of a research project and facilitate the development of proper techniques for data collection and analysis (Leon, Davis, & Kraemer, 2011), I did not use a pilot study in this research project because the process for data collection was relatively straightforward.

Data Organization Technique

To organize and query the data in this study, I used a Microsoft Excel (2013) file to record the relevant data fields for all credit unions in the sample. The Microsoft Excel (2013) file included the following fields: (a) credit union name, (b) charter number, (c) city, (d) state, (e) zip code, (f) field-of-membership (FOM) criteria, (g) total asset size, (h) peer group, and (i) the five different financial ratios related to the study hypotheses. These data fields were necessary to sort and query the credit unions into groups and sub-groups by FOM code, asset size, and peer-group.

I will retain the raw data in a Microsoft Excel (2013) spreadsheet for at least 5 years. The spreadsheet will be available upon request. I will back up the spreadsheet on three password protected data drives, as follows (a) personal computer hard drive, (c) external hard drive, and (d) USB flash drive. To safeguard the backup data from potential loss, I will store backup files in three different physical places. In addition, the raw information is available to the public from the NCUA database at any time.

Data Analysis

The purpose of this study was to determine whether a significant difference in financial performance and risk tolerance existed between faith-based and non-faith-based credit unions of similar size and location. The principal research question of this quantitative, causal-comparative study is: To what extent did a difference exist between financial performance and risk tolerance at faith-based credit unions and non-faith-based credit unions from 2003 to 2012? Two subsidiary research questions evolved from the main research question: (a) To what extent did financial performance of faith-based credit unions significantly differ from financial performance of non-faith-based credit unions from 2003 to 2012? (b) To what extent did financial risk tolerance of faith-based credit unions significantly differ from financial risk tolerance of non-faith-based credit unions from 2003 to 2012? To answer these research questions, I compared financial ratios of faith-based credit unions over a decade to corresponding ratios at non-faith-based credit unions of similar size and location.

Several researchers employed similar time series techniques when comparing how Islamic banks differed from conventional banks. Rozzani and Rahman (2013) studied how bank efficiency differed between Islamic and conventional banks by using *t* tests to examine the difference between the means of key financial ratios of a paired sample of institutions from 2008 to 2011. Ismail, Majid, and Rahim (2013) determined the efficiency of Islamic banks versus conventional banks by testing the relationship between financial ratios of a paired sample of institutions from 2006 to 2009. Similarly, Ahmed and Rahman (2012), and Yahya, Huhammad, and Hadi (2012) performed comparative

studies on the level of efficiency between Islamic and conventional banks by examining the difference between their mean ratios in a time series analysis. Therefore, precedence exists in the research for comparing faith-based with non-faith-based financial institutions.

Analyzing Financial Performance

Five hypotheses evolved from the main and sub research questions of the study. From the first part of the research question, regarding whether religion affects credit union financial performance, I generated two hypotheses, one involving the return on average assets ratio, and the other the capital ratio. The most common ratio used to measure overall credit union financial performance is the return on average assets ratio (ROAA), defined as net income divided by average total assets before reserve transfers (Akhter et al., 2011; Masruki et al., 2011; NCUA, 2012b). The ROAA ratio determines how well credit union managers use assets to create profits (Wasiuzzaman, 2013). A hypothesis of this study is that the ROAA of faith-based credit unions will significantly differ from the ROAA of non-faith-based credit unions because of the lower risk associated with religious faith. Increased risk aversion should cause different profit margins over time at faith-based credit unions, in conformity with the principles of risk and return as supported by the capital asset pricing model (Zabarankin et al., 2014).

The second hypothesis, regarding the relationship between religion and financial performance, is that the capital ratio for faith-based credit unions will significantly differ from the same ratio for non-faith-based credit unions. Profits from credit unions accumulate in the form of capital, which represents a buffer against future losses (NCUA,

2012b). To promote long-term safety and soundness, risk-averse credit unions are more likely to accumulate higher levels of capital (McKillop & Wilson, 2011). The most common ratio used to measure the overall financial condition of credit unions is the capital ratio, defined as net worth divided by average total assets (Wasiuzzaman, 2013; NCUA, 2012b).

Analyzing Financial Risk Tolerance

From the subsidiary research questions concerning the relationship between religion and financial risk tolerance, I generated the remaining three hypotheses. Risk tolerance affects risk management, which is critical to long-term financial performance and viability (Madura, 2012). The three main types of financial risks faced by depository financial institutions are liquidity risk, credit risk, and interest-rate risk (Madura, 2012).

Analyzing liquidity risk. For depository financial institutions, liquidity risk is the chance of having insufficient funds to pay for withdrawals by depositors (i.e. a run on the bank) and claims by other creditors, such as vendors and central liquidity facilities, as well as to meet loan demand (Ariffin, 2012; Drehmann & Nikolaou, 2013; Madura, 2012). The proper management of liquidity risk is of paramount importance to the operation and viability of financial institutions (Ariffin, 2012). A common measure of liquidity risk is the cash ratio, defined as cash plus short-term investments divided by total assets. Higher cash ratios indicate larger proportions of liquid assets to total assets, thereby minimizing the chance of having insufficient liquidity (NCUA, 2012b). A hypothesis of this study is that the cash ratios will significantly differ between faith-based and non-faith-based credit unions. This hypothesis relates also to financial performance

because liquid assets typically generate lower rates of return (Masood & Ashraf, 2012; Wasiuzzaman, 2013).

Analyzing credit risk. Credit or default risk refers to the chance that assets will lose value or liquidate below recorded values (Arora et al., 2012). Higher asset quality aligns with lower credit risk. The two most prominent categories of credit union assets are loans to members, and loans to others (i.e., investments), such as loans to governments and financial institutions (Madura, 2012). A common ratio measuring the quality of loans to members is the delinquency ratio, defined as delinquent loans divided by total loans (NCUA, 2012b). The higher the delinquency ratio, the more chance that loans will default. A hypothesis for this study is that the delinquency ratio for faith-based credit unions will significantly differ from the same ratio for non-faith-based credit unions. While loans to members are subject to significant credit or default risk, loans to governments (e.g., Treasury securities) and financial institutions (e.g., CDs) are typically government-insured and thus not subject to significant amounts of credit risk (Madura, 2012). Consequently, my focus on credit risk in this study was on loans to members and the delinquency ratio.

Analyzing interest rate risk. Interest rate risk is a significant risk for financial institutions (Papadamou & Siriopoulos, 2014). Interest rate risk consists of two components: (a) the chance that assets will decline in value due to changing interest rates, and (b) the chance that rates earned on assets will not move in synchronization with rates paid on liabilities (Tiplea, 2011). Interest rate risk is a substantial risk faced by credit

union leaders, especially in the United States, which is one of the few countries in which borrowers can lock into fixed rates for more than 10 years (Calza, et al., 2013).

