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Subsidized Rental Income, Nonrental Income, and Profitability in Tax Credit Development Companies

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This is to certify that the doctoral study by

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Abstract

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by

Samuel Simmons

MBA, Webster University, 2014

BS, Florida A&M University, 1980

Doctoral Study Submitted in Partial Fulfillment

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Abstract

Identifying sustainable income streams is a challenge for affordable housing developers to achieve profitable operations. To sustain successful operations, tax credit developers often need to understand the association between subsidized rental income (SRI), nonrental income (NRI), and profitability. Framed within the supply-side and demand-side economic theories, the purpose of this correlational study was to examine the relationship between SRI, NRI, and profitability. Secondary financial data were collected from a random sample of 31 tax credit companies and public housing authorities for the year 2015 within the state of Florida. The results of the multiple regression analysis were not significant in predicting profitability in terms of return on assets and gross operating profits. The multiple regression analysis results showed that SRI and NRI were not significant predictors of profitability. It is recommended tax credit housing developers incorporate a more aggressive strategy to attract eligible supply-side tenants, which represents a more stable income stream. The implications for positive social change include the potential for profitable tax credit developers to provide affordable housing, employment, and construction activities, which would contribute to the local economy and benefit society.

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Dedication

I dedicate this doctoral study to God, through His Son, my Lord and Savior, Jesus Christ, who has strengthened me. I dedicate this achievement to my wife and children, who have been a blessing to me.

Acknowledgments

I would like to acknowledge my chair, Dr. Lionel de Souza, for patience, dedication, and guidance in the completion of this journey. Thanks to my second committee member, Dr. Edgar Jordan, and university research reviewer, Dr. Kevin Davies. I also acknowledge my Walden classmates for their support.

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Section 1: Foundation of the Study

The success of the low-income housing tax credit (LIHTC) program has been demonstrated in the creation of nearly 2.9 million housing units since its inception in 1986 (Novogradac, 2016). The LIHTC program has become the primary vehicle to finance affordable rental housing in the United States (Hammett, 2015), with nearly 8 billion tax credits awarded (Kalugina, 2016). Emerging from concerns that the existing system of subsidized housing was ineffective, the LIHTC program was launched as a housing system that was financially sustainable and politically popular, with the infusion of tax credit allocations to commercial enterprises (Johnson, 2014). One of the driving forces for implementing the LIHTC program was to end tax shelters (Stanhope, 2016).

The problem facing tax credit developers, however, is of a growing reliance on the housing choice voucher (HCV) program and other means to sustain profit margins. The HCV program represents subsidized rental income (SRI). In addition to SRI, tax credit developers seek nonrental income (NRI) means to support profitable operations. With continued Congressional budget cuts of the HCV program, the profit margins of tax credit developments are often at risk. The purpose of this quantitative correlational study was to examine the relationship between the independent variables SRI and NRI and the dependent variable of the profitability of tax credit development companies. Quantitative designs are used by researchers to examine the relationship between independent and dependent variables (Al-Thani & Semmar, 2017; Guo, 2015; Onen, 2016), which was the aim of this study.

Background of the Problem

LIHTC developments are made affordable because commercial enterprises use federal subsidies to pay a significant portion of the construction costs, thereby minimizing debt service payments. Tax credit developers create commercial enterprises and must agree to set aside a certain percentage of units at reduced rates for low- and moderate-income tenants (Johnson, 2014). Subsidy infusion is exchanged for affordable units within the tax credit developments (Schwartz, 2015). The exchange forms the basis for the public-private partnership between the government and tax credit real estate developers (Novogradac, 2014).

Low-income housing tax credits represent a supply-side program, which means that the federal subsidy is delivered directly to construct or rehabilitate buildings and is not distributed to households (Schwartz, 2015). The HCV program, however, is a demand-side program in which federal assistance is provided directly to tenants in the form of vouchers to find available housing (Hsu, 2015). Public and private funds are used to construct and operate tax credit developments. The financing mechanism was designed so that the developments can sustain favorable profit margins (Johnson, 2014). In addition to housing tenants that meet LIHTC criteria of 60% or below median income, the program can also house persons who receive federal assistance from the HCV program (Novogradac, 2014), which is the demand-side program. An overreliance on voucher holders by tax credit developers poses a risk to profitable operations as the HCV program is subject to Congressional budget cuts (Affordablehousing, 2017).

Hsu (2015) found that there has been a heavy reliance on the HCV program to fill LIHTC developments. Researchers have recently discovered that the LIHTC program may be considered more of a hybrid of supply-side and demand-side programs, with voucher holder participation estimated between 16% and 40% (Hsu, 2015). Many tenants use housing choice vouchers to rent from tax credit developments (Kingsley, 2017). Tax credit developers tend to target HCV households for two reasons. First, voucher holders are sought in areas where the tax credit rents are competitive with fair market rents. Second, surplus income is derived from housing voucher holders, which is not the case with housing nonvoucher holders. Tenant voucher holders pay above maximum rents because their payment standards are higher than LIHTC rents, creating a windfall for the developers of tax credit units.

Problem Statement

Many tax credit development companies that build affordable housing fail to operate profitably as commercial enterprises without assistance from government subsidies (Hsu, 2015). Nearly 35% of tax credit development companies were operating below break-even (Hammett, 2015), and have required additional streams of income to sustain operations. The general business problem was that some tax credit housing developers fail to understand the negative impact of dwindling income sources on profitable operations. The specific business problem was that some tax credit developers do not know the relationship among SRI, NRI, and profitability.

Purpose Statement

The purpose of this quantitative correlational study was to examine the relationship between SRI, NRI, and profitability as this pertains to tax credit housing developers. The independent variables were SRI and NRI, and the dependent variable was profitability. The targeted population consisted of tax credit housing developments with 200 or more units in the state of Florida, from which a random sample was drawn. The implications for positive social change from the study findings may lie in the possible contribution to knowledge, which could advance the ability to offer affordable housing to the economically disadvantaged in society. The study findings may provide tax credit housing developers with an improved understanding of the association between SRI, NRI, and profitability, and may thereby benefit low-income tenants. With an improved understanding of the relationship between SRI, NRI, and profitability, the potential for positive social change could include the development of more affordable housing by developers to meet the needs of low-income tenants.

Nature of the Study

The three types of research methods include quantitative, qualitative, and mixed methods (Yin, 2017). For this study, a quantitative method was chosen to examine the relationships between variables (see Lach, 2014). The purpose of the quantitative method was to examine the relationship between SRI, NRI, and profitability. Qualitative methods are used by researchers who seek to understand a phenomenon by seeking answers to *how* and *why* questions rather than using statistical results (Yin, 2017); the latter was the aim of the current study. The need for results based on statistical testing rendered the

qualitative method inappropriate for the study. Mixed methods, a combination of quantitative and qualitative approaches, is advantageous when addressing research questions that require both types of data in a single study (Zhang & Watanabe-Galloway, 2014). The mixed-methods approach was not chosen for this study because there was no need to combine objective measurements with a subjective inquiry. The mixed-methods approach is often cumbersome and may require additional time in executing the research (McKim, 2015).

Nonexperimental, experimental, and quasi-experimental designs were reviewed to determine the appropriate design for this study. Based on the objective of the study, which was to examine the relationship between SRI, NRI, and profitability within the tax credit housing industry, a nonexperimental correlational design was appropriate. A correlational design is used to determine the degree and strength of the relationship between the independent and dependent variables from data generated using appropriate correlational techniques and analyzed using appropriate statistical techniques (Arkkelin, 2014). The purpose of the correlational design was to examine the relationship between two independent variables (SRI and NRI) and the dependent variable (profitability). Experimental and quasi-experimental designs involve controlled environments, which may entail the manipulation of variables and interventions as the aim is to examine cause-and-effect relationships (Walter, Dunsmuir, & Westbrook, 2015). The aim of the current study was to examine the correlational relationship between variables, not cause and effect; therefore, quasi-experimental and experimental designs were inappropriate.

Research Question

The research question was the following: What is the relationship between subsidized rental income, nonrental income, and profitability?

Hypotheses

H_0: There is no relationship between subsidized rental income, nonrental income, and profitability.

H_1: There is a relationship between subsidized rental income, nonrental income, and profitability.

Theoretical Framework

The supply-side theory (Laffer, 1983) and the demand-side theory (Keynes, 1936) underpinned the study and constituted the theoretical framework. The aim was to understand how tax credit housing developers apply SRI and NRI to profitability. The two categories of federal housing programs, supply-side and demand-side, aligned with the economic theories chosen to underpin the study. Canto, Joines, and Laffer (1982) argued that reduced taxes spur economic growth. Economic growth is driven by the supply of goods and services (Laffer, 1983). The constructs underlying the supply-side theory include reduced taxes, increased private sector investments, and increased capital production, pertain to the tax credit housing program. The supply-side theory was relevant to this study because the federal government created a supply of goods and services through the LITHC program, which includes tenants who provide SRI and NRI to support the profitability of tax credit housing companies. SRI and NRI are sources that may negatively affect profitability.

Keynes (1936) developed the demand-side economic theory. Keynesian theorists have argued that economic growth is driven by the demand for goods and services (Prizio, 2015). One of the constructs underlying the demand-side theory is the infusion of spending to create consumer demand (Keynes, 1936). The demand-side theory was relevant to this study because the federal government has created a demand for goods and services through the HCV program. Tenant voucher holders provide income streams to tax credit developments that include SRI and NRI to sustain profitability (Hsu, 2015).

Operational Definitions

The following operational definitions provide clarity regarding the meaning of terms as they were used in this study:

Affordable housing: Rental dwellings within reach of individuals and families who pay no more than 30% of annual income for rent and utilities (Hammett, 2015).

Area median income: The midpoint household income from a metropolitan area or a nonmetropolitan county used in determining eligibility for housing programs (U.S. Department of Housing and Urban Development [HUD], 2015b).

Developers: Professionals involved in the production of LIHTC multifamily housing, including syndicators, bankers, builders, managers, and investors (Hammett, 2015).

Gross operating profit: The difference between the cost of goods sold and total sales divided by total assets minus financial assets (Ukaegbu, 2014).

Low-income households: Households with incomes between 50.1% and 80% area median income (HUD, 2015b).

Low income housing tax credits (LIHTC): The largest subsidy that provides tax credits as an incentive for private investors participating in low-income housing production (Schwartz, 2015).

Public-private partnership: Partnerships between governments and the private sector that spur the development of affordable housing by adding resources (Johnson, 2014).

Qualified allocation plan (QAP): A federally required annual planning tool used by state housing finance agencies to explain how tax credits were allocated (HUD, 2015b).

Return on assets (ROA): The earnings before interest, taxes, depreciation, and amortization divided by the total assets (Kara, Erdur, & Karabiyik, 2015).Assumptions, Limitations, and Delimitations

Assumptions, limitations, and delimitations provide critical information about the methodology, findings, and scope of a study (Leedy & Ormrod, 2015). Assumptions are assertions not confirmed in the study (Marshall & Rossman, 2016). Limitations are potential weaknesses of a study (Leedy & Ormrod, 2015), while the scope and delimitations indicate the boundaries of a study (Leedy & Ormrod, 2015).

Assumptions

Assumptions in a study are assertions that the researcher takes to be true in the absence of confirmation (Marshall & Rossman, 2016). The first assumption was that I would be able to locate tax credit developers who rely on households receiving federal rent assistance to bolster favorable profit margins of the company. The second

assumption was that I would be able to retrieve archival financial data from the Florida State Housing Corporation and public housing authorities to gather information for the independent and dependent variables. The last assumption was that there would be an alignment between the study and the quantitative correlational design. The purpose of the study was to examine the relationship between the independent variables (SRI and NRO) and the dependent variable (profitability).

Limitations

Limitations are potential weaknesses that represent important components of a study (Leedy & Ormrod, 2015). First, there was a lack of data to identify the percentage of HCV households who occupy tax credit developments. Second, there appeared to be a dearth of research as to how tax credit developers apply surplus income from voucher households to their developments. Finally, the findings from the study may not be generalizable to all tax credit housing developments in the United States because different locations can affect rents and profitability.

Delimitations

Delimitations indicate boundaries regarding what the researcher will cover in the study (Leedy & Ormrod, 2015). The first delimitation was that only the strength and direction of the association were examined in the study, not the cause-and-effect relationship between SRI, NRI, and profitability. The second delimitation was that the focus of the study was on developments that contain 200 or more units and excluded smaller properties. The last delimitation was that the study was restricted to the state of Florida.

Significance of the Study

The findings from this study may provide tax credit housing developers and affordable housing researchers with a better understanding of the possible risks and opportunities to profitable operations from the use of different income streams. The study may also fill a gap in the literature regarding the impact of SRI on the tax credit housing development industry. The study may also contribute to the improvement of business practices in the tax credit housing industry and to the advancement of positive social change.

Contribution to Business Practice

The findings from the study may contribute to business practice by providing new knowledge on the for-profit concept of maximization of profits and minimization of risks. Hammett (2015) posited that the goal of commercial businesses is to maximize profits and reduce risks. The findings may also lead to a better understanding of the effect of SRI and NRI on the profitability of tax credit developments. Tax credit housing developers may use the findings to improve their understanding of the connection between SRI, NRI, and profitability within operations (see Bratt & Lew, 2016). Second, the results could help tax credit developers avoid possible risks to profitable operations (see Hammett, 2015). Third, the findings may help public policy officials implement regulations designed to increase the population of eligible tax credit tenants. Finally, public policy officials may use the findings to fund additional solutions to the affordable housing dilemma (see Hsu, 2015).

Implications for Social Change

The findings from this study may contribute to positive social change by increasing the understanding of developers with respect to the association between SRI, NRI, and profitability. The findings of the study may contribute to existing knowledge in this domain and may be used to increase affordable housing for the economically underserved. Tax credit developers and public housing officials may be informed of ways to decrease rent burdens (see Bratt & Lew, 2016), which could benefit low-income tenants and communities that address homelessness (see Hsu, 2015).. Society may benefit as additional renters move from substandard living conditions to affordable housing (see Hsu, 2015).

A Review of the Professional and Academic Literature

Researchers often seek to gain an intimate understanding of themes related to the objectives of a study through an exhaustive review of articles, books, and other literature. With a thorough understanding of themes, researchers can convey the intent of the study. The purpose of this quantitative correlational study was to examine the relationship between the dependent variable of profitability and the independent variables of SRI and NRI in LIHTC developments. The following research question guided this study: What is the relationship between SRI, NRI, and profitability? The hypotheses for this study were the following:

H_0: There is no relationship between SRI, NRI, and profitability.

H_1: There is a relationship between SRI, NRI, and profitability.

The supply-side theory (Laffer, 1983) and the demand-side theory (Keynes, 1936) underpinned the study. The theoretical framework was used to guide the examination of the research variables. Information in this section includes supply-side theory, demand-side theory, and profitability as the main topics of review. The constructs underlying the supply-side theory include reduced taxes, increased private sector investments, and increased capital production, pertain to the tax credit housing program. A major construct underlying the demand-side theory is government intervention to promote consumer spending. The demand-side theory was relevant to this study because the federal government created a demand for goods and services through the HCV program from which tax credit housing developers receive SRI, which is relied on for profitable operations. The two economic theories contain opposing perspectives regarding affordable housing, which may be relevant when examining profitability within the tax credit housing arena.

Strategy for Sourcing Literature

Dissertations, industry websites, journal articles, and scholarly texts were primary sources for the literature review for this study. The Walden University online library was the primary source for finding and selecting pertinent peer-reviewed and other journal articles. Access to online library databases was based on enrollment status at Walden University. The academic journal repositories proved beneficial for relevant searches. Keywords were used in the following databases: Thoreau, Academic Search Complete, ProQuest Central, SAGE Premier, and Google Scholar. Keywords and phrases queried in the databases included *LIHTC*, *supply-side theory*, *demand-side theory*, *affordable*

housing, *quantitative correlation*, *qualified action plan*, *profitability measures*, *Housing Choice Vouchers*, *public-private partnerships*, and *subsidized housing*.

Table 1 provides a summary of the references used in this doctoral study. Queries from databases resulted in 130 research items. The appropriateness for retrieval of scholarly and practitioner literature was determined by reviews of the abstracts, introductions, and conclusions. The literature review for this study included 130 references, and 112 were published between 2015 and 2018. Over 85% of the references in this study were peer-reviewed and published on or after 2015. The literature review contains 82 in-text citations with 70 from peer-reviewed references. The results reflect compliance with the 85% guide.

Table 1

Detailed List of References

Description	Value
Total number of references used in this doctoral study	130
Total number of references within the last 5 years	112
Percentage of references within the last 5 years	86%
Total number of peer-reviewed references	111
Percentage of peer-reviewed references	85%
Total number of references used in the literature review	82
Number of literature review references within the last 5 years	71
Percentage of literature review references within the last 5 years	87%

Five topics are covered in the literature review. The first and second topics include a review of studies on the theoretical frameworks: the supply-side economic theory and the demand-side economic theory. Review of the literature addressing the SRI independent variable is covered under the demand-side housing topic. The NRI independent variable is addressed under the supply-side housing topic. The third topic is the dependent variable (profitability). Construct measurements and profitability methodologies are covered in the last two topics. The section concludes with a summary and transition.

Supply-Side Housing

The LIHTC program is an $8 billion industry that was created by Congress to build affordable housing for low-income families (Gramlich, 2016; Sullivan & Anderson, 2017). Supply-side theorists have argued that economic growth is driven by the supply of goods and services (Prizio, 2015). The constructs underlying the supply-side theory include lower taxes, increased private sector investments, and increased capital production. The supply-side theory was relevant to this study because the LIHTC program is a supply-side government subsidy derived from tax credits. Shaw (2015) posited that tax credit subsidies are the only way affordable housing can be built effectively. One of the weaknesses identified in the LIHTC program was sensitivity to shifts in the economy (Schwartz, 2015). The market for tax credits showed that as the economy slows, the demand for tax credits may also decline (Schwartz, 2015).

Supply-side theorists are often at odds with demand-side theorists who support the Keynesian economic theory (Phelps, 2016). Keynesian theorists have argued that

economic growth is based on the demand for goods and services (Prizio, 2015). Incorporated in both theories is the reliance on government intervention. Demand-side economists argue that placing money in the hands of lower- and middle-income renters increases aggregate demand and thereby increases economic activity (Prizio, 2015). Within the demand-side housing program, vouchers are placed in the hands of low-income persons who use them to rent from private landlords or tax credit companies (Hsu, 2015). Within the supply-side housing program, subsidies are provided to private real estate companies to build and rehabilitate affordable housing (Shaw, 2015).

The U.S. government categorizes housing subsidies into supply-side or demand-side programs. The categories align with the supply-side and demand-side economic theories. A subsidy for affordable housing tenants delivered indirectly for the construction or rehabilitation of buildings is characterized as supply-side and has produced 2.6 million units of affordable housing (Hsu, 2016). The tax credit program has been criticized for higher costs and lower numbers of units produced in the past 20 years (Sullivan & Anderson, 2017). Sullivan and Anderson (2017) found that tax credits cost 66% more during that period, with industry officials citing increased construction costs, lower grant revenue, and increased targeting of low-income renters as the reasons.

Federal government officials adopted the belief that all citizens should be provided access to decent, safe, and affordable housing (Johnson, 2014). Housing needs fall into Maslow's (1943) theory Layer 2: hierarchy of needs. Maslow (as cited in Henwood, Derejko, Couture, & Padgett, 2015) described safety needs as a primary motivation for behavior if they go unmet. Maslow noted that housing is one of the

measures for an individual or family to feel secure. Within Maslow's levels of progression to an individual's self-actualization, the need for housing must be met after the basic needs are met. Criticism of Maslow's theory and hierarchy has arisen from many scholars (Bouzenita & Boulanouar, 2016). According to Harrigan and Commons (2015), Maslow did not explain elements of behavior that cause individuals to move from one stage to another. With the application of Maslow's theory of the hierarchy of needs to explain renter motivations, it may be evident from the literature review that when people are provided affordable housing, a level of behavioral motivation may have been experienced for them to become productive citizens. Henwood et al. (2015) posited that the identification of self-actualization goals is associated with the lack of having basic needs met instead of the fulfillment of basic needs.

The housing goal, along with the demand for increased accountability from the government in resource distribution, became the basis for resolving housing issues and led to the implementation of the LIHTC program (Johnson, 2014). Greater accountability of government resources was one of the reasons for creating the tax credit housing program. However, in recent years public accounting of the program costs among government officials and regulators responsible for monitoring has been insufficient, with some calling for changes (Sullivan & Andersons, 2017). Sullivan and Anderson (2017) also found insignificant data pertaining to the oversight and monitoring efforts of the tax credit housing program, with the possible implication that the IRS is not properly performing its oversight responsibilities. Advocates have argued that the tax credit housing program has an effective built-in self-monitoring mechanism (Di & Murdoch,

2013). Bratt and Lew (2016) noted that monitoring is performed by the developer and owner who require exemplary management for the development to remain in compliance.

The LIHTC program aligns with the supply-side economic theory. Supply-side theorists have supported the use of tax cuts to spur private investment in the production of capital projects (Prizio, 2015). Although broad support for the LIHTC program has been expressed, skepticism has arisen about the ability of the program to have a significant national impact on affordable housing needs (Johnson, 2014). The tax credit housing program gained widespread popularity with developers who saw the benefits of building housing complexes in which a significant portion of the construction was funded by the government (Schwartz, 2015).

The LIHTC program was initially criticized because of the assertion that underwriting was unnecessarily burdensome (Hammett, 2015). The program has also been criticized because of complex rules and inefficiency (Sullivan & Anderson, 2017). Critics have complained about high transaction costs and inefficiency within the LIHTC (Edwards & Calder, 2017). Hammett (2015) highlighted the efficiency with which tax credit dollars have been applied to construction development rather than administrative costs. Tax credit housing efficiency production has declined in recent years with the production of fewer units and the use of more housing tax credits (Sullivan & Anderson, 2017).

Ihlanfeldt and Mayock (2017) advocated for the need to locate affordable housing near high-quality schools as a means of improving academic achievement for students of low-income households. Perceptions of deterioration in the quality of schools and

neighborhoods loom as barriers to establishing tax credit housing developments. Tax credit developers, as well as other affordable housing developers, must address the not-in-my-backyard perception of residents when planning housing developments (Scally & Tighe, 2015). Dillman, Horn, and Verrilli (2017) noted that the production of LIHTC housing in economically distressed communities has a positive impact on surrounding neighborhoods in terms of modest increases in property values and enhanced safety. Higher opportunity neighborhoods that receive LIHTC housing experience modest property value reductions and no effect on crime (Dillman et al., 2017).

Additional operating income is often required for tax credit developments to operate profitably (Hsu, 2015). Thayer (2018) described subsidy layering as a gap-financing mechanism that has been used for over 30 years. Tax credit projects are complicated due to the layering of grants, tax credits, bonds, and municipal assistance. Funding mechanisms from states and local governments are sought by developers. Bratt (2016) suggested that tenant incomes and the ability to pay should drive the affordability of rental apartments, but such a mechanism requires additional subsidies beyond the LIHTC funding. Weisbach (2006) argued that the LIHTC program should be replaced with vouchers because the voucher program is less expensive. Although less expensive, the voucher program is subject to annual funding cuts from Congress, which is not the case with the LIHTC program. Housing advocates promoted the view that the LIHTC program was more geared toward benefiting wealthy investors than low-income households (Johnson, 2014) because upper-income investors and big corporations benefited from poor households. Novogradac (2016) noted that more than 13.3 million

Americans have benefited from the LIHTC program over a 30-year period. Freedman and McGavock (2015) argued that LIHTC crowds out private development, and that nearly half of existing tax credit housing units would have been constructed without a subsidy.

Overall, the tax credit program has been viewed as a win-win process because the benefits accrue to all parties within the affordable housing arena. An affordability problem exists among a growing number of renter households in the United States (Johnson, 2014). An important housing policy question to ask would be the following: Are LIHTC developers doing a disservice to eligible nonvoucher holders by limiting available units when they rent to voucher holders? Demand subsidies in the form of vouchers can harm nonvoucher holders who seek housing in tax credit developments. Supply-side operations include the application process, compliance, tax credit developers, and public-private partnerships.

Application process. The profitability of tax credit housing developments is affected by the application process, which includes the developer identifying levels of rents and the location of the development. The application process is a competitive mechanism that is geared toward ensuring the best housing is produced, and the process begins with a project owner submitting a competitive application to the state housing agency (Hsu, 2015). The intense competition for tax credits has come under scrutiny as the process hampers development and serves to frustrate developers who would rather spend the time working additional tax credit applications (Bratt, 2016).

Federal law requires that states give preference to developments serving the lowest income renters and within poverty areas (HUD, 2015a). However, market forces

govern income levels and profit margins of tax credit developments, as with other real estate markets (Johnson, 2014). Developers have targeted the higher income group at or below 60% of area median income for 88% of tax-credit projects placed in service between 1987 and 2014 (Lew, 2015).

The application process includes developers' attentiveness to the Qualified Allocation Plan, which is used by states to award the tax credits to developers (Skuzinski et al., 2016). Section 42 of the Internal Revenue Code requires that states create an annual QAP, which sets the criteria for how tax credit projects are to be selected. Preferences are set for projects serving the lowest income tenants (Ellen, Horn, Kuai, Pazuniak, & Williams, 2015). The building locations used for affordable housing development are often less than ideal for market-rate developers, who seek the best sites (Davis, 2016).

Affordable housing developers choose to maximize the amount of LIHTCs received by targeting neighborhoods designated as Difficult Development Areas or Qualified Census Tracts, which are frequently characterized as poverty areas (Eriksen, 2017; Niver, 2016). Awarding of tax credits by state agencies is a process of chasing points by developers. To ensure that LIHTC developments are built in high-opportunity areas, Spotts (2016) argued that housing finance agencies (HFA) should adopt location-sensitive cost evaluations.

High-opportunity areas are described as geographic locations that are served by high-quality schools and have such amenities as access to quality transportation, jobs, superior health care, and public services (Neville, 2017). Higher opportunity neighborhoods that are occupied by LIHTCs experience modest property value

reductions with little to no effect on crime (Dillman et al., 2017). Although additional points are awarded based on the location of developments in high poverty areas, the negative effect on profit margins could cause developers to seek rental assistance from the HCV program as well as other streams of income.

Currently, developers are reluctant to target high-opportunity areas because QAPs contains threshold requirements such as land and per unit development costs that are not conducive to high opportunity areas (Spotts, 2016). Progress to deconcentrate poverty has been made within the LIHTC program (Niver, 2016). Affordable housing is more regionally distributed within the LIHTC, providing low-income households with greater access to high-opportunity neighborhoods. Tax credit developers locate more than one-third of units in the suburbs (Niver, 2016). Profitability is ultimately at risk when developers chase points by locating their developments in high poverty areas, leading to the need for greater rental assistance in the form of SRI.

Compliance. The Internal Revenue Service (IRS) mandates compliance with rent structures and unit restrictions that affect the profit margins of tax credit housing developments as specific percentages of rents and units must be maintained during a 15-year period (Schwartz, 2015). Compliance monitoring for a subsequent 15-year period is provided by state housing agencies (Bratt, 2016). The monitoring efforts by the IRS have been criticized in recent years, as Sullivan and Anderson (2017) noted that only seven audits had been performed of the 58 housing agencies assigned by the IRS to monitor the program since its inception in 1986. Lipschultz (2016) noted the Internal Revenue

Service (IRS) has generally found that program requirements are met by developers of LIHTC properties.

The quality of the LIHTC project is maintained by private for-profit investors who provide oversight and discipline (Bratt, 2016). The LIHTC program is an IRS responsibility, included in the 1986 Tax Reform Act; however, enforcement and assessment rest with the Department of Housing and Urban Development (Schwartz, 2015). The oversight for the first fifteen years of a LIHTC project is provided by the federal government, which includes the threat that tax credits could be rescinded if the project fails to comply with the proper level of income and units (Bratt, 2016). Proponents have argued that less than 1% foreclosure rate occurs within the LIHTC program (Johnson, 2014). Compliance with reduced rents and a target number of units set aside for low-income use means that the developer has agreed to forego maximum rents, resulting in the need for additional income streams such as the HCV program. Developers seek rental assistance from the HCV program to bolster their profit margins (Hsu, 2015).

Affordable housing advocates have expressed concern that the affordability component would cease after the compliance period ended (Sullivan and Anderson, 2017). The shortage of affordable housing fuels the concerns when considering which direction tax credit developments will move after the compliance period. Weiss (2016) predicted by 2043, two million apartments in the U.S. will have lost the affordability component attached to federal restrictions. Researchers, however, found that only 6% of projects whose compliance period ended reverted to market-rate housing, with the remainder of the projects either having their tax credits renewed or remaining affordable

without tax credits (Schwartz, 2015). Affordability of developments in the absence of tax credits places an additional strain on profit margins and a greater reliance on voucher holder income to fill the financial gap.

Tax credit developers. Tax credit developers exchange the opportunity to charge market-rate rents for the subsidy provided through the tax credit program (Johnson, 2014). The process effectively lowers the debt service costs for the development (Schwartz, 2015). Maximization of profits and minimization of risks are established goals within real estate development (Hammett, 2015). However, maximization of profits is not realized for developers within the LIHTC industry as rental income is sometimes reduced for the sake of affordability. With nearly one-fourth of all tax credit developments operating below breakeven, as found in several publications, the implications may be that the tax credit subsidy is not enough to sustain profitable operations. Invariably, developers turn to SRI and other means to sustain profitable operations.

Tax credit developments receive higher rent payments from voucher holders than from eligible non-voucher holders. HUD provides a higher payment standard for voucher holders than the 60% LIHTC payments (Novogradac, 2014). Novogradac further posited that researchers have recently discovered that the LIHTC program may be considered a hybrid of supply-side and demand-side programs as development managers use HCV households to fill their apartment complexes. However, the risk is posed to tax credit developers by overly relying on income from the HCV program as it is subject to annual Congressional budgetary cuts (Hammett, 2015).

Tax credit housing developers have grown dependent on the voucher program to fill units and to gain incremental income to sustain operations and profit margins (Hsu, 2015). The HCV program is subject to annual Congressional review and budget reductions. Unlike the HCV program, the LIHTC program is not subject to annual review for spending authorization because the program has been established by the 1986 Tax Reform Act within the IRS tax code and is therefore not subject to annual funding cuts (Hammett, 2015).

Developers use tax credit subsidies to pay a significant portion of construction costs for erecting affordable developments, with the intent of reducing debt service costs and creating sustainable operations (Schwartz, 2015). Sustainable operations within the tax credit development industry have been realized through additional funding sources (Hsu, 2015). Although SRI increases the profit margins of tax credit developments, shrinking federal dollars within the HCV program should serve to motivate tax credit developers to more aggressively market the vast pool of non-voucher renters who meet the 60 percent AMI eligibility.

Many of the extremely-low-income renters experience rent burdens while housed in tax credit housing programs (HUD, 2015a). JCHS (2015) reported a shortage of affordable housing in the U.S., which results in cost burdens to renter households**.** HUD defines extremely-low-income households as earning 30% or less of the area median income compared to 60% or less for the LIHTC program (HUD, 2015b). Housing extremely low-income renters negatively affect the profitability of tax credit developments. Bratt (2016) observed that tenant income and the ability to pay should

drive the affordability of rental apartments, but such a mechanism requires additional subsidies beyond the LIHTC funding.

Developers who are committed to serving extremely low-income households tend to employ creative strategies in mixed-income complexes (Johnson, 2014). Some tax credit developers use incremental income to assist extremely-low-income households through a strategy termed cross-subsidization (Hsu, 2015). Hsu also noted that the cross-subsidization strategy implemented by some development firms in utilizing income from higher-earning households might help offset lower rents to meet the overall operating costs of the development.

Most of the criticism of the tax credit program was based on earlier observations such as cumbersomeness of the paperwork and syndication costs (Hammett, 2015). A reduction in syndication costs has occurred as well as a willingness on the part of investors to accept lower returns (Niver, 2016). Throughout the years, the tax credit housing program has been demonstrated to be a stable investment that attracts developers and investors (Schwartz, 2015). The program is described as beneficial to all parties: low-income families receive modern, well-built, affordable dwellings; and developers, syndicators, and investors profit from their roles.