Although several measures of interest rate risk exist, one of the most common measures is the net long-term asset ratio (NCUA, 2012b). The net long-term asset ratio, defined as net long-term assets divided by total assets, measures the risk exposure and ability to respond to moving interest rates, with higher ratios representing increased risk (NCUA, 2012b). Long-term assets include loans that will not refinance, re-price, or mature within 5 years, and investments with remaining maturities of more than 3 years (NCUA, 2012b). A hypothesis of this study is that the long-term asset ratio will significantly differ between faith-based and non-faith-based credit unions.

Statistical Techniques for Data Analysis

The sample consisted of 134 credit unions of which 67 were faith-based and 67 were non-faith-based. I used the statistical program G*Power (Version 3.1.9.2) to generate a sample size of 134 under the following assumptions: (a) two-tailed tests, (b) power level of .8, (c) alpha of .01 (.05 divided by five hypotheses, as required by the Bonferroni adjustment), and (d) medium effect size of .3. Alpha (α) is the probability of making a Type I error by rejecting a true null hypothesis and the power of the test is the probability of rejecting a false, null hypothesis ($1-\beta$; Weiers, 2011).

From the NCUA database, I downloaded the Financial Performance Reports for each matched pair credit unions in the sample. From the Financial Performance Reports, I recorded in Microsoft Excel (2013) the five financial ratios that form the hypotheses of this study and determined their means over the years 2003 to 2012. Using Microsoft

Excel (2013), I calculated the difference in the mean ratio for each matched pair of credit unions in the sample (e.g., $\mu_1 - \mu_2$). I used a matched-pair t test to determine if the difference in means between pairs was statistically significant to ensure that hypotheses are accepted or rejected with the type I or type II errors (Weiers, 2012). I set the level of significance (Type I error, alpha or α) at .01, which is .05 divided by the five hypotheses, per the Bonferroni adjustment. I used IBM SPSS Statistics (Version 21) to calculate the p value of the test (i.e., the observed level of significance). The decision rule was to reject the null hypothesis if the p value fell below the established level of significance of .01.

Because of the volatility caused by the financial crisis that began in 2008, I set the year as an additional independent variable to determine if the year was an independent factor affecting the ratio differences between FBCUs and NFBCUs from 2003 to 2012. I used IBM SPSS Statistics (Version 21) to perform one-way ANOVA tests of the differences. For the one-way ANOVA tests, I again set alpha at .01 (e.g., .05 divided by 5 tests). By using the one-way ANOVA tests instead of 10 separate t tests, I reduced the risk of making Type I (alpha) errors and increased the power of the test ($1 - \beta$).

Summary of Data Analysis Techniques

In his theory of the Protestant ethic, Weber (1905) posited that different religions led to variant economic outcomes. Since that time, economists have pointed to a variety of economic choices that deviated from the rational choice theory, which purports that economic decisions are driven exclusively by logic and thus are unaffected by culture and religion. The results of this study provide managers of faith-based credit unions with information about whether religion affected the financial performance and risk tolerance

of faith-based credit unions. As part of the analysis, I presented tables with separate columns for descriptive and inferential statistics of each hypothesis. In the text surrounding the tables, I interpreted and explained the results. Finally, I stated whether the results supported or rejected the null hypotheses, which in turn, answered the research questions.

Study Reliability and Validity

Reliability

Reliability in research connotes dependability and consistency of the data measurements, analysis, and results (Thomas & Magilvy, 2011). In addition, reliability refers to the stability and similarity of data measurements over time (Street & Ward, 2012). Reliability depends on consistent and methodical data processing procedures and techniques. Proof of reliability occurs when researchers draw the same conclusions from multiple measurements (Cohen et al., 2011).

In this study, I did not use instruments or surveys to gather credit union data. Rather, I downloaded the credit union information from the database of a government agency. Because the data consist of self-reported figures provided by credit union managers, some potential exists for mistakes and manipulations in the data. However, several mitigating controls exist. When credit union managers upload data, the database performs a confirmation procedure to ensure the internal consistency of the figures (NCUA, 2013d). In addition, government and other external auditors regularly examine credit union reports for accuracy and consistency. When discrepancies occur, credit unions submit corrected reports to the database in a timely manner (NCUA, 2013d).

Examiners and auditors periodically scrutinize any significant data variances over time or within peer groups.

Validity

The concept of validity, which originated with positivist quantitative research, relates to the dependability of data measurements and findings (Thomas & Magilvy, 2011). Validity connotes controllability, predictability, objectivity, and observability (Thomas & Magilvy, 2011). In quantitative research, a high degree of construct validity indicates that variables measure what they were intended to measure, which is necessary to test hypotheses and draw inferences about relationships or differences among variables (Ihantola & Kihn, 2011). Researchers commonly divide validity into internal and external components.

Internal validity. Internal validity concerns whether or not variations in the independent variable(s) *cause* changes to occur in the dependent variable(s) (Ihantola & Kihn, 2011). Internal validity primarily relates to making valid inferences of cause and effect in experimental treatments (Cohen et al., 2011). Although this study does not involve experimental treatments, internal validity is a concern under the causal-comparative design because of the potential for unidentified and uncontrolled confounding factors.

The sampling plan for this study used a matched-pair approach, which allowed for some control of confounding factors (Weiers, 2011). In this study, the two most important confounding factors were credit union asset size and regional socio-economic variances, both of which can significantly affect measures of credit union financial risk

and performance (Alam, 2012; Rozzani & Rahman, 2013; Wheelock & Wilson, 2011). A credit union that has \$500 million of assets is not comparable with a credit union that has \$5 million of assets. The stratification of credit unions by asset size is a fundamental principle used in the industry for the development of peer ratios and other comparison data (Alam, 2012; NCUA, 2012a, 2012b; Rozzani & Rahman, 2013; Wheelock & Wilson, 2011). In addition to asset size, regional differences in unemployment, housing values, and other socioeconomic factors may significantly affect credit union financial performance and risk tolerance.

To control for the confounding variables of asset size and geographical location, I used the NCUA query to find a non-faith-based credit union of similar size and location to match each faith-based credit union in the sample. The average asset size of the non-faith-based credit unions differed by less than 2% from the average asset size of the related faith-based credit unions. I selected the nearest non-faith-based credit union within the specified asset size range by using the NCUA database query function, which allowed for sorting by (a) city, (b) postal zip code, (c) state, and (d) region. In addition, the NCUA website includes a lookup function in which the location of all credit unions within a specified distance shows on a Microsoft Bing map. This type of matched pair sampling plan allowed for control of some confounding factors and had relatively high statistical power and robustness due to smaller variances between groups (Weiers, 2011).

Nevertheless, as stated by Zucker and Darby (1999), isolating the impact of religion on economic choices is difficult because of myriad cultural and demographic factors possibly affecting economic choices. The potential existed for confounding

factors not identified or controlled. Consequently, the results of this study cannot prove cause and effect and deserve cautious interpretation (Boyko, 2013). Any significant differences I identified from the findings in this study require further research to confirm causation.