Investments in LIHTC developments are viewed as low risk because of the high demand and low foreclosure rates associated with the program. Sullivan and Anderson (2017) noted that tax credit housing is perceived by investors as a safe investment because the developments are often filled with tenants and long waiting lists. Incentives within the tax credit housing industry are crucial for attracting private sector investment.

Schwartz (2015) suggested that the tax credit housing program was vulnerable to economic shifts as there was a reticence on the part of developers to purchase tax credits during the great recession. The susceptibility of the LIHTC market to shifts in investor demand was evidenced during the financial crisis when revenues were reduced across the United States, slashing the demand for tax credits.

Surplus income from voucher holders is used by tax credit housing developers in the operations of the developments (Hsu, 2015). Other developers fill the gap in operating tax credit developments by applying traditional financial housing mechanisms (Johnson, 2014). A gap in literature may exist regarding how tax credit developers use the incremental income from voucher holders, which could serve as an additional stream of income to sustain operations. HUD does not mandate how the surplus income derived from voucher holders should be used by tax credit developers (Hammet, 2015). An important question is raised based on developers receiving incremental income from voucher holders: Should all developers use the surplus to cross-subsidize, reduce rents for other extremely low-income households as some developers are doing? Additional research may be needed to determine how tax credit developers use surplus funds from SRI within the housing developments.

Public-private partnerships within tax credits. The low-income housing tax credit (LIHTC) is a public–private partnership that has become an integral part of affordable housing. A public-private partnership is often described as a mutually beneficial relationship between the public and private sectors (Du, Wu, & Zhu, 2018; Wang, Cui, Liu, 2018). The entrance of private sector developers into affordable housing

production has proven to be a successful strategy (Woo, Joh, & Van Zandt, 2016; Woo & Yu, 2017).

The LIHTC program represents an evolution from government conventional low-income housing programs, to a gradual shift in responsibility to private landlords, developers, investors, and public-private partnerships (Johnson, 2014). Banks have recently become the largest investors in LIHTCs. The bankers are statutorily motivated by the Community Reinvestment Act, which was enacted in 1977 to meet the credit needs within a community. Investors are incentivized to partner with developers to build affordable housing apartments by providing a portion of the capital for construction and in turn receiving tax credits for a 10-year period.

The federal government has become dependent on for-profit and non-profit organizations to deliver affordable housing, which has brought about decentralization of the affordable housing program (Bratt & Lew, 2016). Concerns have been raised regarding the seemingly over-reliance on private actors by the federal government (Niver, 2015). The question of accountability was raised with government dependence on private-sector production of affordable housing. The profitability of tax credit developments can be attributed to the private sector partnerships as developers seek various financial means, including the HCV program, to sustain operations.

Shifting the responsibility of affordable housing production to the private sector, the federal government additionally devolved its responsibility for affordable housing to regional, state, and local government for creating greater productivity and efficiency (Bratt & Lew, 2016). Some criticism has arisen concerning the degree that the

government relies on the private sector to perform functions formerly handled by the government (Sullivan & Anderson, 2017). The role of the private sector in performing public functions has been valued at a trillion dollars annually (Niver, 2015).

The tax credit program was designed as a catalyst for private investment in affordable housing (Schwartz, 2015). A paradigm shift occurred within the federal housing policy that moved the responsibility of resolving housing issues from the federal level to public-private partnerships. Efficiency and profitability drivers of private business coupled with governmental goals account for the astounding production of affordable housing. Public-private partnerships have been widely used in the operations and responsibilities of public service (Liu et al., 2017). Although the public-private partnership has been instrumental in the success of affordable housing production within the LIHTC program, goal congruence has become a concern as the two entities collaborate to address housing needs (Bratt & Lew, 2016). Higgins and Huque (2015) found differences in how the two sectors measured accountability, with the public partner requiring greater visibility of its investment than the private partner.

Within the affordable housing realm, the goal of the public sector is to meet the demands of public policy in providing affordable housing for its citizenry (Johnson, 2014). Tax incentives were the motivation for private developers to take on the role of affordable housing production (Schwartz, 2015). However, the goal of commercial businesses is to maximize profits and reduce risks (Hammett, 2015). The goals of public and private sector representatives may not always intersect perfectly because of their respective motives. However, despite ambiguity, conflicts, and complexities, public and

private sectors have been extremely successful in merging to produce nearly 2.9 million affordable housing units (Novogradac, 2016). Inherent within goal congruence are issues such as goal ambiguity, goal conflicts, and goal complexity.

One of the chief goals of the tax credit program was to encourage private sector support of affordable housing (Johnson, 2014). Nearly $8 billion tax credits are awarded on an annual basis within the tax credit program (Hammett, 2015). The exchange of subsidy for affordable housing units forged the relationship upon which the public-private-partnership has been based between the federal government and residential real estate developers (Johnson, 2014). As private sector investors benefit from the cost reduction of government subsidy, they must balance the need to sustain profitability by providing the required number of affordable units for low-income tenants (Shaw, 2015).

The opportunity to claim a federal tax credit is the main economic incentive derived from tax credit investment by the private sector (Hsu, 2015). Equity for the development is generated from private investors who then use tax credits to offset their tax liability. Schwartz (2015) noted that private investment in affordable housing was spurred by the tax credit program. Corporations and individuals are provided incentives to invest in the construction or rehabilitation of affordable rental housing (Johnson, 2014). Although the investment component is largely responsible for attracting investors into the affordable housing market, public officials are incentivized by the creation of affordable housing (Schwartz, 2015).

Public-private partnership agreements abound in communities across the United States. The city of Buffalo, NY, represents an example of a private-partnership agreement

in which city officials demonstrated partnership cooperation by offering 17 acres to developers for the purpose of building affordable housing (Popiolkowski, 2015). Success stories abound where partnerships have formed between public and private sectors to achieve affordable housing. Municipalities have demonstrated a willingness to donate or sell land at a low cost. Additionally, local governments, through their Community Redevelopment Agency entities, have demonstrated a willingness to fund infrastructure for LIHTC projects that benefit the housing community (Hsu, 2015). Although public officials are influenced to merge with private developers in providing affordable housing, private developers are generally influenced by economic reasons (Fyall, 2014).

Additional funding is commonly required for profitable operations of tax credit developments (Hsu, 2015). Tax credit housing developments generally require multiple layers of funding sources, in addition to the tax credit housing subsidy (Bratt, 2016). The need for additional funding is indicative of the higher cost of the tax credit program compared to the voucher program. Replacement of the tax credit housing program with the voucher program was advocated by Weisbach (2006) because the voucher program has been deemed to be less expensive and complicated.

Demand-Side Housing

The demand-side housing program aligns with the theory developed by economist Keynes (1936), which is termed Keynesian economics or demand-side economics. Keynesian economics is based on the premise that economic activity is driven by the demand for goods and services (Backhouse, 2015). Demand-side economics is often at odds with the supply-side theory, which is based on the presumption that the supply of

goods and services is the main driver of economic growth (Prizio, 2015). Government intervention is a common theme in demand-side and supply-side housing. Vouchers provided to low-income persons to find available housing is an example of government intervention in demand-side economics. Money allocated to businesses through tax credits to build affordable housing is an example of government intervention in supply-side economics (Laffer, 1983).

Governmental interaction to boost consumer spending is a key construct of the demand-side theory (Keynes, 1936). The HCV program, implemented in 1998 with the Quality Housing and Work Responsibility Act, is a demand-side housing program (Niver, 2016). The HCV program was designed to pay the rent of eligible households with government vouchers. The program provides affordable housing for renters who earn 60% or less of the area median income (Johnson, 2014). Tenant-based vouchers are currently held by approximately two million families. Renters who have vouchers are provided the option to rent from private landlords and tax credit developments (Hsu, 2015). Private landlords have the option of accepting or rejecting voucher holders, but tax credit developers are prohibited from rejecting voucher holders (Schwartz, 2015).

Hsu (2015) found that there has been a growing dependence on the HCV program by tax credit developers. Researchers have discovered that the LIHTC program may be considered more of a hybrid of supply-side and demand-side programs as tax credit developers use voucher holders to fill their complexes (Novogradac, 2014: Edwards and Calder, 2017). Based on studies by HUD and others that demand-side programs are more cost-effective than the supply-side programs, Weisbach (2006) argued that the LIHTC

should have been replaced by demand-side rent vouchers. Shaw (2015) posited that tax credit subsidies are the only way affordable housing can be built effectively.

The HCV program is a demand-side mechanism in which federal assistance is provided directly to tenants in the form of vouchers to find available housing (Novogradac, 2014). Quite frequently, developers of tax credit apartments seek out voucher holders to increase their profit margins (Hsu, 2015). Hsu noted that SRI from the demand-side program is known to be present in some of the tax credit developments, but there is a lack of academic literature on the number of voucher holders who comprise the developments. Congressional budget cuts within the HCV program are threats to sustained profitability of tax credit developments. The funding for housing assistance in 2016 was 4.6% or $2.1 billion below the level for 2010 adjusted for inflation (Rice, 2016).

Johnson (2014) observed that the LIHTC program was launched as a housing system that would be both financially sustainable and politically popular. However, the problem facing tax credit developers is a growing reliance on demand-side subsidy from voucher holders to sustain profit margins. Many tax credit development companies that develop affordable housing do not operate profitably without government subsidies (Hsu, 2015). The HCV program continues to shrink with Congressional cuts (Affordablehousing, 2017). The aim of the study is to determine to what extent, if any, developers rely on these demand-side subsidies to increase profitability. A gap in knowledge exists about the financial impact of the incremental income derived from vouchers on tax credit developments. Further research is needed to generate answers in

these areas. The proposed cuts to demand-side housing programs are indicative of the risks to profitability faced by tax credit developers who may rely on SRI. To avoid the risk to profitability, tax credit developers should apply greater efforts to attract eligible non-voucher holders within supply-side housing because LIHTC funding is not subject to annual budget cuts (Affordablehousing, 2017).

Residents of LIHTC-funded units often receive other forms of housing support. The exchange of reduced debt for low-income units was intended to improve the cash flow of tax credit developments (Hsu, 2015). Indicated within the review of literature is that the tax credit subsidy does not provide adequate funding to support operating expenses. Quite often, developers seek additional subsidies, including SRI from HCV holders. In addition to voucher holder income, state and local governments provide income to fill the financial gap in operating costs (Johnson, 2014). The need for additional subsidy is demonstrated as nearly 35% of tax credit properties operated below the break-even point (Hammett, 2015).

The findings from several researchers indicated that all production subsidy programs are more expensive than vouchers when considering both government and tenant costs (Niver, 2017). Although more expensive, the tax credit program is not subject to annual Congressional cuts faced by the HCV program (Affordablehousing, 2017). As the demand-side subsidies undergo Congressional cuts, tax credit developers will need to operate with greater efficiency and less reliance on voucher holders. Greater marketing efforts should be applied by tax credit developers to rent their units to a greater number of tax credit eligible tenants and rent less to voucher holders to break what could

be an increasing dependency on the declining voucher program. With the recently proposed funding cuts to the HCV program, the argument that Weisbach (2006) raised for replacing the tax credit housing program with the voucher program could prove questionable.

Revealed in a recent analysis of the LIHTC database was that developers targeted the higher income group more frequently over the past twenty years (Lew, 2016). Sustained profitability within tax credit housing requires a delicate balance between housing low-income tenants and generating adequate income. Bratt (2016) posited that the affordability of rental units should be driven by tenant incomes and the ability to pay. Johnson (2014) argued that rent levels are essential for maintaining the affordability of housing. The affordability component within the LIHTC program caused a strain on the profit margins of tax credit developments, resulting in the possible reliance on the voucher program and other additional funding streams in order to sustain profit margins (Hsu, 2015).

Profitability

Profitability is a measure of performance, which includes a level of financial knowledge. Financial performance has long been an indicator of a firm's success (Edgeman, Eskildsen, & Neely, 2015). Secondary data was used to examine firm profitability. Arguably however, calculations using financial ratios cannot address nonfinancial issues. Ahmad and Zabri (2016) used nonfinancial performance measures to investigate 102 Malaysian manufacturing firms. Edgeman et al. (2015) explained that the occurrence of nonfinancial issues is commonly due to organizational failure to implement

appropriate policies. Weaknesses due to nonfinancial issues should be addressed with organizational policies. Profitability is the dependent variable in this study and was measured by the ROA and gross operating profits financial ratios. Tan (2016) used ROA as a profitability indicator to successfully study 41 Chinese banks over a period of 8 years.

A non-experimental design was used in the study to examine profitability from secondary data as the dependent variable. With the use of a non-experimental design as a theoretical framework, profitability was used as a dependent variable by Temtime (2016) to examine the working capital of small and medium-sized enterprises. Multiple measures of profitability are needed to effectively gage firm performance (Abu-Shanab, Abu-Shanab, & Khairallah, 2015; Mas'adeh, Tayeh, Al-Jarrah, & Tarhini, 2015; Wang, Feng, & Lawton, 2016). The researchers noted that a more comprehensive perspective of firm performance is gained through the application of a multi-dimensional measurement approach versus the use of a single measurement. Multiple measures of profitability have been advocated to convey the diversity of stakeholder's interests (Falavi & Abdoli, 2015; Feng, Morgan, & Rego, 2015). Firm performance includes business financial and operational performance.

Edgeman et al. (2015) argued the traditional use of financial measures to determine firm success. Firm performance is also determined by means other than financial measures. Lazăr (2016) found that sales growth and value-added resulted in a positive effect on firm performance. Bhatia and Srivastava (2016) advocated the use of market-based measures in addition to accounting measures to gauge firm performance.

SRI and NRI are the independent variables in the study. These variables were examined to determine the degree of relationship between profitability, the dependent variable. SRI and non-rental income were also examined to determine whether the use of these indicators can predict profitability.

Construct Measurement

Measurement accuracy is often achieved with quantitative research, using statistical and mathematical approaches to develop and project experimental research findings (Campbell & Stanley, 2015; Gorard, 2015; McCusker & Gunyadin, 2015). The confidence in quality may be built in the discerning reader through the execution of a quality and rigorous study. The objective for researchers using qualitative research is to probe for why and how answers pertaining to the phenomenon (Yin, 2017). Measurement and discernment of quality in quantitative research is often evident and achieved rigorous construct measurement. The next section covers the review of the measurement variables for the constructs of SRI, NRI, and profitability.

Measures of subsidized rental income. SRI is a demand-side subsidy directly provided in the HCV program to low-income renters (Novogradac, 2014). The LIHTC is a supply-side subsidy that is indirectly provided for eligible renters for tax credit units (Hammett, 2015). Renters must meet 60% or below area median income (AMI) to qualify for the LIHTC program (Schwartz (2015).

For the study, SRI is rental assistance received by tax credit developers who house voucher holders. The rental assistance is provided in the form of HCV payments to the tax credit companies from local housing authorities. The income from voucher

holders is targeted by developers because higher payments are received from voucher holders and have the effect of increasing profitability (Hsu, 2015). When voucher holders are re-directed from the private market to tax credit housing, the effect could be that fewer LIHTC units are available for non-voucher holders. A primary focus of the study was to determine the degree of the financial impact that the HCV program (SRI) has on the LIHTC program.

The value for SRI is mined from 1099-Misc documents, secondary financial data sources. The reliability of secondary data sources was argued by Johnston (2014), who posited that researchers could collect data in a less obtrusive manner. Dunn et al. (2015) posited that secondary data was an efficient and effective approach in research. Tasic and Feruh (2012) noted that secondary data might not be appropriate to address a research question under study because the purpose of the original data collection may be different. The secondary data sources in this study aligned with the intended purpose. SRI was calculated as a percentage of total income, to potentially determine the degree of the financial impact that the voucher program has on the tax credit housing program.

Measures of nonrental income. Although rent restrictions lower development income, subsidy mechanisms have been put in place to support facility operations and debt service (Schwartz, 2015). NRI represents non-rental income that is generated by the tax credit development entity and is an independent variable. Nearly one-fourth of LIHTC developments operate below the break-even point (Hammett, 2015). The construct was calculated as a percentage of total revenue, and that percentage was converted as a value. The NRI variable was mined from the income section of the

independently audited financial statements. Rents and subsidies are frequently supplemented with NRI to sustain tax credit housing operations. Rent levels are essential for maintaining the affordability of housing (Johnson, 2014). NRI represents additional services and means on the part of tax credit developments to generate supplemental income with the intent of bolstering profitability.

Measures of profitability. The accounting measures of profitability in the study include ROA and GOP. These proxies were used to determine the degree of profitability for tax credit development companies (Kara et al., 2015), and posited that profitability could be measured from the accounting ratio and measure of ROA. Temtime (2015) argued the use of GOP as an effective accounting measure. The ROA is an accounting financial performance measurement (Kara et al., 2015). The ROA is a familiar measurement of profitability within accounting (Faello, 2015; Kara et al., 2015; Masadeh, 2015).

Wang et al. (2016) and Margaretha and Supartika (2016) argued that a more comprehensive perspective of firm performance is gained through the application of a multi-dimensional measurement approach versus the use of a single measurement. Falavi and Abdoli (2015) supported the use of multiple measures of profitability in conveying the diversity of stakeholder's interests. For the study, ratio analyses for the ROA and the GOP were applied to measure the profitability of low-income housing tax credit developments.

The ROA and GOP ratios are standard measures of profitability used in accounting**.** The ratios are used in this study to answer the research question: What is the

relationship between SRI, NRI, and profitability of the tax credit development industry? Both U.S. companies and non-U.S. companies use ROA as a measure of profitability. ROA is often used as a measure of profitability by non-U.S. firms (Enqvist, Graham, & Nikkinen, 2014). The fact that the ROA was not affected by various degrees of financial leverage was pointed out as a weakness (Enqvist et al., 2014).

Within this study, gross operating profit (GOP) was also used as a proxy for profitability. The degree of profitability for tax credit development companies was determined by the GOP ratio. Temtime (2016) used GOP as a proxy for profitability to examine the working capital of small and medium-sized enterprises. The ratio of GOP is derived from the formula of sales minus costs of goods sold to total assets minus financial assets, where financial assets are characterized as non-physical in nature (Enqvist et al., 2014). The GOP reflects the measure of a firm's operating efficiency to physical assets.

Reliability and validity properties of measurements. Reliability and validity are concepts of measurement and affect the rigor of research instruments and the trustworthiness of findings within a study (Sing, 2017). Researchers in economics and finance have experienced a proliferation of governmental and private databases, which has spurred the use of archival data. A decline in the use of laboratory studies and surveys has occurred while an increase has occurred in the use of archival data (Boyd, Bergh, Ireland, & Ketchen, 2013). Archival data for the independent variables of SRI and NRI and the dependent variable of profitability were used in this study to answer the

research question: What is the relationship between SRI, NRI, and Profitability in the low-income housing tax credit industry?

The use of secondary archival data sources has increased because of the expansion of electronic databases in the fields of finance and economics (Tasic & Feruh, 2012). Researchers used fewer surveys and laboratory studies from the 1980s to the 2000s, during which an increase occurred in the use of archival data (Boyd et al., 2012). The limitations in research design and methodology were experienced by Cotteleer and Wan (2016) in the use of archival data to examine a phenomenon. The reliability and validity of archival data must be ensured as greater reliance is placed on these sources. A detailed account of reliability and validity is provided in the following section.

Reliability is characterized by dependability and consistency in the measurement of variables (Du & Zhou, 2012). Researchers have a variety of ways to test reliability. The test-retest reliability is used to demonstrate the stability of a test in different sessions (Bolarinwa, 2015). Inter-rater reliability is used to evaluate different observers scoring an event using the same instrument (Bolarinwa, 2015). The split-half reliability analysis is a process of dividing question items into two groups in which scores are computed for each half and then examining their correlation (Du & Zhou, 2012). Other conventional reliability methods include the Cronbach's alpha coefficient and Confirmatory Factor Analysis (Sing, 2017). No objective statistical tests exist to evaluate the reliability and validity of archival data sources (Du & Zhou, 2012).

Measurement validity is described as the accuracy of the instrument to perform the intended measurements (Singh, 2017). Internal validity analysis is based on the

premise that variations in the dependent variable result from changes in the independent variables and refer to the accuracy of measurement obtained from the research (Bolarinwa, 2015). Internal validity is supported by analysis procedures that are credible. Construct validity refers to the extent to which an instrument measures the constructs that are intended to be measured (Aravamudhan, & Krishnaveni, 2016). A lower degree of measurement credibility is ascribed to an analysis that may indicate a lower construct validity (Tasic & Feruh, 2012).

Researchers use convergent and discriminant validity to demonstrate the correlation of scores on one measure with other measures of the same construct (Bolarinwa, 2015). Indicated within discriminant validity is the degree to which the test assesses the construct to be examined (Singh, 2017). Demonstrated within convergent validity is the extent to which a construct measure and other measures of the same construct are consistent (Duppong Hurley, Lambert, Epstein, & Stevens, 2015).

External validity may reflect how well the results of the research can be applied to groups and environments outside of the study (Bolarinwa, 2015). External validity often depicts a broader application of the results of the study. The reliability of secondary data sources is gauged from the credibility ascribed to the reports (Tasic & Feruh, 2012). Financial reports, as secondary data sources, were considered reliable by Du and Zhou (2012). Independent auditing firms verify and attest to the credibility of the financial statements. Quality indicators for financial statements include the process of independent auditing, attesting, and verification (Boyd et al., 2013). Although audited financial reports

are reliable sources, the reliability of the reports can be affected by computational errors, sample errors, and missing data (Du & Zhou, 2012).

Potential errors can occur with the use of secondary data. The occurrence of sampling error means that an equal chance of selection is not afforded to each element of the population (Tasic & Feruh, 2012). The purpose of the original data could have been reorganized to meet a purpose that is different from the current study (Johnston, 2017). Threats from secondary data sources can be mitigated when researchers use a random sampling technique and by confirming that the same measurements and units of analysis were used in the archival data sources (Tasic & Feruh, 2012).

Boyd et al. (2013) posited that the selection of secondary data proxies should be based on clear theoretical specifications of the constructs and variables. Boyd et al. further stated that the literature review should contain an explanation of the fit between the secondary data proxies and the theoretical constructs. The occurrence of missing data is less likely as it would be with survey and observation approaches because of the subjectivity of participants in the survey and observation techniques (Eisenhardt, Graebner, & Sonenshein, 2016; Slater, Joksimović, Kovanovic, Baker, & Gasevic, 2017). Encounters with missing data should result in the removal of the entire data record from consideration within the study and replacing the missing record with a new complete data record (Xu, Baldea, Edgar, Wojsznis, Blevins, & Nixon, 2015).

The use of secondary data sources, such as financial statements, has been questioned by some scholars (Du & Zhou, 2012). Financial reports were shown as reliable and dependable sources through literature review. Miller (2016) and Temtime

(2016) used archival financial data to conduct their doctoral studies. Johnston (2017) noted that the reliability of financial reports is often based on that external and independent entities have already audited, verified, and attested to the accuracy of the financial data.

Profitability Study Methodologies

Creditors, investors, and financial analysts make decisions based on the reliability of audited financial reports (Johnston, 2017). Researchers use a variety of methods to measure firm performance. Profitability has been commonly examined through the lens of quantitative research. However, few researchers appear to have used qualitative research to explore profitability. Qualitative research was used by Gandy (2015) to explore the strategies small business owners used to achieve profitability by the end of the first 5 years from business establishment. However, based on an extensive review of literature, the standard in the study of profitability generally favored by researchers included quantitative research. Temtime (2016) used a quantitative correlation design to examine the relationship between working capital management, policies, and profitability. Researchers, therefore, predominantly used quantitative research, invariably using a non-experimental design to examine profitability.

Transition

Section 1 reflects descriptions of the general and specific business problems, as well as the purpose, nature, and significance of the study to provide a foundational basis for the research. The review of prior study models may show that a quantitative research method, correlation design, and archival data available through public entities are

appropriate to examine the relationship between SRI, NRI, and profitability. Also included in Section 1 was a review of academic and professional literature on the topic of inquiry and the theoretical framework, study constructs and variables, research measurements, and methods and designs. Assumptions, limitations, and delimitations related to the study were also discussed in Section 1.

Section 2 includes discussions regarding the role of the researcher, the rationale and justification of research data source mining, and the research method and design selection. Section 2 also includes a restatement of the purpose statement, specific details on population and sampling, ethical research instrumentation, data collection, and analysis techniques, and the validity of the study. Section 3 includes the results and findings of the research, the application to professional practice and the implication for social change from the possible contribution of knowledge that the study may hold for the community of renters and the providers of low-cost housing.

Section 2: The Project

The purpose of this quantitative correlational study was to examine the relationship between SRI, NRI, and profitability of the tax credit development industry. In Section I, I provided an explanation of the general business problem and the specific business problem. Section 2 includes details on conducting the study: (a) the role of the researcher, (b) qualifications of participants, (c) methodology, (d) tools used in data collection, and (e) study validity.

Purpose Statement

The purpose of this quantitative correlational study was to examine the relationship between the independent variables of SRI and NRI and the dependent variable of profitability as it pertained to tax credit housing developers. The targeted population consisted of tax credit housing companies in the state of Florida. The implications for positive social change include the contribution to knowledge, which could advance the ability to offer affordable housing to the economically disadvantaged in society. The study findings may also provide tax credit housing developers with an improved understanding of the association between SRI, NRI, and profitability, which may benefit low-income tenants. With an improved understanding of the relationship between SRI, NRI, and profitability, the potential for positive social change could include the development of more affordable housing by developers to meet the needs of low-income tenants.

Role of the Researcher

This quantitative correlational study was undertaken by analyzing archival data from financial statements and 1099 documents. The financial statements of tax credit documents were requested from the Florida Housing Finance Corporation, which administers tax credit developments within the state of Florida. The 1099 documents, which reflect annual payments to these entities, were requested from public housing authorities in the state of Florida. These agencies are required by law to honor a public records request; therefore, data collection for this study did not pose difficulties. Email was used to request and receive financial documents.

Multiple regression analysis was used to examine the data and determine the degree and extent of any correlations between SRI, NRI, and profitability. I (a) collected the data for the variables, (b) organized the data on an Excel spreadsheet for the year 2014, (c) and imported the data into Statistical Package for the Social Sciences (SPSS) quantitative analytical software. The data collection efforts involved retrieving secondary data for the independent variables of SRI and NRI, and the dependent variable of profitability for the 31 tax credit developments that constituted the sample population.

I participated in all facets of the study, which included (a) ensuring appropriate storage of data, (b) ensuring data integrity, and (c) assuring confidentiality. I reviewed the Belmont Report protocol and completed the Protecting Human Research Participants training by the National Institutes of Health Office of Extramural Research. Statistical analysis results were used to assess the significance of the correlation between the dependent and independent variables (see McCusker & Gunyadin, 2015). Analysis of the

relationships was based on the degree of covariance found between the correlated independent variables.

Researcher bias can occur in any stage of the data collection process and may cause a misrepresentation of the study findings (Tasic & Feruh, 2012). My role as a researcher aligned with standardized academic protocols established by Walden University and its Institutional Review Board (IRB). The method, analysis, and conclusions of a study are ensured with the alignment of established IRB protocols. Implementing measures to ensure the validity and reliability in this study helped ensure that data analysis was robust and rigorous. The intent of the study was to examine the degree and extent of any positive, negative, or lack of correlation between SRI, NRI, and profitability of tax credit developments.

Data were entered from the census population into SPSS. The research question and hypotheses were addressed based on an analysis of the data from the correlation testing. To avoid bias, I maintained the confidentiality of participating tax credit companies and avoided subjectivity throughout the data analysis process (see Tasic & Feruh, 2012).

Participants

This study did not involve the recruitment of individuals as study participants because the aim was to collect and analyze secondary data from a sample of tax credit developments that had a minimum of 200 units and operated in the state of Florida for the year 2015. The eligibility criteria for the tax credit developments to merit inclusion in the study were the following: (a) active status within the low-income housing tax credit

program in 2015 and (b) financial documents containing income statements, balance sheets, and 1099 Misc. forms for 2015.

The strategy to access the data included requests via email to the Florida Housing Finance Corporation and officials of public housing agencies. The clerk for the Florida Housing Finance Corporation was contacted for a listing of low-income housing tax credit companies. After selecting the sample firms, I requested financial statements from the Florida Housing Finance Corporation. Public housing authority officials of the sample firms were contacted for 1099 Misc. documents. The requested documentation from these agencies was received either by email or regular mail. As noted by Johnson (2014), Miller (2016), and Temtime (2016), archival financial reports can be used to test hypotheses and answer research questions.

Research Method and Design

I chose a quantitative correlational design to examine the relationship between SRI, NRI, and profitability of tax credit developments. Researchers may choose from quantitative, qualitative, and mixed methodologies to conduct research (McKim, 2015). Quantitative and qualitative methodologies are the two primary research methods, and mixed-method is a combination of the two (Fetters & Molina-Azorin, 2017).

Research Method

I used a positivist philosophy and a quantitative method instead of qualitative and mixed methods to conduct the study. Researchers who have a positivist worldview are often inclined to use quantitative methodology in the social or natural sciences (Yin, 2017). Quantitative methodology is favored when researchers seek to examine

relationships between variables, which may include making predictions (Babones, 2016; Onen, 2016).

The use of the quantitative methodology was justified in support of the need to test a relationship between SRI, NRI, and profitability within the tax credit development industry. Statistical testing may provide answers regarding the strength and degree of positive or negative relationships, or a lack thereof, between the independent and dependent variables. The objective for researchers using qualitative methods is to probe for answers to why and how questions pertaining to the phenomenon, rather than providing conclusive results from statistical or mathematical testing (Ott & Longnecker, 2015; Rahn, 2016; Yin, 2017).

The need for conclusive results based on experimental testing rendered the qualitative method inappropriate for the study. Within quantitative methodology, a hypothesis or theory is tested to explain relationships between dependent and independent variables (Babones, 2016; Simpson & Lord, 2015). The selection of a research method is based on the research question as well as external and internal conditions of validity (Fetters & Molina-Azorin, 2017).

Researchers may choose to use the mixed-methods approach when ambiguity exists within the statistical data (Fetters & Molina-Azorin, 2017). The intent of researchers using a mixed-methods approach is to gain a better understanding of the phenomenon by including both qualitative and quantitative methods of research (Humphreys & Jacobs, 2015; Schoonenboom, 2017; Stockman, 2015; Venkatesh, Brown & Sullivan, 2016). Requirements in terms of additional time and integration of skills for

the different methods rendered the mixed-methods approach inappropriate for this study (see Mckim, 2015). Because only numerical analysis was used for this study, a mixed-methods approach was not appropriate.

Experimental and nonexperimental are two types of quantitative designs used to test the validity of a hypothesis (McCusker & Gunyadin, 2015). Correlational research is included in nonexperimental designs and often involves an examination of relationships between two or more nonmanipulated variables (Fetters & Molina-Azorin, 2017).

The research question for this study addressed the possible correlational relationships between SRI, NRO, and profitability. A numerical interpretation of a specified relationship is established in quantitative studies rather than an attempt to provide an explanation of the data (McCusker & Gunyadin, 2015). Quantitative research provides results from statistical or mathematical testing (Yin, 2017). The quantitative method with a correlational design was appropriate for this study. Researchers use quantitative methods with a correlational design to measure variables and to test hypotheses while addressing research questions (Fetters & Molina-Azorin, 2017).

Research Design

Experimental and nonexperimental quantitative research designs were considered for this study. The selection was guided by the purpose of the study. Experimental designs are used to establish a cause-and-effect relationship and include random sampling and manipulated data (McCusker & Gunyadin, 2015). The study was nonexperimental with no (a) manipulation of variables, (b) random sampling, or (c) data to determine a cause-and-effect relationship. The nonexperimental design was the appropriate choice for

the study because it aligned with the purpose of the study, which entailed hypothesis testing to examine the correlation between variables.

A correlational design for testing hypotheses was useful to determine the degree and extent of any positive or negative, or a lack thereof, the correlation between the independent variables of SRI and NRI and the dependent variable of profitability of tax credit developments. A correlational design is categorized as a nonexperimental design, which also includes causal-comparative and descriptive (McCusker & Gunyadin, 2015; Park & Park, 2016; Reio, 2016). Based on the need to examine relationships between variables, a correlational design was appropriate for this study (see Wagner, 2017). With the application of an appropriate research design, suitable research methods can be applied to hypotheses in a study (Fetters & Molina-Azorin, 2017). The current focus was on the research question addressing the correlation between SRI, NRI, and profitability of tax credit developments.