Finally, the financial ratios I used in this study to measure credit union financial performance and risk tolerance were standard ratios that industry leaders use routinely (NCUA, 2012b). I downloaded spreadsheets containing the financial ratios directly from the NCUA database for assuring the accuracy of data translation. I used identical formatting and structure for each credit union record to assist in the cross-referencing of cell addresses within formulas. Using the formula auditing features in Microsoft Excel (2013), I reviewed all cell references and formulas to identify and correct any improper or inconsistent formulas.

External validity. External validity concerns the generalization or transferability of sample results to other populations, periods, and settings (Ihantola & Kihn, 2011). Threats to external validity come from inadequate statistical models and assumptions (Ihantola & Kiln, 2011), as well as differing times, contexts, and places. In this study, my use of established statistical methods and standard statistical software mitigated threats to statistical generalization. A common threat to statistical validity is low statistical power, which increases the chance of incorrectly accepting the null hypothesis (Weiers, 2011). I set the statistical power at 0.8, which is the most common level of power associated with a reasonable chance of rejecting an incorrect hypothesis (Weiers, 2011).

Another threat to statistical validity is incorrect assumptions regarding the suitability of the data for testing, such as the normality and symmetry of the data distribution required for *t* tests. The statistical procedures used in this study would not produce valid results if a nonparametric data distribution existed. To test for any violations of parametric assumptions, I used IBM SPSS Statistics (Version 21) to calculate skewness, kurtosis, the Kolmogorov-Smirnov significance, and the Shapiro-Wilk significance (Dovonon, Goncalves, & Meddahi, 2013; Ghasemi & Zahediasl, 2012; Razali & Wah, 2011; Yap & Sim, 2011). When violations of parametric assumptions occurred, I used the bootstrapping features of IBM SPSS Statistics (Version 21) to ensure the validity of the results.

I used a matched-pair test to address two of the most important variances in credit unions, which are asset sizes and geographical locations (Alam, 2012; Rozzani & Rahman, 2013; Wheelock & Wilson, 2011). Pairing each faith-based credit union with a non-faith-based credit union of similar size and proximity helped reduce the effect of geo-economic variations around the country. Finally, to control for the effect of time variances, such as the financial crisis of 2008, the study covered the decade from 2003 to 2012. I expected these measures to enhance the assurance of external validity.

Transition and Summary

In this section, I included a detailed description of the doctoral study project. I began the section with a summary of the role of the researcher, followed by a discussion of the research method and design. Next, I covered the sampling plan, data collection process, and data analysis procedures. Finally, I concluded with an evaluation of

reliability and validity concerns. In the next and final section, I presented the results of the data analysis, applications to professional practice, and recommendations for further study.

Section 3: Application to Professional Practice and Implications for Change

Introduction

The purpose of this quantitative, causal-comparative study was to provide managers of faith-based credit unions (FBCUs) with information about differences in financial performance and risk tolerance between FBCUs and non-faith-based credit unions (NFBCUs) that may enable managers to improve the investment strategy and long-term sustainability. From the study results, I found that from 2003 to 2012, significant differences existed between FBCUs and NFBCUs in the areas of financial performance (i.e., capital adequacy but not profitability) and financial risk tolerance (i.e., liquidity risk and credit risk, but not interest-rate risk). Specifically, the mean capital ratio (*H2*) was significantly smaller in FBCUs than in NFBCUs. The mean cash (*H3*) and delinquency ratios (*H4*) were significantly larger in FBCUs than in NFBCUs. No significant differences existed in the return on average assets ratio (*H1*) or the long-term asset ratio (*H5*). Finally, the year, as an independent variable, was not a significant factor affecting the differences in financial performance and risk tolerance between FBCUs and NFBCUs.

Presentation of the Findings

In this section, I discuss the results of the data analysis and statistical tests. After providing a summary of the descriptive statistics, I address the use of bootstrapping to adjust for any violations in distributional assumptions (e.g., skewed distributions and outliers). Finally, I present the inferential statistics and conclusions for the tests of assumptions in the context of the theoretical framework and literature.

Descriptive Statistics and Distributional Assumptions

Descriptive statistics. The principal research question for this study is: To what extent did a difference exist in financial performance and risk tolerance between FBCUs and NFBCUs? Table 1 contains descriptive statistics for 2003-2012, and Figures 1 to 5 are line graphs of the mean ratios. Using Microsoft Excel (2013), I recorded five financial ratios for every credit union in the sample. Each ratio related to a corresponding hypothesis. The return on average assets ratio (ROAA) measured profitability and related to *H1*. The capital ratio indicated levels of reserves and leverage and related to *H2*. The cash ratio measured levels of liquidity and cash flow and related to *H3*. The delinquency ratio measured loan default or credit risk and related to *H4*. Finally, the long-term asset ratio (LTA) measured interest rate risk and related to *H5*.

Table 1

Descriptive Statistics of Hypothesis Tests for 2003 to 2012 (n = 134^a)

Measure	ROAA ^b ratio (<i>H1</i>)	Capital ratio (<i>H2</i>)	Cash ratio (<i>H3</i>)	Delinquency ratio (<i>H4</i>)	LTA ^c ratio (<i>H5</i>)
Faith-based credit unions (FBCUs)					
Mean (<i>M</i>)	0.21	16.88	67.70	7.04	5.13
Standard deviation (<i>SD</i>)	1.50	8.10	19.92	9.14	9.61
Standard error mean (<i>SEM</i>)	0.06	0.31	0.77	0.35	0.37
Non-faith-based credit unions (NFBCUs)					
Mean (<i>M</i>)	0.08	20.05	44.82	4.47	5.46
Standard deviation (<i>SD</i>)	1.63	11.14	20.29	6.51	9.23
Standard error mean (<i>SEM</i>)	0.06	0.43	0.78	0.25	0.36

^aThe sample consists of 134 credit unions of which 67 were FBCUs and 67 were NFBCUs.

^bReturn on average assets ratio.

^cLong-term asset ratio.

As of 2012, the average asset sizes of FBCUs and NFBCUs in the sample were \$9,755,000 and \$9,593,000, respectively, indicating a close pairing by asset size (i.e., less than a 2% difference). To control for confounding regional socioeconomic factors, I paired each FBCU with the nearest NFBCU in the same region. As shown in Appendix A, the sample contains a broad representation of credit unions by jurisdiction and by field of membership. However, because of the restrictive faith-based common bonds, the sample contains mostly small credit unions (e.g. asset size of \$50 million or less).

Distributional assumptions. A parametric requirement for paired sample *t* tests and one-way ANOVA tests is the existence of normally distributed dependent variable data. Table 2 contains the results of the data normality tests. As indicated, none of the distributions of the five variables was normal for the period 2003-2012 due to skewness, kurtosis, or outliers.

Table 2

Distribution Normality Tests for 2003 to 2012 (n = 134^a)

Characteristic	ROAA ratio (H1)	Capital ratio (H2)	Cash ratio (H3)	Delinquency ratio (H4)	LTA ratio (H5)
Skewness	0.33	-0.74	-0.15	0.44	-0.06
Kurtosis	3.22	0.96	-0.36	5.04	9.25
Kolmogorov-Smirnov significance level ^b	.00	.00	.05	.00	.00
Shapiro-Wilk significance level ^b	.00	.00	.01	.00	.00

^aThe sample consists of 134 credit unions of which 67 were FBCUs and 67 were NFBCUs.