Population and Sampling

The population for this study was LIHTC developments in the state of Florida for the year 2015. Listings of LIHTC developments in the state of Florida are available through the Florida Housing Finance Corporation. Records of financial statements and 1099 Misc. documents from Florida Housing Finance Corporation and public housing agencies for the year 2015 were used to examine the relationship between SRI, NRI, and profitability. Archival data were mined from the financial records of the sample population to answer the research question. The population was appropriate for this study because LIHTC companies use SRI and NRI as components of profitability (Johnson,

2014: Hsu, 2015). The data needed to answer the research question and test the hypotheses were publicly available.

The sample for the study consisted of financial data for 31 tax credit housing developments in the state of Florida for 2015. Samples must be large enough for correlations to be established between variables, must be aligned with techniques for data analysis, and must be representative of the population (Wagner, 2017). Random probability sampling was used because selection bias and skewed results were minimized, and because of the potential for high internal and external validity (see McCusker & Gunyadin, 2015). I examined financial records drawn from the population of 1,050 records, and I used a sample of 31 tax credit developments with 200 or more units within the state of Florida.

The data for SRI, NRI, and profitability were mined from income statements, balance sheets, and 1099 Misc. forms. Researchers use effect size and value for small, medium, and large to determine the sample size for a population (Tabachnick & Fidell, 2013). I used a power test analysis to calculate the minimum sample size required for the study, as suggested by Greenland et al. (2016). The sample size generated by G*Power 3.10 software for conducting a one-tailed test (see Faul et al., 2009) in which $\alpha = .05$, power = .80, and effect size = .42 (large) was 31 (see Figure 1).

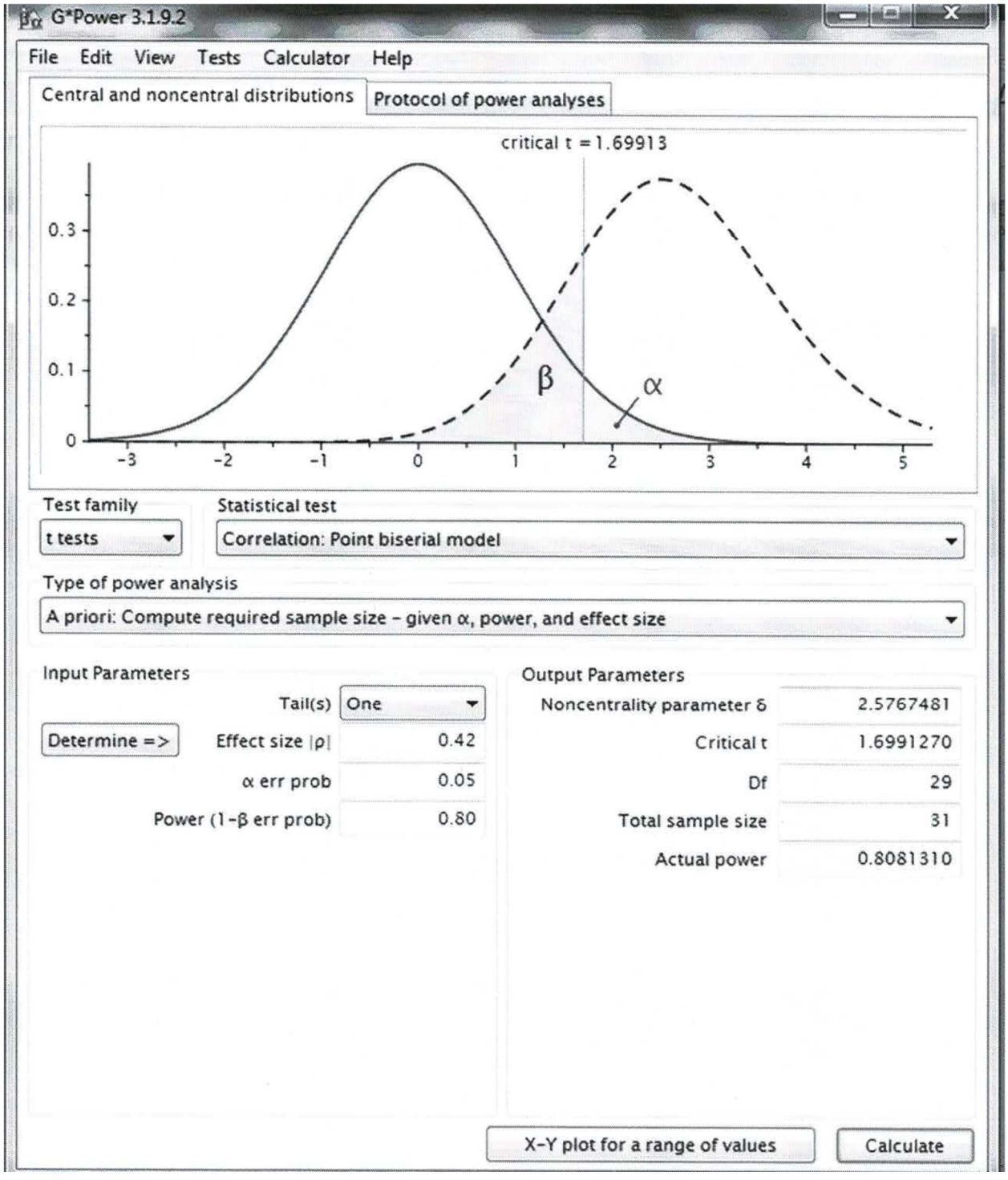

Figure 1. A priori sample size (*N* =31) generated by using the free G*Power 3.1 software by Faul et al. (2009).

Ethical Research

Respect, beneficence, and justice are terms described in the Belmont Report (USDHH, 2015) as the essential guidelines for ethical research. Wallace and Sheldon (2015) noted that some elements for ethical research include (a) voluntary participation, (b) confidentiality, (c) informed consent, (d) protection of vulnerable populations, and (e) harm protection. Voluntary participation, informed consent, and freedom to withdraw from participation align with the imperative of ensuring respect to participants (Wallace & Sheldon, 2015). Protection of vulnerable populations, avoidance of harm, and confidentiality fall under the category of beneficence; informed consent and voluntary participation refer to Justice (Wallace & Sheldon, 2015). The elements did not apply to the study because the data were mined from secondary sources. Protection and confidentiality of mined data was maintained through the coding of participating tax credit companies during and after the stages of data analysis

There was no need for an agreement with representatives of tax credit developments because all the information needed for the study consisted of publicly available secondary data. Johnston (2017) noted that ethical considerations are minimal with research using secondary data. Because no human subjects were directly involved in the research, there should be minimal potential for ethical threats. However, ethical concerns can be raised by biases in collecting and analyzing data (Tasic & Feruh, 2012). The data were sanitized by the removal of all identifiers as all names of companies on the tables were replaced with numerical codes. Access to all data was in the sole control of the researcher. I saved the data on a USB drive, and it will be secured in a locked safe for

five years from the official completion date of the study. After this date, all text data will be shredded, and electronic files destroyed by program deletion using the Active@ KillDisk. The IRB must approve research studies as mandated by the governing board of Walden University to ensure compliance in accordance with the requirements of the rubric (Walden University, 2016). Walden University's approval number for this study was 10-30-19-0544500. I have reviewed the Belmont Report protocol, and as required, completed Protecting Human Research Participants training by the National Institutes of Health Office of Extramural Research.

Data Collection Instruments

No formal instrument was used in the study as data were extracted, mined, and analyzed from existing financial records**,** audited financial statements, and 1099-Misc forms of tax credit developments from the state of Florida. Income statements and balance sheets were used to determine ROA and GOP, proxies for the dependent variable profitability. SRI and NRI are the two independent variables. SRI is reflected in the 1099 Misc. Forms as payments on behalf of residents from public housing agencies to tax credit developments. NRI includes receipts for laundry, vending, and other activities reported on the income statement. The mining of secondary data sources could uncover new insights that may have been passed over and not examined by other researchers and analysts. Raw data were available from the researcher upon request.

Instrumentation

Data for this study were collected from two secondary sources used in the operations of tax credit developments: audited financial statements and 1099 forms of the

sample 31 tax credit developments. Clear theoretical specifications of the constructs and variables should be the basis for selecting secondary data proxies (Boyd et al., 2012). SRI, an independent variable, is embedded within the income of audited financial statements. Because it is not a separate income line item, the data must be mined from the 1099-Misc forms. The form reflects the aggregate dollar value of rental assistance paid to the tax credit developments by public housing agencies on behalf of low-income tenants.

Audited financial statements and 1099-Misc forms are accessible by the public, and available upon request. The IRS requires each tax credit development company to prepare and file annual financial reports that follow the Generally Accepted Accounting Principles (GAAP) and laws governing financial and accounting reports. An independent auditing firm verifies and attests to the credibility of the financial statements, as was true of the records from the 31 sample tax credit housing companies.

The financial reports were appropriate sources of information to measure the constructs of SRI, NRI, and profitability for several reasons. First, audited financial statements and the 1099-Misc forms contain all the relevant information to operationalize the constructs to be studied, contain answers to the research question, and can be used to test the hypotheses. Second, from a historical standpoint, researchers are provided the capability to examine the study within the context of events that have already occurred (Johnston, 2017). Third, when the organization is used as a unit for analytical purposes, financial reports provide reliable measures. Fourth, financial metrics are necessary tools for performance evaluation. Last, creditors, investors, and financial analysts make decisions based on the reliability of audited financial reports (Johnston, 2017).

Subsidized Rent Measure

SRI represents federally provided funds to households whose incomes range between 80% and below area median income (HUD, 2015b). Tenants are provided a payment standard based on household size from HUD with which to rent housing from tax credit developers and private landlords. For this study, the payment to tax credit developers on behalf of voucher holders was termed SRI. SRI is an independent variable and was calculated as a percentage of total revenue earned by tax credit companies. The percentage was converted to a value to test the hypotheses. Some tax credit developments may reflect SRI, while others may not. A higher ratio would likely indicate a greater reliance on SRI to support the operations of the tax credit development, and conversely, a lower ratio would indicate a lesser dependence on the variable. The following ratio was used in computing SRI:

$$Subsidized\ rental\ income\ value = \frac{Subsidized\ rental\ income}{Total\ Revenue}$$

Nonrental Income Measures

NRI, an independent variable, represents income that is not derived from rents generated by the tax credit development entity such as laundry and vending. The amount was calculated as a percentage of total revenue, and that percentage was converted to a value. The NRI variable was mined from the income section of the independently audited financial statement. The existence of NRI data was revealed through the examination of income statements from the 31-sample tax credit housing companies. A higher ratio would indicate a greater reliance on NRI to support the tax credit development, and

conversely, a lower ratio would indicate a lesser dependence on the variable. The following ratio was used in computing Non-income rental value:

$$Non - Rental\ Income\ value = \frac{Non - Rental\ Income}{Total\ Revenue}$$

Profitability Measures

The interests of stakeholders are reflected by profitability (Margeretha & Supartika, 2016). Multiple measures of profitability have been advocated by Falavi and Abdoli (2015) and Feng et al. (2015) to convey the diversity of stakeholder interests. A more comprehensive perspective of firm performance is gained through the application of a multi-dimensional measurement approach versus the use of a single measurement (Wang et al., 2016). Multiple calculations of measures of profitability were used in this study to reflect the interests of stakeholders of tax credit development companies. The ROA and GOP were used as independent variables to measure the construct of profitability. ROA is a ratio that reflects net income to total assets (Faello, 2015), as denoted by the following formula, to be used in this study.

$$Return\ on\ Asset\ (ROA) = \frac{Net\ profit}{Total\ Asset}$$

The ratio of GOP is derived from the application of sales minus costs of goods sold to total assets minus financial assets (Enqvist et al., 2014). Financial assets are characterized as non-physical in nature. A higher GOP reflects a better return (Ukaegbu, 2014). Because tax credit development companies fall within the service industry, gross

income or total revenue was used as the numerator, which is equivalent to sales minus cost of goods sold within the industry, as reflected in the following formula:

$$Gross\ Operating\ Profit, GOP = \frac{Sales - Cost\ of\ Goods\ Sold}{(Total\ Assets - Financial\ Assets)}$$

Table 2

Research Constructs, Variables, and Measures

Constructs	Variables	Measures
Subsidized Rental Income	Subsidized Rental Income (SRI)	$\frac{Subsidized\ Rental\ Income}{Total\ Revenue}$
Non-rental Income	Non-rental Income (NRI)	$\frac{Other\ Income}{Total\ Revenue}$
Profitability	Return on Asset (ROA)	$\frac{Net\ Profit}{Total\ Asset}$
	Gross Operating Profits (GOP)	$\frac{Sales - Cost\ of\ Goods\ Sold}{(Total\ Assets - Financial\ Assets)}$

Financial statements are invariably independently audited, verified, and attested as reliable sources (Boyd et al., 2013). Research quality is indicated by the reliability and validity of measurement instruments (Singh, 2017). Researchers are admonished to provide controls for potential sources of error and can convey the reliability and validity properties of the measurements (Tasic & Feruh, 2012). Reliability is characterized by dependability and consistency in the measurement of variables (Du & Zhou, 2012).

Although audited financial reports are reliable sources, their reliability can be affected by computational errors, sample errors, and missing data (Du & Zhou, 2012).

The occurrence of sampling error means that an equal chance of selection is not afforded to each element of the population (Tasic & Feruh, 2012). To address possible sampling errors in this study, I (a) used random sampling, (b) ensured that no changes had occurred from the original financial statements to the date and time of retrieval and access, and (c) personally checked for incorrect and missing entries. Missing and incomplete data were replaced. The inclusion of all the data for a given period ensures there is no chance of selection bias.

Measurement validity refers to the functionality of an instrument based on its design (Tasic & Feruh, 2012). Du and Zhou (2012) postulated that there are usually no objective statistical tests to evaluate the reliability and validity of archival data sources. However, I (a) used prior studies to guide and follow a rigorous process to select the secondary data proxies, (b) ensured that the theoretical specifications of the study variables were precise, and (c) ensured that the measurement variables aligned with the theoretical constructs.

Data Collection Technique

The aim of this correlation study was to examine the potential relationships between the independent variables of SRI, NRI, and the dependent variable of profitability within the tax credit housing development industry. Upon obtaining IRB approval, I collected data through email requests for audited financial statements and 1099 forms of the 31 sample tax credit developments from the Florida Housing Finance Corporation and from public housing authorities. The population from which the sample was drawn consists of 1,050 tax credit developments within the state of Florida. A power

test analysis should be used to calculate sample size in quantitative research (Greenland et al., 2016). The sample size generated by G*Power 3.10 software for conducting a 1-tailed test in this research (Faul et al., 2009) where $\alpha = .05$, power = .80, and effect size = .42 (large) was 31 (see Figure 1, page 49).

The examination of financial documents to evaluate company performance is akin to the data collection technique that financial analysts and investors use to analyze the performance of publicly traded firms (Johnston, 2017). The use of secondary data sources, such as financial statements, has been questioned by some scholars. However, financial reports were shown as reliable and dependable sources through extensive endorsements found in reviewing pertinent literature. Financial reports were considered reliable data sources by Miller (2016) and Temtime (2016). Archival financial data were used by Brown (2018) and Tannous (2018) to conduct their doctoral studies. These researchers have considered archival data sources as reliable and dependable.

The sample of 31 tax credit companies containing 200 or more units was drawn from a population of 1,050 developments within the state of Florida. The sample size generated by G*Power 3.10 software for conducting a 1-tailed test in this research (Faul et al., 2009) where $\alpha = .05$, power = .80, and effect size = .42 (large) was 31 (see Figure 1). The Florida Housing Finance Corporation, a public entity charged with administering the low-income housing tax credit program, is a repository of financial data for tax credit developments. The initial step in collecting secondary data must be to ensure that the data is relevant and can be used to answer the research question (Tasic & Feruh, 2012). The second step in secondary data collection included (a) assembling and populating mined

data from financial documents into a Microsoft Excel Spreadsheet, (b) calculating the measures for SRI, NRI, ROA, and GOP variables for the calendar year 2015, and (c) importing the values of the independent and dependent variables to SPSS for analysis.

Tasic and Feruh (2012) posited that rigorous analysis is achieved when researchers have comparable and consistent financial data across companies. Johnston (2017) provided several arguments supporting the use of secondary data sources: (a) secondary data are economical as researchers could bypass data collection and instrument creation by mining data from existing sources, (b) secondary sources are reliable because the data can be collected in a less obtrusive manner, (c) secondary data proxies are more advantageous in minimizing biases than informant-sampling approaches, and (d) secondary data sources are used by researchers to overcome the barriers of accessing the research setting. Johnston (2017) argued that the use of secondary data in the absence of human subjects minimizes biases. Identifiers were removed from documents. No information was presented in the study that would compromise the confidentiality and identity of the entities analyzed.

Table 3 shows an example of raw data from financial documents.

Table 3

Example of Raw Data Imported From Audited Financial Statements and 1099-Misc Forms for Company 010

Company Code 010	2013	Variables	Values	Units
Subsidized Rental Income	$6,528	SRI	0.00	320
Non-rental Income	$306,814	NRI	0.08	
Total Assets	$38,879,041	ROA	-0.03	
Total Revenue	$3,684,939	GOP	0.10	
Total Financial Assets	$2,642,728			
Net Income / Loss	($1,250,331)			

Data usage from archival documents will likely be beneficial in reducing the cost of data collection, reducing the time required for data collection, and improving data reliability (Johnston, 2017). The authors further argued that conceptual-substantive reasons are used to justify secondary data as the information may be the only data available for the study of a problem. For this study, the preferable method for collecting data was to use existing data sources. The study data are secured in a locked safe for a period of 5 years from the date of publishing this doctoral study. Table 4 shows an example of the relevant variables.

Table 4

Example of Measures of Research Variables

Code	SRI	NRI	ROA	GOP	# of units
1	0.02	0.04	0.01	0.13	Units 336
2	0.01	0.06	(0.06)	0.15	Units 246
3	0.01	0.06	(0.05)	0.13	Units 212
4	0.01	0.06	0.02	0.18	Units 292
5	0.00	0.08	(0.03)	0.1	Units 320
6	0.01	0.08	(0.02)	0.08	Units 264
7	0.03	0.07	(0.01)	0.19	Units 300
8	0.12	0.06	(0.02)	0.09	Units 234
9	0.14	0.07	(0.40)	0.24	Units 360
10	0.35	0.06	0.00	0.04	Units 340
11	0.02	0.00	(0.03)	0.25	Units 376

Note. SRI = Subsidized Rental Income, NRI = Non-rental Income, ROA = Return on Asset, GOP = Gross Operating Profit.

Table 5

Example of Calculation of Research Variables

Mined Raw Data	Values	Variables	Calculated Data
SRI	$27,905	SRI	$0.01
NRI	$237,059	NRI	$0.07
Total Revenue	$3,195,654	ROA	-$0.00
Total Assets	$21,384,996	GOP	$0.16
Total Financial Assets	$1,572,425		
Total Assets Less Financial	$19,812,571		
Net Income / Loss	-$92,351		

Note. SRI = Subsidized Rental Income, NRI = Non-rental Income, ROA = Return on Asset, GOP = Gross Operating Profit.

Data Analysis

This study was designed to answer the research question: What is the relationship between SRI, NRI, and profitability? The central hypothesis of the study was: There is no significant relationship between SRI, NRI, and profitability in the low-income housing tax credit development industry. The independent variables were SRI and NRI; the dependent variable is profitability.

Data quality of financial statements was confirmed through the process of independent auditing, attesting, and verification. Independent auditors are required to certify the reliability of financial statements (Du & Zhou, 2012). In addition to the importance of descriptive, correlation, and regression analysis to answer the research

question and test the null hypothesis, Xu et al. (2015) noted that data editing and cleaning are also necessary steps to confirm the quality of data.

Tabachnick and Fidell (2013) emphasized that the selection of a statistical analysis technique is based on the type of research question, the number of variables in the research, and the measurement scale. Data editing and cleaning are quality measures used to verify the completeness, consistency, and accuracy of data (Xu et al., 2015). Different approaches to data collection require different techniques for data screening (DeSimone, Harms, & DeSimone, 2015; Lin, Shen, Chen, & Sehldon, 2017; Sleeper et al., 2017).

The process of data cleaning included checking for inaccurate or missing information within the dataset, such as duplicate entries, and applying corrective actions. Any encounters with missing data resulted in the removal of the entire data record from consideration within the study and replacing the missing record with a new complete data record, an approach suggested by (Xu et al., 2015). Replacement or removal of outliers is another aspect of data cleaning (Tabachnick & Fidell, 2013).

Descriptive analyses were calculated to examine raw data in a form that is easier to understand and interpret. Descriptive statistics were used to show the mean and standard deviation for SRI, NRI, and profitability of the sample 31 tax credit housing developments. Data interpretation is generally facilitated using descriptive analyses (Tabachnick & Fidell, 2013). Detection of data abnormalities and understanding of data characteristics are achieved using descriptive analyses. Graphical illustrations were used in the study. Tabachnick and Fidell (2013) advocated the use of graphical displays such

as charts, frequency tables, and scatter plots as necessary tools for visual checking of normality. The use of the Shapiro-Wilk test is recommended to evaluate the normality assumption (Tabachnick & Fidell, 2013).

Correlation analysis is important to determine the strength and direction of the relationship between SRI and NRI to profitability. The ratio Return on Assets was used as a proxy for profitability to examine the correlations between SRI and NRI. Gross operating profit was used as the other proxy for profitability to examine the correlations between SRI and NRI. A correlation coefficient is used to measure and establish a linear relationship between SRI, NRI, and profitability. The correlation coefficient is presented as values from -1 to +1 (Greenland et al., 2016). A correlation coefficient close to -1 indicates a strong negative relationship, a correlation coefficient close to +1 indicates a strong positive relationship, and a correlation coefficient of zero indicates that no relationship exists between the variables (Greenland et al., 2016).

Correlation analysis was also used to help test the assumptions of linearity, normality, multicollinearity, autocorrelation, and homoscedasticity. Multicollinearity was evaluated by examining the correlation coefficients collinearity coefficients. The bivariate correlation between SRI and NRI was examined. An acceptable level (1,000), which would indicate no violation of the assumption of multicollinearity. An evaluation was completed of the normality, linearity, homoscedasticity, and independence of residuals by examining the normal probability plot (P-P) of the regression standardized residuals and the scatterplot of standardized residuals for both proxies of the independent variable. A visual inspection of the normal probability plot was undertaken to determine

whether or not the normality assumption for ROA and GOP are violated. When the residuals are in a somewhat straight-line pattern, the indication is assumed of the absence of serious violations to the assumptions of normality. The scatterplot of the dependent residuals was examined to determine the presence of a dispersed data set with limited or no visible pattern, which would indicate no gross assumptions violation.

Features in SPSS, such as the normal probability plot (P-P) and the scatterplot, are useful tools to examine linearity, homoscedasticity, and normality. Violations of statistical assumptions can be addressed with the application of bootstrapping and a series of other measures. Multicollinearity is described as a condition in which the independent variables are highly correlated with values of .80 or higher, and singularity is described as conditions in which the predictor variables reflect perfect correlation (Vatcheva, Lee, McCormick, & Rahbar, 2016). SPSS output on the correlation matrix is used by researchers to observe the correlation coefficients among the independent variables in their examination of multicollinearity and singularity (Boyd et al., 2013). The assumption of multicollinearity is also tested by researchers in the use of variance inflation factors (VIF) and tolerance indices (Yu et al., 2015), and were likewise in this study as well.

The results of the study contained computations and reporting of all Variance Inflation Factors and tolerances of variables, which measures violation of the assumption of multicollinearity. SRI and NRI may affect profitability simultaneously, and therefore, independently measuring the effect of each variable on profitability through only correlation analysis would yield an incorrect result. Multiple regression analysis is a statistical procedure used to test the hypothesized simultaneous relationship between the

study variables (Harrell, 2015; Montgomery, Peck, & Vining, 2015). Analysis of variance (ANOVA) and Chi-square tests are inappropriate for the research. ANOVA and Chi-square tests are geared toward evaluating the effects of different interventions and group differences on the dependent variable (Wagner, 2017). The predictor variables in a study are continuous and not categorical (Greenland et al., 2016). Lastly, the purpose of the research was not to analyze variances among different groups, but rather to determine whether a relationship existed between the independent and dependent variables. The regression coefficient, R^2, indicates the power of the independent variables in explaining the variances in the dependent variable (Tabachnick & Fidell, 2013). The percentage of variance in the data is demonstrated by the coefficient of determination within the regression model (Harrell, 2015).

The size of the beta coefficients for the independent variables and their R^2 values were examined and statistically analyzed by using *F* tests to see whether they contribute to improving the predictive efficiency of the equation. If the test shows a statistical significance level greater than 0.05, it would indicate a lack of significant relationships (Greenland et al., 2016). The coefficient of determination can have values ranging from -1, which indicates a perfect negative correlation between variables to +1, which indicates a perfect positive correlation between variables and a correlation coefficient of zero which reflects that the variables have no relationship (Greenland et al., 2016). In this study, I used IBM SPSS version 21 to complete the statistical analysis. The analysis and interpretation were reflected in the study. SPSS is a commonly used statistical software in

academic research (Boyd, 2013; Wagner, 2017). The data were secured on a flash drive, and a summary of findings is provided in the manuscript of this research

Study Validity

Validity related to quantitative research includes three general types: measurement validity, design validity, and inferential validity (Singh, 2017). Measurement validity refers to the quality of the instrument and how well the instrument performs its intended function. There are no instruments in the current study; therefore, measurement validity was not applicable. Data were mined from the income statements, balance sheets, and 1099 Misc. documents of tax credit housing companies for the year 2015. Total revenue, net income, and NRI were mined from the income statements; total assets and nonfinancial assets were derived from the balance sheet, and SRI were drawn from the 1099 Misc. documents. The data were used to calculate and examine the independent variables, SRI and non-rental income, and the ratios ROA and GOP, proxies for the dependent variable profitability. Internal and external validity are included in design validity; both are applicable to the study, as well as statistical validity**.**

External validity refers to how well the results of the research can be generalized to similar groups and environments outside of the study (Mckibben & Silvia (2016). Mckibben and Silvia (2016) described external validity as the accurate interpretation of outcomes to reflect the truth in the objective world. The application of a random probabilistic sampling strategy would indicate a strong external validity. The focus of external validity is a broader application of the results of the study. Bolarinwa (2015) posited that researchers obtain a representative sample of the target population as an

effective strategy to mitigate threats to external validity. As proposed by Mckibben and Silvia (2016), potential threats to external validity should be addressed, and the results of research should be validated. I employed a sample ($N = 31$) of tax credit housing companies, which is adequate to generalize the results to a broader population**.**

The internal validity is applicable for quantitative and quasi-experimental designs because it refers to approximate truth about causal relationship interferences. Internal validity is only relevant in experimental and quasi-experimental studies in which a causal relationship is sought (McCusker & Gunyadin, 2015). Threats to internal validity were not applicable because the research was a nonexperimental correlation study. However, threats to statistical conclusion validity were identified.

Inferential validity or statistical conclusion validity refers to how legitimate the correlation is between the dependent and independent variables (Gözü, Anandarajan, & Simmers, 2015). Threats to statistical conclusion validity are described as low reliability of the measure, sample size, and assumptions derived from the data (Call-Cummings, 2017). Descriptive, correlation, and multiple regression are analysis tools frequently used to mitigate the threats to validity (McCusker & Gunyadin, 2015). Type I error is defined as the probability of incorrectly rejecting the null hypothesis, and Type II error is defined as falsely accepting the null hypothesis (Johnston et al., 2017). Threats to statistical conclusion validity are minimized by quantitative researchers selecting the appropriate value of significance (p-value) for the study (Gözü et al., 2015).

Prior to conducting the statistical tests, relevant assumptions of the study were addressed. Assumptions relevant to multiple regression tests were identified by Lopez,

Valenzuela, Nussbaum, and Tsa (2015) as (a) variables are normally distributed, (b) a linear relationship between the dependent variable and the independent variables, (c) the residual is homoscedastic, indicating the independent variables have equal variance of errors and (d) reliability of the measurement. With the violation of any of the assumptions, the threat to a statistical conclusion would increase. An appropriate level of significance is helpful in minimizing the risk of a Type I error. Typically, business researchers apply an α-value of .05 and represent what I used in the study (Greenland et al., 2016; Sing, 2017).

Transition and Summary

Section 2 includes the purpose of the study, the role of the researcher, and the research method and design selection. Section 2 also includes details of the population and sampling, ethical research, instrumentation, data collection and analysis techniques, and the validity of the study. The rationale for selecting a quantitative research method, correlation design, and archival data to examine the relationship between SRI, NRI, and profitability was also addressed in Section 2. Section 3 includes a discussion of the results and findings of the research and the application to professional practice. The implications for positive social change and recommendations for action are also included in Section 3.

Section 3: Application to Professional Practice and Implications for Change

Introduction

The purpose of this quantitative correlational study was to examine the relationship between SRI, NRI, and profitability among LIHTC companies in the state of Florida for the year 2015. I collected financial data from the Florida Housing Finance Corporation and from public housing authorities regarding the relationship between SRI, NRI, and profitability. The research question for this study was the following: What is the relationship between SRI, NRI, and profitability? The hypotheses for the study were as follows:

H_0: There is no relationship between SRI, NRI, and profitability.

H_1: There is a relationship between SRI, NRI, and profitability.

The independent variables were SRI and NRI. The dependent variable of profitability was measured by ROA and GOP.

Two measures of profitability were used within the regression model computations. Based on the regression results, I failed to reject the null hypothesis, which indicated that a significant relationship did not exist between SRI, NRI, and profitability. Tax credit developers may gain knowledge in the identification of appropriate income streams that maximize profitability from the results of this study. Included in this section are (a) the presentation of findings, (b) application to professional practice, (c) positive social change implications, (d) recommendations for action and additional study, (e) reflection of my research experience, and (f) conclusion of the study.

Tests of Assumptions

The assumptions necessary to run multiple linear regression include nonmulticollinearity, normality, linearity, homoscedasticity, and independence of residuals. The results of the tests of assumptions are presented in this section.

Multicollinearity

Vatcheva et al. (2016) described multicollinearity as a condition in which the independent variables are highly correlated. The independent variables of SRI and NRI were examined with collinearity statistics to determine the correlation coefficients and the variance inflation factor. Researchers use correlation coefficients among independent variables to examine multicollinearity (Boyd et al., 2013). The assumption of nonmulticollinearity is also tested using variance inflation factors and tolerance indices (Yu et al., 2015). Multicollinearity was evaluated by examining the correlation coefficient collinearity statistics. The bivariate correlation between SRI and NRI was acceptable (1.000), indicating no violation of the assumption of multicollinearity. The variables also reflected a tolerance value of 1.000 and a variance inflation factor value of 1.000.

Normality, Linearity, Homoscedasticity, and Independence of Residuals

An evaluation was completed for the normality, linearity, homoscedasticity, and independence of residuals by examining the normal probability plot (P-P) of the regression standardized residuals and the scatterplot of the standardized residuals for both proxies for the dependent variable, as shown in Figure 2.

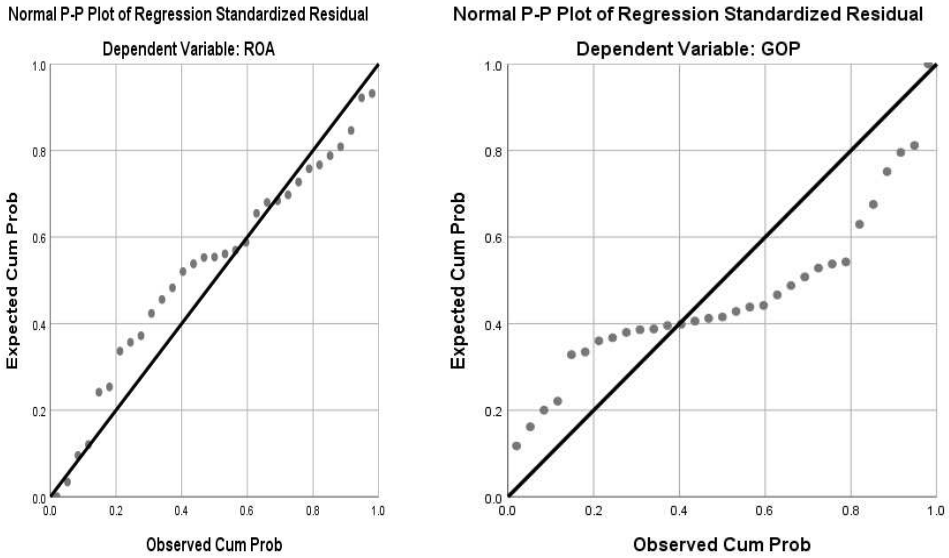

Figure 2. Normality P-P plot for variables predicting ROA and GOP.