^bThe significance levels for normal distribution are greater than .05. The significance levels for non-normal distributions are less than or equal to .05.

Under both the Kolmogorov-Smirnov and Shapiro-Wilk tests, which measure data normality, the significance levels for normal distributions should be greater than .05. However, as indicated in Table 2, none of the significance levels for these tests was greater than .05. Consequently, to adjust for any violations of the distributional assumptions, I used bootstrapping in IBM SPSS Statistics (Version 21) to process 1,000 samples from the data set for each variable, using an overall alpha level of .01.

Inferential Statistics and Results of Hypothesis Tests

I used paired samples *t* tests (two-tailed) to determine if the difference in means between matched pairs from 2003 to 2012 was statistically significant at an alpha level of .01. I calculated the significance value (*p* value) of the difference in means and rejected the null hypothesis when the *p* value fell below the alpha level (.01). Presented in Table 3 is a summary of the results of *t* tests for the difference in means for each hypothesis.

Table 3

Inferential Statistics for Hypothesis Tests for 2003 to 2012 (n = 134^a)

Characteristic	Mean difference (M)	Standard error (SE)	Significance level (<i>p</i>)	<i>t</i> statistic ^b
ROAA (H1)	0.13	0.08	.11	1.58
Capital ratio (H2)	-3.18	0.49	.00	-2.21
Cash ratio (H3)	22.88	0.92	.00	24.70
Delinquency ratio (H4)	2.57	0.42	.00	3.44
LTA ratio (H5)	-0.34	0.34	.33	0.33

^aThe sample consists of 134 credit unions of which 67 were FBCUs and 67 were NFBCUs.

^bTwo-tailed *t* test.

Return on Average Assets (H1). The difference between the mean ROAA ratio of FBCUs ($M = .21$, $SD = 1.50$) and of NFBCUs ($M = .08$, $SD = 1.63$) was not

statistically significant for the decade ending in 2012, $t(133) = 1.58, p > .01$. Therefore, insufficient evidence exists to reject the null hypothesis ($H1_0$). I concluded that ROAA did not significantly differ between FBCUs and NFBCUs from 2003 to 2012.

This finding should reassure managers of FBCUs that despite a significantly greater proportion of funds in lower-yield assets (cash reserves), the profitability of FBCUs did not significantly differ from that of NFBCUs of similar size and location for the period 2003 to 2012. However, as shown in Figure 1, the mean ROAA ratios for FBCUs appeared more volatile when considered year-by-year, especially during the mortgage crisis and economic downturn that began in 2007. Nevertheless, as indicated in Table 4, the year, as an independent variable, was not a significant factor in the differences in ROAA ratios for the period 2003 to 2012, at an alpha of .01.

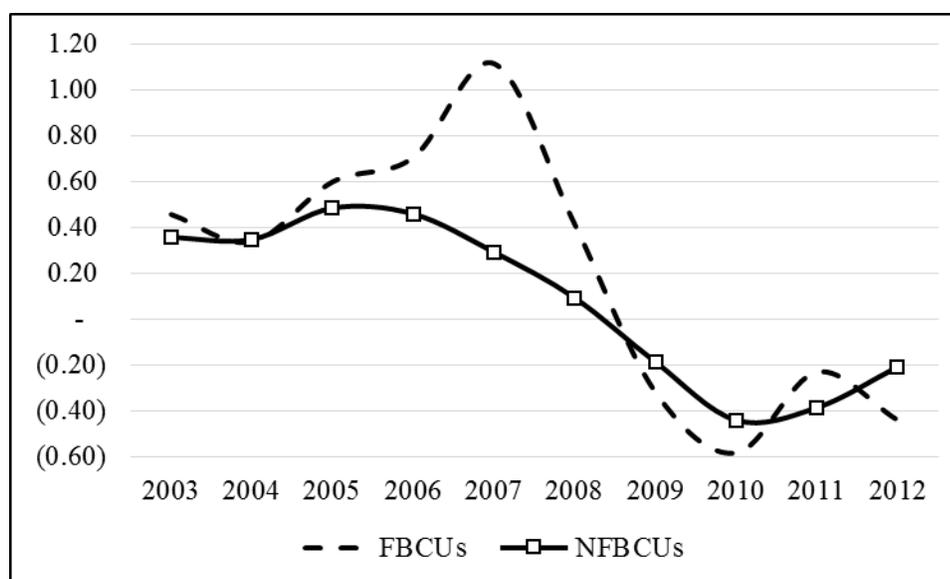


Figure 1. Mean return on average asset ratios ($H1$) from 2003 to 2012 for FBCUs and NFBCUs.

Capital Ratio (H2). A significant difference existed between the mean capital ratio of FBCUs ($M = 16.86$, $SD = 8.10$) and of NFBCUs ($M = 20.05$, $SD = 11.14$) for the decade ending in 2012, $t(133) = -6.9$, $p < .01$. I concluded that capital levels of FBCUs were significantly *lower* than capital levels of NFBCUs from 2003 to 2012. Therefore, sufficient evidence exists to reject the null hypothesis ($H2_0$).

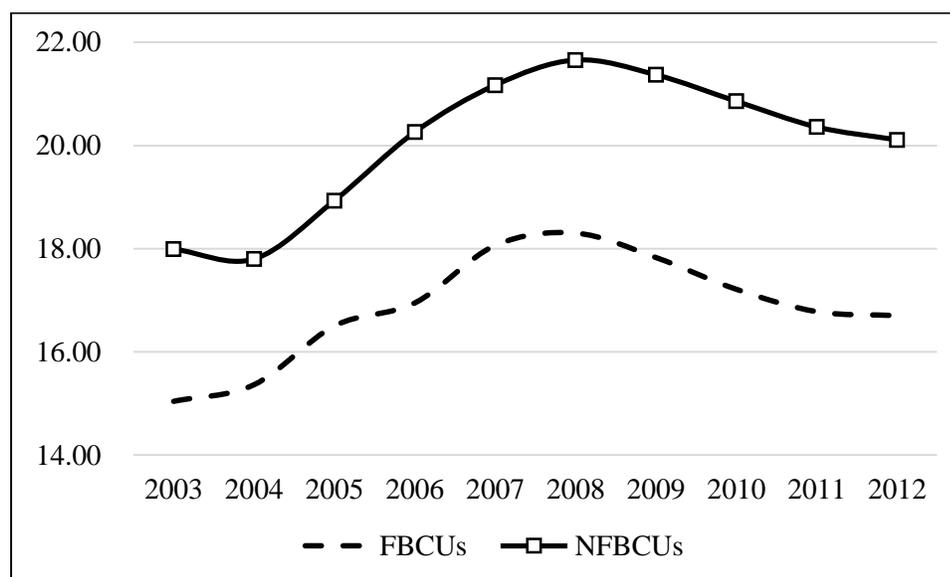


Figure 2. Mean capital ratios (H2) from 2003 to 2012 for FBCUs and NFBCUs.