A visual inspection of the normal probability plot in Figure 2 indicated the normality assumptions for ROA and GOP were not violated, which meant the multiple linear regression fit test was appropriate for the study. The figures show that the residuals followed a somewhat straight line, indicating no serious violations of the assumptions of normality. The scatterplot of the standardized residuals was also evaluated. A review of the scatterplot of the dependent residuals revealed a dispersed data set with limited or no visible pattern, which meant the linear regression model was appropriate for the data. No gross assumption violations were detected because there was a lack of clear patterns in the scatterplot of standardized residuals (see Figures 3, 4, and 5).

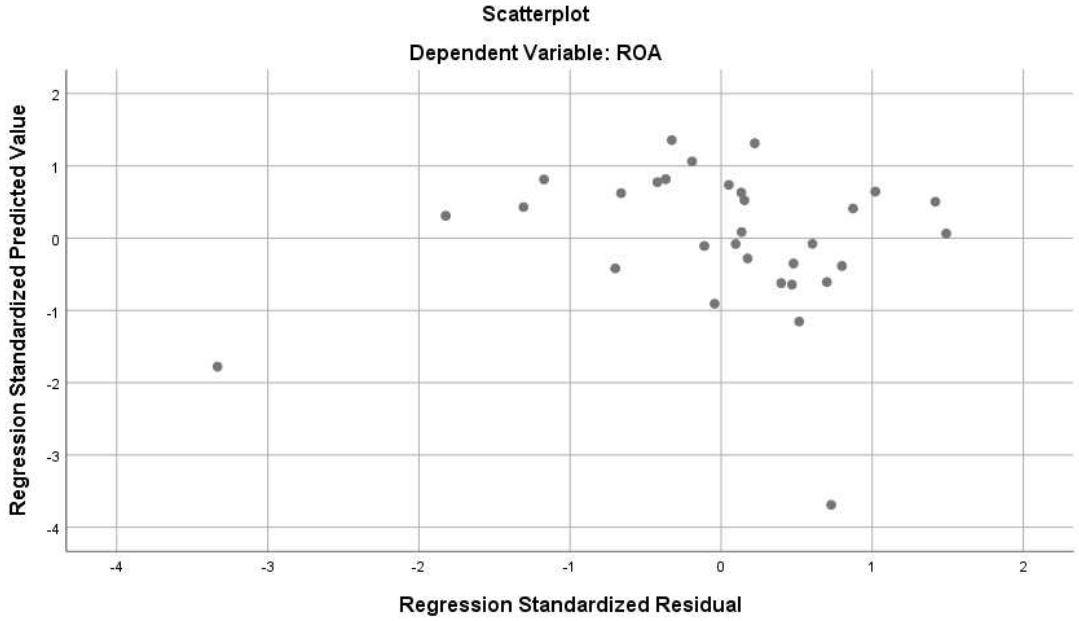

Figure 3. Scatterplot of regression residuals for ROA (homoscedasticity test).

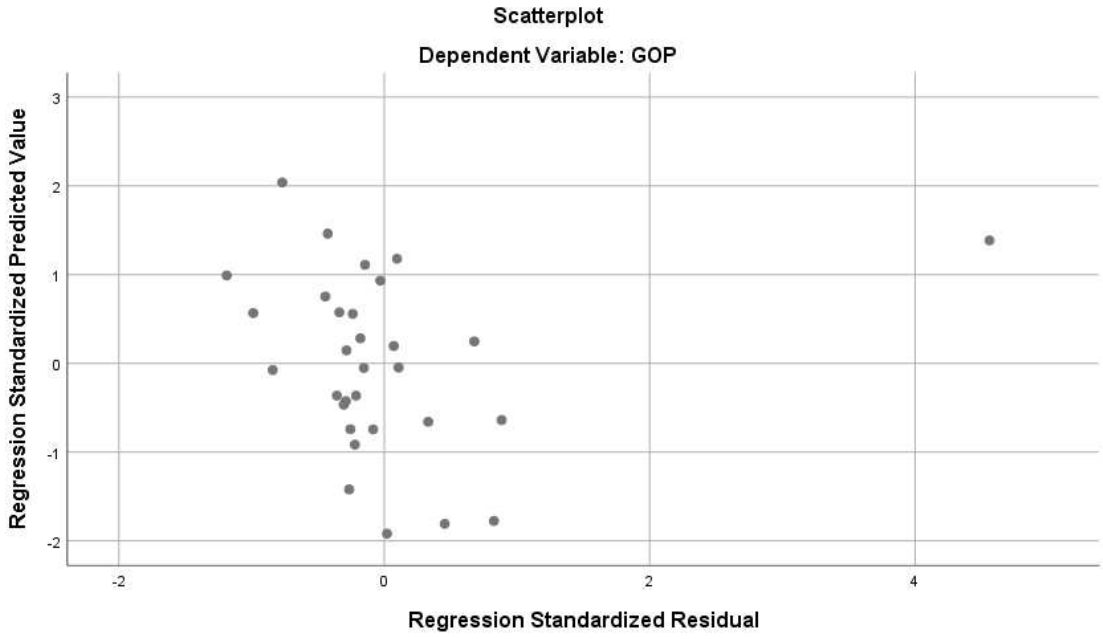

Figure 4. Scatterplot of regression residuals for GOP (homoscedasticity test).

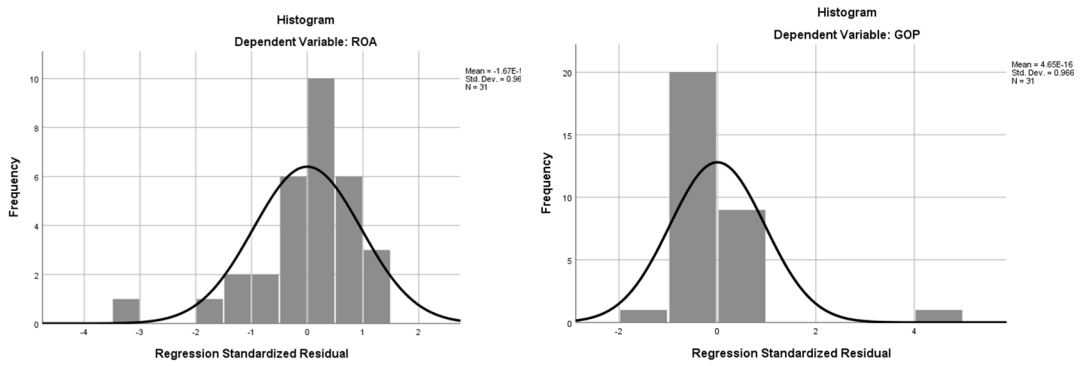

Figure 5. Histogram (test of normally distributed residuals).

Presentation of the Findings

Pearson correlation and linear regression were the statistical tests applied for data analysis. The independent variables were SRI and NRI. The dependent variable was profitability, as measured by ROA and GOP. The first correlation test addressed whether there was a significant relationship between SRI and ROA. The second correlation test addressed whether there was a significant relationship between NRI and ROA. The third correlation test addressed whether there was a significant relationship between SRI and GOP. The fourth correlation test addressed whether there was a significant relationship between NRI and GOP.

The alternative hypothesis stated that there was a relationship between SRI, NRI, and profitability. The null hypothesis stated that there was no relationship between SRI, NRI, and profitability. Descriptive statistics and correlation analysis were applied to assess the data before testing the hypothesis with multiple regression analysis. The descriptive statistics for the independent variables (SRI and NRI) and the proxies for the dependent variable profitability (ROA & GOP) are presented in Table 6. Figure 3 and

Figure 4 scatterplots depict the linearity between each independent variable and the dependent variable.

Descriptive Data of Independent and Dependent Variables

Descriptive analyses are used to facilitate data interpretation (Rovai et al., 2013). Descriptive statistics in Table 6 shows the mean (*M*) and the standard deviation (*SD*) for all 31 tax credit housing development companies.

Table 6

Descriptive Statistics for the Independent and Dependent Variables

Variable	*N*	*M*	*SD*	Variance
SRI	31	.06	.07	.004
NRI	31	.06	.03	.001
ROA	31	-.02	.04	.002
GOP	31	.18	.10	.011

The ROA and the GOP models, proxies for profitability, were used to test the hypotheses. Two correlations were tested to examine the ROA model. There was a weak negative correlation between SRI and ROA, $r(30) = -.368$, that was not statistically significant, $p = .042$. The results indicated that the null hypothesis could not be rejected, and that support was not found for the alternative hypothesis; therefore, results indicated no significant relationship between SRI and ROA.

The correlation between NRI and ROA was -0.119, indicating a weak negative correlation that was not statistically significant, $p = .525$. The results indicated that the null hypothesis could not be rejected, and grounds were not found for the alternative

hypothesis; therefore, results indicated no significant relationship between NRI and ROA. The multiple linear regression model was performed to test whether ROA (dependent variable) could be predicted from SRI and NRI (independent variables). NRI and SRI account for approximately 14.8% of the variability in ROA (see Table 7), but the regression model was not significant, $F(2,28) = 2.426$, $p = .107$ (see Table 8). Therefore, support for the alternative hypothesis was not found, and the null hypothesis could not be rejected. NRI and SRI were not significant predictors of profitability as measured by ROA. SRI (independent variable) was not significant in the estimated model coefficients .045 > .0125; NRI (independent variable) was not significant .525 > .0125 (see Table 9), indicating no need to conduct a separate regression to determine whether one or both could better predict ROA.

Table 7

Regression Model for Return on Assets

Model	*R*	R^2	Adj R^2	Std Err
ROA/NRI,SRI	.384	.148	.087	.037

Table 8

ANOVA Analysis of Regression Model for Return on Assets

Model		SS	*df*	MS	*F*	*p*
ROA/NRI,SRI	Regression	.007	2	.003	2.426	..107
	Residual	.040	28	.001		
	Total	.047	30			

Note. Dependent variable: ROA, Predictors: NRI, SRI.

Table 9

*Regression Test Analysis of Return on Assets (*N = *31)*

Variable	*B*	SErr	Beta	*t*	*p*
Constant	.002	.016		0.151	.881
SRI	-.219	.104	-0.366	-2.095	.045
NRI	-.134	.210	-0.111	-0.638	.529

Note. Dependent Variable ROA.

Two correlations were tested to examine the GOP model. The results indicated that the correlation was neutral to negative between SRI and GOP, $r(30) = -.061$, $p = .738$). The correlation between NRI and GOP was moderately positive, $r(30) = .401$, and not statistically significant, $.025 > .0125$. The results indicated that the null hypothesis could not be rejected, and support was not found for the alternate hypothesis; therefore, results indicated no significant relationship between NRI and GOP. The multiple linear regression model was performed to test whether GOP (dependent variable) could be predicted from SRI and NRI (independent variables). NRI and SRI account for approximately 16.4% of the variability in GOP (see Table 10), but the regression model was not significant, $F(2,28) = 2.747$, $p = .081$ (see Table 11). Therefore, support to accept the alternative hypothesis was not found, and the null hypothesis could not be rejected. NRI and SRI were not significant predictors of profitability as measured by GOP, as shown in Table 12.

Table 10

Regression Model for Gross Operating Profits

Model	*R*	R^2	Adj R^2	Std Err
GOP/NRI,SRI	.405	.164	.104	.100

Table 11

ANOVA Analysis of Regression Model for Gross Operating Profits

Model		SS	*df*	MS	*F*	*p*
GOP/NRI,SRI	Regression	.055	2	.028	2.747	.081
	Residual	.282	28	.010		
	Total	.338	30			

Note. Dependent variable: ROA, Predictors: NRI, SRI.

Table 12

*Regression Test Analysis for Gross Operating Profits (*N = *31)*

Variable	*B*	SErr	*Beta*	*t*	*p*
Constant	0.093	.044		2.140	.041
SRI	0.088	.277	.055	.317	.754
NRI	1.290	.557	.400	2.316	.028

Note. Dependent variable GOP.

The results of the correlation tests and regression models are statistically presented to answer the research question pertaining to supply-side and demand-side economic theories. However, the results verified that there was no relationship between SRI, NRI, and profitability within the tax credit housing industry. Therefore, SRI, NRI

(independent variables) cannot predict profitability (dependent variable), and the null hypotheses failed to be rejected.

The purpose of this study was to examine the influence of demand-side and supply-side practices on profitability within tax credit housing developments in the State of Florida. The supply-side and demand-side programs, as the theoretical framework of this study, are used to explain how SRI and NRI affect profitability. The central concept in the framework is that tax credit housing developers achieve profitability through effective management of SRI and NRI. The application of the supply-side and demand-side economic theories to this study yielded a deeper understanding of the interrelationships between SRI, NRI, and profitability.

The concept held within the supply-side theory, in which economic activity is spurred by tax reduction to the supplier, is that profitable operations will be derived from the governmental infusion of cash in the form of tax credits to affordable housing developers. The subsidy, which finances a significant portion of building costs, reduces debt service, and effectively increases income and profitability. However, reduced income because of rent restrictions, which make the developments affordable, may negatively affect profitability. The NRI from vending, laundry, and other activities have the effect of increasing net income, and ultimately, profitability. The demand-side theory proponents have held that profitability is gained through a governmental infusion of cash in the form of vouchers to renters of affordable housing. The increase in rental income increases net income, and effectively increases profitability.

The regression results showed that the SRI, independent variable, is not a significant predictor of ROA, a proxy of profitability, the dependent variable. The lack of a significant relationship between the SRI and ROA means that the HCV program is not a major determinant of profitable operations within the tax credit housing program. Instead, tax credit subsidy and LIHTC program rents are used to sustain profitable operations that are based on the extant literature (Johnson, 2014; Shaw, 2015; Sullivan & Anderson, 2017).

NRI is also not a significant predictor of ROA. The lack of a significant relationship between NRI and ROA means that ancillary income from vending, laundry, and other activities associated with development operations is not a major determinant of profitable operations within tax credit housing operations. This means that the tax credit subsidy and program rents are used to sustain profitable operations, which aligns with the extant literature (Johnson, 2014; Shaw, 2015; Sullivan & Anderson, 2017). The literature review reflects that IHTC subsidy and rents support profitable operations of tax credit developments.

The regression also indicated that the SRI and NRI combined are not significant predictors of GOP. The lack of a significant relationship between SRI and GOP means that the HCV program is not a major contributor to profitability as measured by the GOP. The tax credit subsidy and program rents sustain tax credit operations, which aligns with the extant literature (Johnson, 2014; Shaw, 2015; Sullivan & Anderson, 2017).

The ROA is represented as a percentage of net income divided by total assets. A significant portion of buildings was paid from supply-side tax credits, net income, and

profitability increase because of reduced debt service costs (Prizio, 2015). The GOP ratio, as a proxy for profitability, is represented as a percentage of total revenue divided by total physical assets of the tax credit development. The GOP aligns with supply-side theory because it reflects the measure of a firm's operating efficiency to physical assets (Enqvist et al., 2014). SRI and NRI are components of total revenue, yet the results of findings indicate that the independent variables are not significant predictors of profitability measured by GOP.

Applications to Professional Practice

Based on the findings of this study, it appeared that SRI has no effect on profitability as no significant relationship between SRI and profitability were observed from the analysis. Tax credit developers use the supply-side program of the tax credit subsidy and program rents to sustain profitable operations (Johnson, 2014; Shaw, 2015; Sullivan & Anderson, 2017). Various layers of income streams are used to support the supply-side program of LIHTC, including the demand-side program of HCVs (HSU, 2015; Johnson, 2014; Novogradac, 2014). SRI is known to be present in many tax credit developments, providing additional income for operations (Novogradac, 2014).