Several researchers (Baxamusa & Jahal, 2010; Beck, Demirguc-Kunt, & Merrouche, 2013; El Ghouli et al., 2012; Hess, 2012; Jiang et al., 2015) concluded that faith-based factors led to higher capital and lower leverage, which is incongruent with the findings in this study. Based on the results of this study, managers of FBCUs should carefully monitor for potential undercapitalization compared to capital levels at NFBCUs. As indicated in Figure 2, the capital ratios of both FBCUs and NFBCUs increased from 2003 to 2007 but decreased starting in 2008 when the financial crisis began, which is an understandable trend. However, a troubling development for managers of FBCUs was the

gradual increase in the capital ratio differential between FBCUs and NFBCUs, as illustrated in Figure 2.

Cash Ratio (H3). A significant difference existed between the mean cash ratio of FBCUs ($M = 67.7$, $SD = 19.92$) and of NFBCUs ($M = 44.82$, $SD = 20.29$) for the decade ending in 2012, $t(133) = 24.45$, $p < .01$. Therefore, sufficient evidence exists to reject the null hypothesis ($H3_0$). I concluded that average liquidity levels were significantly higher at FBCUs than at NFBCUs from 2003 to 2012, indicating that managers of FBCUs exhibited a lower tolerance for liquidity risk.

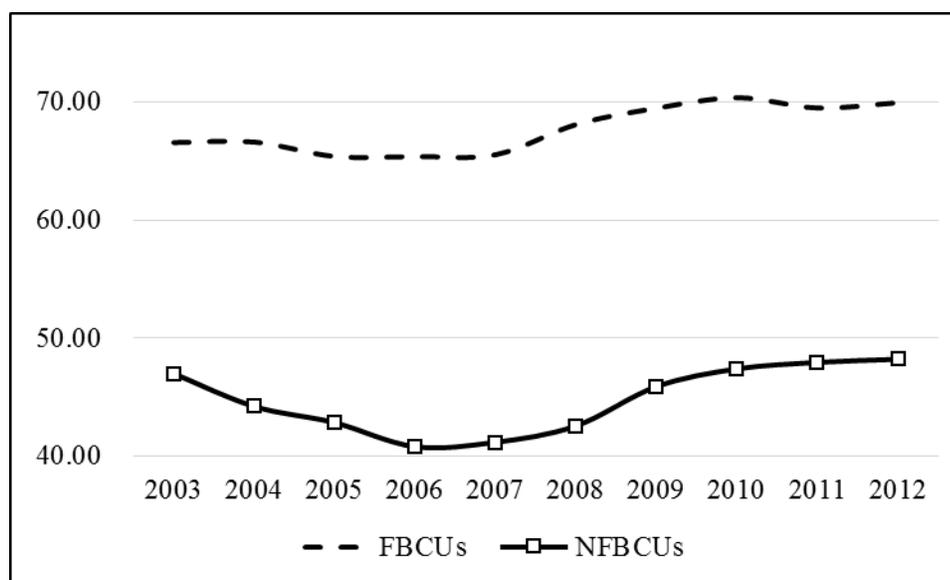


Figure 3. Mean cash ratios (H3) from 2003 to 2012 for FBCUs and NFBCUs.

The levels of cash and near-cash investments were substantially higher at FBCUs than at NFBCUs. This finding is consistent with the conclusion of several researchers that faith-based factors led to higher levels of liquidity, which reflected an aversion to liquidity risk (Barro & McCleary, 2003; Baumeister, Bauer, & Lloyd, 2010; Guiso et al., 2006; Kobrich Leon, 2013; McCulloch & Willoughby, 2009; Renneberg & Spaenjers,

2012). The opportunity cost of accumulating excessive cash is a major factor affecting credit union performance (Ariffin, 2012).

Delinquency Ratio (H4). A significant difference existed between the mean delinquency ratio of FBCUs ($M = 7.04$, $SD = 9.14$) and of NFBCUs ($M = 4.47$, $SD = 6.51$) for the decade ending in 2012, $t(133) = 6.22$, $p < .01$. Therefore, sufficient evidence exists to reject the null hypothesis (H_{4_0}). I concluded that mean delinquency ratios were significantly higher for FBCUs than for NFBCUs from 2003 to 2012, indicating lower asset quality for FBCUs and an acceptance of higher credit risk by managers of FBCUs.

The finding of higher delinquency ratios at FBCUs contradicts the conclusions of several researchers who have found that default and bankruptcy rates were lower for faith-based organizations or individuals (El Ghouli et al., 2012; Hess, 2012). Because of the apparent contradiction, I gathered additional data on net charge-off ratios, which measure the actual net losses incurred from default. The definition of the net charge-off ratio is the amount of loans written off during the year (net of recoveries) divided by average loans (NCUA, 2013b). Interestingly, as documented in Appendix C, mean net charge-offs were lower for FBCUs than for NFBCUs for the period 2003 to 2012.

However, the differences were not statistically significant. Specifically, the difference between the mean net charge-off ratio of FBCUs ($M = 1.02$, $SD = 3.55$) and of NFBCUs ($M = 1.22$, $SD = 2.69$) was not statistically significant for 2003 to 2012, $t(133) = -1.23$, $p > .01$.

These statistics reflect a phenomenon observed at a local FBCU. According to the president of a FBCU, the credit union often had delinquency rates above peer rates

because managers were lenient with late-paying borrowers who were also fellow congregation members and friends (J. Drake, personal communication, June 10, 2015). Despite the late payments, however, the FBCU did not experience higher charge-off rates because borrowers eventually paid the amounts owed in full (J. Drake, personal communication, June 10, 2015). Although this anecdote is not an empirical explanation for this phenomenon, it may indicate one possible reason for the seeming incongruence between the findings in this study and the conclusions of previous researchers (El Ghouli et al., 2012; Hess, 2012).

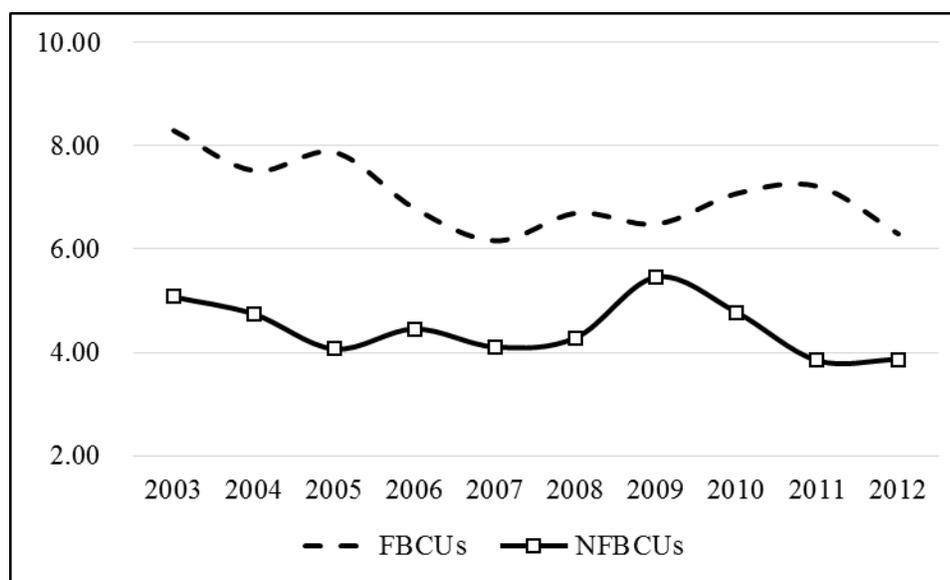


Figure 4. Mean delinquency ratios (*H4*) from 2003 to 2012 for FBCUs and NFBCUs.

Long-term Asset Ratio (LTA) (*H5*). No significant difference existed between the mean LTA ratio of FBCUs ($M = 5.13$, $SD = 9.61$) and of NFBCUs ($M = 5.46$, $SD = 9.23$) for the decade ending 2012, $t(133) = -1.01$, $p > .01$. Therefore, insufficient evidence exists to reject the null hypothesis ($H5_0$). I concluded that the proportion of assets with long-term fixed interest rates did not differ significantly between FBCUs and NFBCUs,

indicating no significant difference in the tolerance for interest rate risk. However, as shown in Figure 5, this conclusion did not hold true from 2010 to 2012 when the U.S. Federal Reserve held short-term rates near zero. When short-term rates were low, the managers of NFBCUs appeared more willing to accept interest rate risk by locking into higher, longer-term rates.

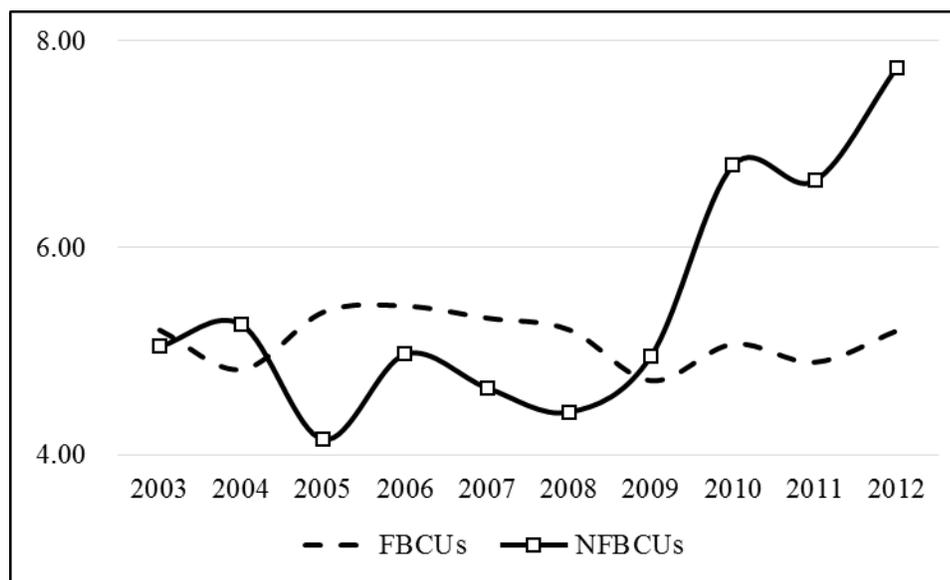


Figure 5. Mean long-term asset ratios ($H5$) from 2003 to 2012 for FBCUs and NFBCUs.

Test Results for Year as an Independent Variable. To determine if the year was a significant factor affecting the ratio differences between FBCUs and NFBCUs, I used IBM SPSS Statistics (Version 21) to perform one-way ANOVA tests. I set the alpha level at .01 (e.g., .05 divided by 5 tests). By using the one-way ANOVA test instead of separate t tests, I reduced the risk of making Type I (alpha) errors. As shown in Table 4, the results were not significant for any of the five ratios, thus indicating that the year was not a significant factor affecting the five ratio differences between FBCUs and NFBCUs because the significance levels, in all cases, exceeded the alpha of .01.

Table 4

Results of One-Way ANOVA Tests for Year as Independent Variable, 2003-2012 (n = 134^a)

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	<i>M</i>	95% <i>LL CI</i> <i>of M</i>	95% <i>CI UL</i> <i>of M</i>
ROAA ratio (<i>H1</i>)								
Between groups	9	55.28	6.14	1.46	.16	0.13	-0.03	0.28
Within groups	660	2782.37	4.22					
Capital ratio (<i>H2</i>)								
Between groups	9	119.02	13.22	.09	1.00	-3.18	-4.08	-2.27
Within groups	660	94992	143.93					
Cash ratio (<i>H3</i>)								
Between groups	9	1818.25	202.03	.34	.96	22.88	21.04	24.71
Within groups	660	390448	591.59					
Delinq. ratio (<i>H4</i>)								
Between groups	9	364.75	40.53	.35	.96	2.57	1.76	3.39
Within groups	660	76491	115.90					
LTA ratio (<i>H5</i>)								
Between groups	9	973.15	108.13	1.48	.15	-0.34	-0.99	0.32
Within groups	660	48314	73.20					

^aThe sample consists of 134 credit unions of which 67 were FBCUs and 67 were NFBCUs.

Findings in the Context of the Theoretical Framework. In the Protestant ethic theory, Weber (1905) related certain traits associated with capitalism to the influence of religion. These traits included (a) thrift, (b) frugality, (c) capital accumulation, (d) debt aversion, (e) speculation avoidance, and (f) risk aversion (Bouckaert & Zsolnai, 2012; Hilary & Hui, 2009; Smith & Smith, 2011; Zulfikar, 2012). If the Protestant ethic theory

holds, religion and religious culture may influence the investment choices made by managers at FBCUs. The Protestant ethic provided a theoretical foundation for hypothesizing that different levels of financial performance and risk-tolerance would exist between FBCUs and NFBCUs. Specifically, it provided a foundation for hypothesizing that key financial ratios of FBCUs measuring financial performance and risk tolerance would significantly differ from the same ratios of NFBCUs.

The findings from this study provided mixed support for the Protestant ethic theory. I concluded that religious factors might explain some of the differences in ratios between FBCUs and NFBCUs that measure financial performance and risk tolerance. However, any differences, or the lack thereof, between ratios of FBCUs and NFBCUs were not entirely congruent with the tenants of the Protestant ethic theory. Specifically, differences existed between FBCUs and NFBCUs in the areas of capital adequacy, liquidity risk, and credit risk, but not in the areas of profitability and interest-rate risk. The mean capital ratio (H2) was significantly smaller in FBCUs than in NFBCUs. The mean cash (H3) and delinquency ratios (H4) were significantly larger in FBCUs than in NFBCUs. Finally, no significant differences existed in the return on average assets ratio (H1) and the long-term asset ratio (H5).

Applications to Professional Practice

Faith-based and other small credit unions are vanishing at the rate of nearly one credit union each workday (Goddard et al., 2013). Leaders of these credit unions face substantial challenges in developing strategies for survival in the highly competitive financial services sector. The purpose of this study was to inform leaders of FBCUs about

any unique faith-based factors that may influence financial performance and risk tolerance, thereby potentially enabling managers of FBCUs to improve investment strategies. As part of this study, I completed a search for articles about the distinctive challenges faced by leaders of FBCUs but I did not find any articles on this topic in the literature. Therefore, managers of FBCUs may benefit from the study findings as they attempt to understand the ramifications of faith-based factors and develop financial strategies accordingly. I will provide copies of my study to several leaders of local FBCUs who expressed interest in the outcomes.

From the findings in this study, I concluded that levels of profitability did not significantly differ between FBCUs and NFBCUs from 2003 to 2012. This finding should reassure managers of FBCUs that despite a significantly greater proportion of lower-yield assets (liquid reserves), the profitability of FBCUs did not significantly differ from that of NFBCUs of similar size and location for the decade ending in 2012.

Another conclusion from the study was that FBCUs were significantly *undercapitalized* compared to NFBCUs. Over time, credit union profits accumulate in the form of capital. Capital represents a buffer against future losses, thereby providing a measure of viability (NCUA, 2012b). Because undercapitalized credit unions are more likely to fail, regulators view sufficient capital as an important determinant of safety and soundness (McKillop & Wilson, 2011). Unlike bank managers who can obtain capital from equity investors, credit union managers can only raise capital through earnings retention (Madura, 2012). Managers of FBCUs must carefully balance the twin goals of developing sufficient capital and simultaneously returning value to members. Based on

the findings in this study, leaders of FBCUs should avoid the development of deficient capital levels to benefit members in the short-term when sufficient capital is a requirement for healthy credit unions over the long-term.

A third conclusion from this study was that liquidity levels were significantly higher at FBCUs than at NFBCUs from 2003 to 2012, indicating a lower tolerance for liquidity risk on the part of managers of FBCUs. Liquidity risk is the chance of having insufficient funds to pay for withdrawals by depositors (i.e. a run on the bank) and claims by other creditors, as well as to meet loan demand (Ariffin, 2012; Drehmann & Nikolaou, 2013). The proper management of liquidity risk is of paramount importance to the operation and viability of FBCUs (Ariffin, 2012). Unlike bank managers who can quickly raise rates to obtain liquid deposits from potential public customers, credit union managers cannot obtain large amounts of liquid funds quickly because of the narrow, faith-based fields of membership (Madura, 2012).

Credit union managers seek to optimize the amount of cash buffer between incoming and outgoing funds, recognizing that too large a buffer ties up funds in low-return investments (Ariffin, 2012). The opportunity cost of accumulating excessive cash is potentially large. For 2012, the yield on average loans for all U.S. credit unions in peer group 1 (e.g., assets less than \$10 million) was 14 times larger than the yield on average investments, which indicates a high opportunity cost stemming from too much liquidity (NCUA, 2013f). To ensure maximum return on assets, managers of FBCUs should increase investment in higher-yield assets by promoting loans.

A fourth conclusion from this study was that delinquency ratios were significantly higher for FBCUs than for NFBCUs from 2003 to 2012. However, the net charge-off ratios over the same time were not significantly different between FBCUs and NFBCUs. Therefore, although managers of FBCUs tended to tolerate tardy payments, this did not lead to higher loan write-offs. Nevertheless, because government examiners use the delinquency ratio as a key indicator of asset quality, managers of FBCUs should implement tighter policies (e.g., higher late fees) to discourage excessive delinquencies.

A final conclusion from the study was that interest rate risk (as measured by the long-term asset ratio) did not significantly differ between FBCUs and NFBCUs. However, as shown in Figure 5, this conclusion was not true from 2010 to 2012, during which the U.S. Federal Reserve held short-term rates near zero. When short-term rates were low, the managers of NFBCUs appeared more willing to accept interest rate risk by locking into higher long-term rates. Leaders of FBCUs should consider earning higher yields by extending fixed rates on loans beyond 5 years, but only if their asset-liability management (ALM) models show acceptable levels of interest rate risk.

Implications for Social Change

Credit unions are member-owned organizations with missions for achieving the social and economic goals of their members and the wider communities (McKillop & Wilson, 2011). The government granted the tax exemption to credit unions in exchange for providing financial services to minorities and those with low-incomes who otherwise have limited access to these services (Bartlett, 2015; McKillop & Wilson, 2011). The implications for social change include the potential to strengthen the fiscal and risk

management strategies for FBCUs, thus maximizing the social benefits to the members and their wider communities. In addition, an understanding of the influence of faith-based factors on investment risk tolerance and performance may facilitate investment management for members of other faith-based organizations, such as faith-based charities and other nonprofits.

Recommendations for Action

Based on the finding in this study, leaders of FBCUs should reject the perception that FBCUs are not as profitable as NFBCUs of similar size and location. Managers of NFBCUs face the same pressures of costly new technology, employee turnover, and lack of economies of scale. Any competitive advantage or value proposition is available to managers of both FBCUs and NFBCUs alike. However, managers of FBCUs should ensure that sufficient profits accumulate in capital reserves to form an adequate buffer against potential future losses. Bank managers can raise new capital quickly from equity contributions, but managers of FBCUs can only raise capital through retained earnings (Madura, 2012). Government regulators view sufficient capital as an important determinant of safety and soundness (NCUA, 2012b).

Because of a tendency toward excessive liquidity, I recommend that managers of FBCUs promote higher-yield products (e.g., home equity loans and flexible rate mortgages). The opportunity cost of accumulating excessive liquidity is potentially very large. To increase return on assets, managers of FBCUs should determine the proper mix of loan products that would meet the needs of members and then promote those products. Of special importance is developing a marketing campaign of loan products for younger

members, who likely have higher credit needs than older members (Berlemann, Oestmann, & Thum, 2014). Because of changing attitudes toward organized religion, especially among younger generations, the average age of faith-based groups is increasing (Waters & Bortree, 2012). This phenomenon may influence the average membership age of FBCUs. As the members of FBCUs age, the demand for credit decreases--a phenomenon I observed at a local FBCU. Therefore, to maintain a healthy loan-to-deposit ratio, the managers of FBCUs must recognize the crucial need to recruit and retain younger members.

Because of an apparent tendency to allow excessive delinquencies, I recommend that managers of FBCUs implement stricter collection policies (e.g., increase late fees). Allowing late payments to members who are friends and fellow churchgoers may lead to favoritism and inconsistent application of credit policies. In addition, although FBCUs did not experience excessive charge-offs from 2002-2012, the long-term health of FBCUs depends on acquiring quality assets.

After investment managers adjusted rates in response to the low rate policy established by officials of the U.S. Federal Reserve, managers of most NFBCUs sought higher returns from longer-rate assets, as illustrated in Figure 5. However, in an apparent attempt to avoid interest rate risk, managers of FBCUs failed to follow suit, thus forfeiting higher potential returns on investment. As shown in Figure 5, the long-term assets ratio of FBCUs was nearly 50% lower than the same ratio for NFBCUS. Therefore, I recommend that managers of FBCUs be more willing to accept a reasonable level of interest rate risk to generate higher returns.

Finally, I recommend that officers of FBCUs form an association or forum in which to address common challenges. Several leaders of local FBCUs expressed their desire for such an association. Leaders would benefit from discussing shared concerns, such as how to achieve economies of scale and growth with restricted memberships. Another potential benefit of such an association is developing cooperative efforts to attain buying power and cost reductions in shared IT and back-office functions.

These recommendations for action may help managers of FBCUs develop effective strategies for gaining and maintaining a competitive advantage. Several leaders of local FBCUs said that they desire copies of this study so they can identify and address any unique faith-based factors affecting financial performance and risk tolerance. In addition to inclusion in academic databases, I plan to make the findings in this study available to managers of FBCUs through personal contact, training sessions, and presentations at credit union conferences.

Recommendations for Further Study

After analyzing five key variables of financial performance and risk tolerance, I identified several differences between FBCUs and NFBCUs. I recommend that future researchers include a number of additional variables, such as trends in membership, average loan size, average shares per member, net interest margins, productivity ratios (e.g., members-per-employee), and employee compensation. Regarding employee compensation, the availability of experienced managers who meet the faith-based membership criteria is a major concern among leaders of FBCUs. To exclude any

distortions from the subprime mortgage and financial crisis, I also recommend that additional research occur for years prior to 2003 and for future years.

Additionally, I recommend that future research include a qualitative or mixed-methods approach to help answer questions about motive and intent. For example, *why* do FBCUs have significantly higher liquid reserves? The reasons could include a lack of liquidity risk tolerance, the existence of an aging membership, or a membership with an aversion to debt. The qualitative approach would be appropriate for other inquiries about the nature of the faith-based affinity. For example, why do members join a FBCU? The reasons could include a faith-based affinity factor related to the close association of the religious group, or merely a better offering of value and price. The answers to all of these questions are important determinants of mission, vision, and competitive advantage and the opportunity for future study of these issues is unlimited.

Reflections

From 1992 to 2010, I volunteered at several FBCUs in multiple capacities, including board chair, treasurer, supervisory committee chair, and asset/liability management committee chair. During this time, I often wondered whether religious culture and values influenced financial decision-making. This phenomenon interested me and I decided to pursue academic research on the topic. Before I began this doctoral study, I resigned from all positions of involvement with any FBCU.

I began this study with the perception that certain religious cultures and attitudes likely influenced financial decisions and risk tolerance in some manner, although I was not sure how or to what extent. However, after documenting the assumptions and the

limitations in this study, I realized the importance of setting aside all biases and preconceptions. During the literature review, I learned that a body of research already existed that indicated certain connections between religion and financial outcomes. When I finished collecting and analyzing data, I was surprised at the outcomes for several of hypotheses because these outcomes were incongruent with the conclusions from the literature and theoretical framework.

In summary, my experience with the research process was humbling and enlightening. I learned about the importance of meticulously planning the research proposal and about the necessity of calculating statistically sound margins of error before drawing inferences. I also learned about the human tendency to jump to conclusions and to assume cause and effect without carefully reviewing the evidence. Because of this experience, my way of thinking and writing has forever changed.

Summary and Study Conclusions

The goal of this study was to determine whether significant differences in financial performance and risk tolerance existed between FBCUs and NFBCUs, thereby providing information to managers of FBCUs that may improve their investment strategies. Leaders of FBCUs who lack information about unique faith-based factors may fail to make adjustments in financial strategies required for long-term sustainability. After selecting a random sample of FBCUs and matching each FBCU with a NFBCU of similar size and location, I recorded five financial ratios related to financial performance and risk tolerance for 2003 to 2012. I used matched pair t tests to determine the significance of the differences in the average ratios for 2003 to 2012. Regarding each year independently, I

used one-way ANOVA tests to determine if the year was a significant factor affecting ratio differences between FBCUs and NFBCUs.

From the data analysis, I concluded that significant differences existed from 2003 to 2012 between FBCUs and NFBCUs in the areas of capital adequacy, liquidity risk, and credit risk, but not in the areas of profitability and interest-rate risk. I determined that leaders of FBCUs accumulated excess low-return liquid reserves, thereby creating a large opportunity cost from the forfeiture of higher-yield alternatives. In addition, FBCUs were relatively undercapitalized and had higher delinquency rates, compared to NFBCUs. The results of the one-way ANOVA tests indicated that the year was not a significant factor affecting the ratio differences between FBCUs and NFBCUs. From these conclusions, I made several recommendations for leaders of FBCUs. The information in this study about unique faith-based differences may be helpful to managers of FBCUs as they develop strategies for long-term sustainability.

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Appendix A: Credit Union Locations, Peer Sizes, and Fields of Membership

Table A1

Credit Union Sample by State or Territory

State	n	State	n	State	n
AL	2	KY	2	PA	24
AR	2	LA	2	PR	2
CA	10	MA	2	SC	2
DC/MD	10	MI	2	TX	6
FL	4	MO	2	VA	4
GA	8	NJ	6	Total	134
IL/WI	4	NY	24		
IN	2	OH	14		

Table A2

Non-Faith-Based Credit Union by Fields of Membership

Common Bond	n	Common Bond	n	Common Bond	n
Community-based	9	Governmental	10	Other Single	2
Associational	11	Manufacturing	14	Multiple	10
Educational	5	Service	6	Total	67

Table A3

Credit Union Sample by Asset Size Peer Group (as of 12/31/12)

Asset Size Group	n	Asset Size Group	n
#1: < \$2 million	98	#5: \$100 to < \$500 million	4
#2: \$2 to < \$10 million	20	#6: \$500 million or more	0
#3: \$10 to < \$50 million	6	Total	134
#4: \$50 to < \$100 million	6		

Appendix B: Descriptive and Inferential Statistics for Net Charge-Off Ratios

Table B1

Descriptive and Inferential Statistics of Mean Charge-Off Ratios^a for 2003-2012

Measure	2003-2012
FBCUs	
<i>M</i>	1.02
<i>SD</i>	3.55
<i>SEM</i>	0.14
NFBCUs	
<i>M</i>	1.23
<i>SD</i>	2.69
<i>SEM</i>	0.10
Differences between matched pairs	
<i>M</i>	-0.21
<i>SD</i>	4.42
<i>SEM</i>	0.17
<i>t</i> statistic	-1.23
<i>p</i> value ^b	.22

^aThe net charge-off ratio is defined as the amount of loans written off during the year (net of recoveries) divided by average loans.

^bTwo-tailed *t* test.