Further, NRI was found to have no effect on profitability because there was no significant relationship between NRI and profitability. In examining the regression analysis, there were no significant relationships between NRI and the two proxies for profitability, ROA and GOP. NRI could not be used as a predictor of profitability. As a component of the supply-side program, which includes ancillary services such as laundry and vending, NRI contributed more to the profitability of tax credit operations than SRI,

based on the findings of the study. SRI derived from the HCV program was found to be a dwindling income stream because of Congressional budget cuts (Affordablehousing, 2017).

As a result, tax credit developers could improve the stability of their income streams by targeting program eligible tenants because low-income housing tax credits are not subject to annual Congressional budget cuts (Hammett, 2015). NRI, as part of supply-side operations, is ancillary to program rental income. Tenants who live in the LIHTC units who are not recipients of SRI are likely to continue using laundry and vending services because they are not affected by subsidy cuts. The identification of alternative streams of income for tax credit development operations should serve to encourage researchers in their work.

Implications for Social Change

The implications for positive social change include the potential for tax credit developers to provide jobs, benefits, and training to workers. Communities may benefit from increased economic activity and capital improvements through the construction of new and rehabilitated housing developments. Society may benefit from this study as low-income renters move from sub-standard living conditions to better affordable housing opportunities

Another implication for positive social change from this study is the potential for tax credit developers to use incremental income in ways that benefit the poor. The incremental income component is found within the hybrid relationship between LIHTC and the HCV program (HSU, 2015; Novogradac, 2014). The rate for rental income

derived from eligible LIHTC tenants is less than the HCV program (Novogradac, 2014). Tax credit developers and public housing officials may be informed of ways to decrease rent burdens, in which tenants pay more than 30% of monthly income in rent and utilities (Bratt, 2016; HUD, 2015b; JCHS 2015).

Recommendations for Action

Tax credit developers may benefit from this study by identifying sustainable income streams that support profitability. Many tax credit developers have considered income from Section 8 vouchers as a preferred source of income and have targeted renters from this demand-side program to fill their complexes (Hsu, 2015; Novogradac, 2014). However, rental income from eligible supply-side tenants was designed to sustain profitable operations (Johnson, 2014; Shaw, 2015; Sullivan & Anderson, 2017).

Tax credit developers can benefit by identifying which income streams have the greatest sustainable effect on profitability. I recommend that steps are taken by tax credit housing developers to identify sources of income that offer sustainable profitability. It is also important to identify which streams of income may pose the greatest risk to profitability in the long run. Based on the findings of the study, SRI and NRI are not significant predictors of profitability as measured by ROA and GOP.

I further recommend that tax credit developers focus their marketing efforts on attracting traditional tax credit eligible tenants. Section 8, tenant income, as represented by SRI, was present in 87% of the tax credit developments within the study. As indicated by the regression analysis, however, no significant relationship existed between the income generated from the HCV program and profitability, nor could the independent

variable be used as a predictor of profitability. From the regression analysis, NRI, which includes income from vending, laundry, and other ancillary activities, held no significant relationship between ROA and GOP, nor could it be used as a predictor of profitability.

Recommendations for Further Research

Future researchers who examine affordable housing data and practices may benefit from the findings of this study by gaining an understanding of the relationship between SRI, NRI, and profitability. Examination of potential income sources may initially appear beneficial for profitable operations but could pose a risk depending on the stability of the funding sources. Funding sources that are subject to annual reductions or termination should be viewed as a risk to sustainable operations.

I also recommend further research from the perspective of a qualitative study. A qualitative study would be required to explore how and why developers use incremental income in their operations. Exploring income streams may lead to further insights into the operational interplay between demand-side and supply-side programs.

Reflections

After learning the difference between research methods, my decision to use a quantitative approach rather than a qualitative approach became quite clear. The purpose of examining the effect of different income streams on profitability within tax credit housing required a quantitative method. The process of acquiring data from various public housing agencies posed the greatest challenge. A surprising discovery within my research was that the ROA ratio, one of the proxies for profitability, yielded an overwhelming majority of negative results because net income was negative. The lesson

learned is that data are not always what is expected by the researcher. Although the GOP ratio, the other proxy for profitability, was positive, I was surprised that the results were different from what I had anticipated. Profitability was not significantly affected by the two independent variables of SRI and NRI. From a business standpoint, tax credit developers use various layers of income, including SRI and NRI, to sustain operations. The tax credit housing industry is comprised of public-private partnerships in which a variety of funding sources is often required.

I found that gaining a working knowledge of the SPSS statistical software was both interesting and challenging. The application of a quantitative methodology requires the use of various statistical tests that include correlation and regression. A degree of intense study was personally needed for me to understand the tests and then to properly write the interpretation. Confidence was gained from using the SPSS software and generating reports. In the beginning, my journey seemed endless and appeared enormous, but through persistence and perseverance, milestones were reached, and the goal was accomplished.

Conclusion

The purpose of this study was to examine relationships between SRI, NRI, and profitability. The effect of SRI and NRI, independent variables, to predict ROA and GOP, proxies for profitability, were examined within the research. This study was comprised of a sample of 31 tax credit housing developments within the state of Florida for the year 2015. Within Section 3, the results of descriptive correlation and regression

analysis on the relationship between SRI, NRI, and profitability were provided. The findings confirmed that SRI and NRI are not significant predictors of firm profitability. Tax credit housing developers should consider the results of this test in assessing the viability of different income streams.

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Appendix A: Certificate of Completion of the Student Researcher's Course

CITI PROGRAM

Completion Date 26-Aug-2019
Expiration Date N/A
Record ID 32918680

This is to certify that:

Samuel Simmons

Has completed the following CITI Program course:

Student Researchers (Curriculum Group)
Student Researchers (Course Learner Group)
1 - Basic Course (Stage)

CITI
Collaborative Institutional Training Initiative

Under requirements set by:

Walden University

Verify at www.citiprogram.org/verify/?w30710ab2-6c80-43af-b3d7-8e6c94f7af74-32918680

Appendix B: Multiple Regression Model Results

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.384[a]	.148	.087	.037865865	2.225

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.007	2	.003	2.426	.107[b]
	Residual	.040	28	.001		
	Total	.047	30			

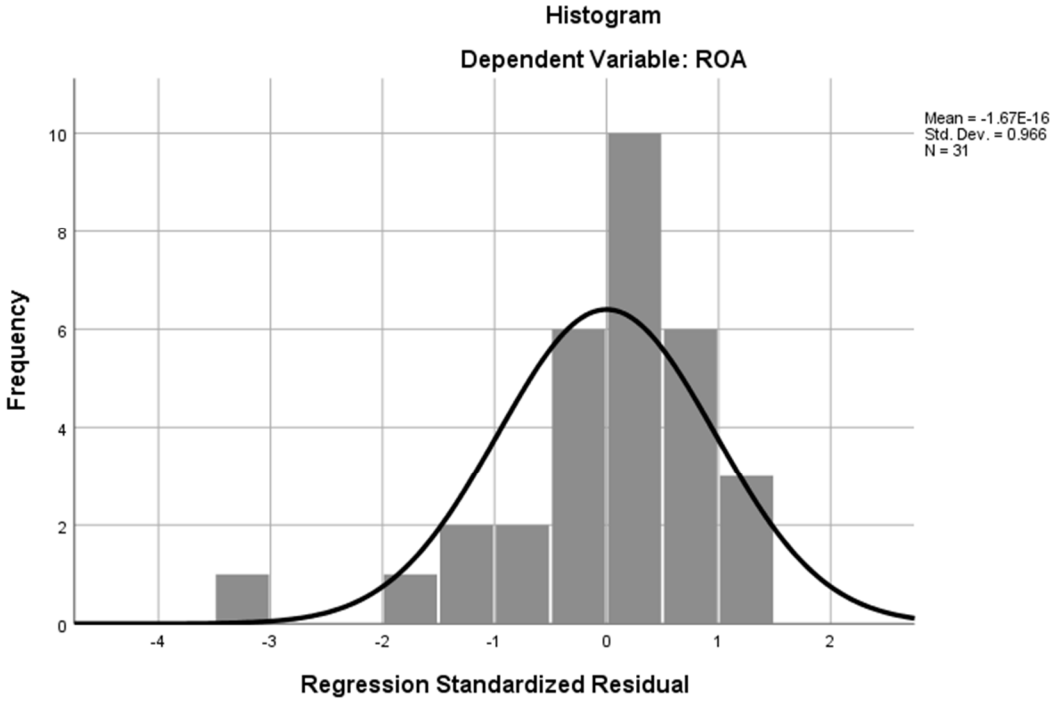
a. Dependent Variable: ROA

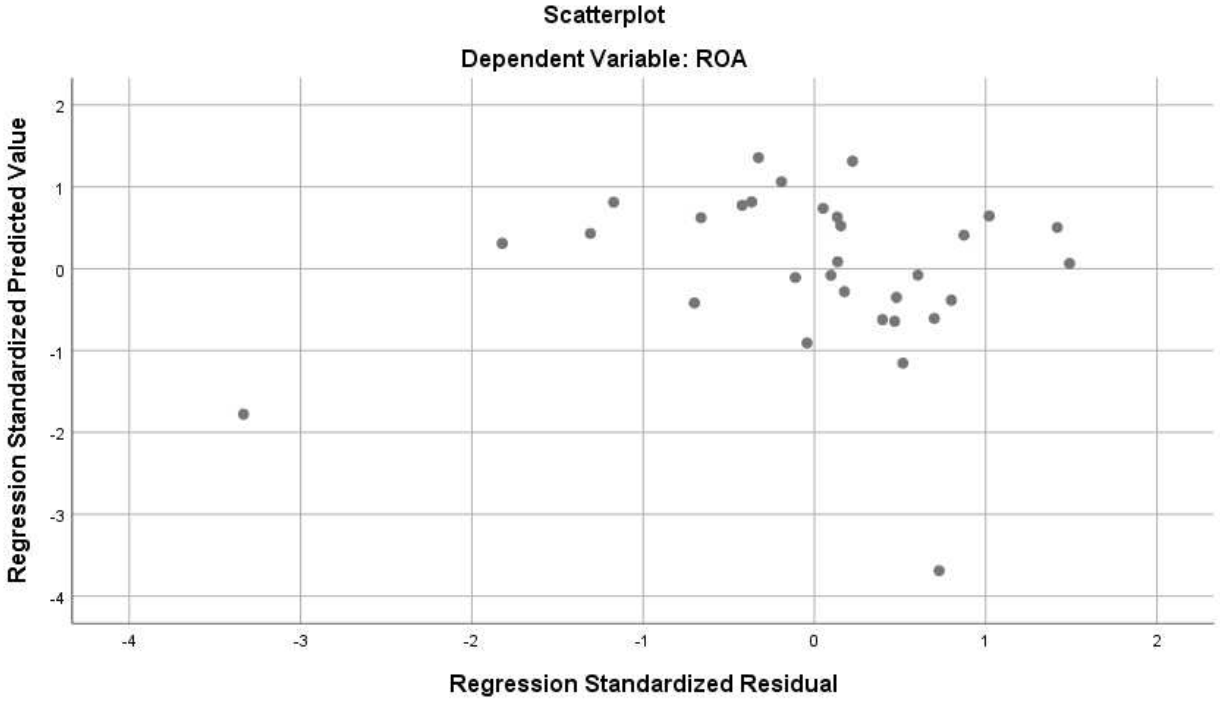
b. Predictors: (Constant), NRI, SRI

COEFFICIENTS

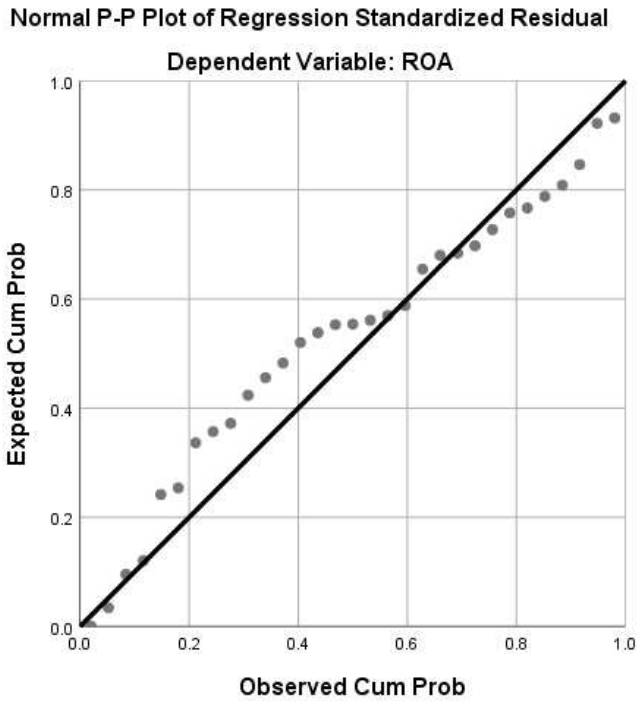
	Unstandardized Coefficients		Standardized Coefficients			Correlations		
	B	Std. Error	Beta	t	Sig	Zero Order	Partial	Part
Constant	.002	.	.	.016	.151	.881		
Subsidized Rental Income	-.219	.104	-.366	-2.095	.045	-.368	-.368	-.366
Non-rental Income	-.134	.210	-.111	-.638	.529	-119	-.120	-..111

Dependent Variable Return on Assets


Histogram
Dependent Variable: ROA
Mean = -1.67E-16
Std. Dev. = 0.966
N = 31
Frequency
Regression Standardized Residual


Scatterplot
Dependent Variable: ROA
Regression Standardized Predicted Value
Regression Standardized Residual

Scatter Plot:
Dependent Variable: ROA



Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	405[a]	.164	.104	.100441950

ANOVA

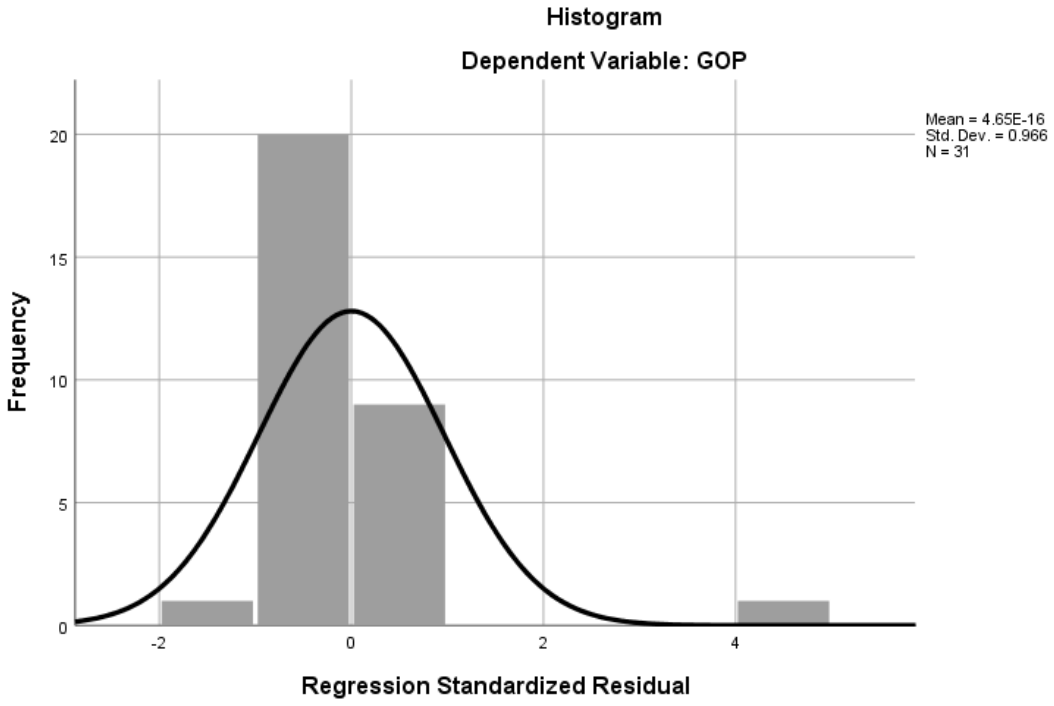
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.055	2	.028	2.747	.081[b]
	Residual	.282	28	.010		
	Total	.338	30			

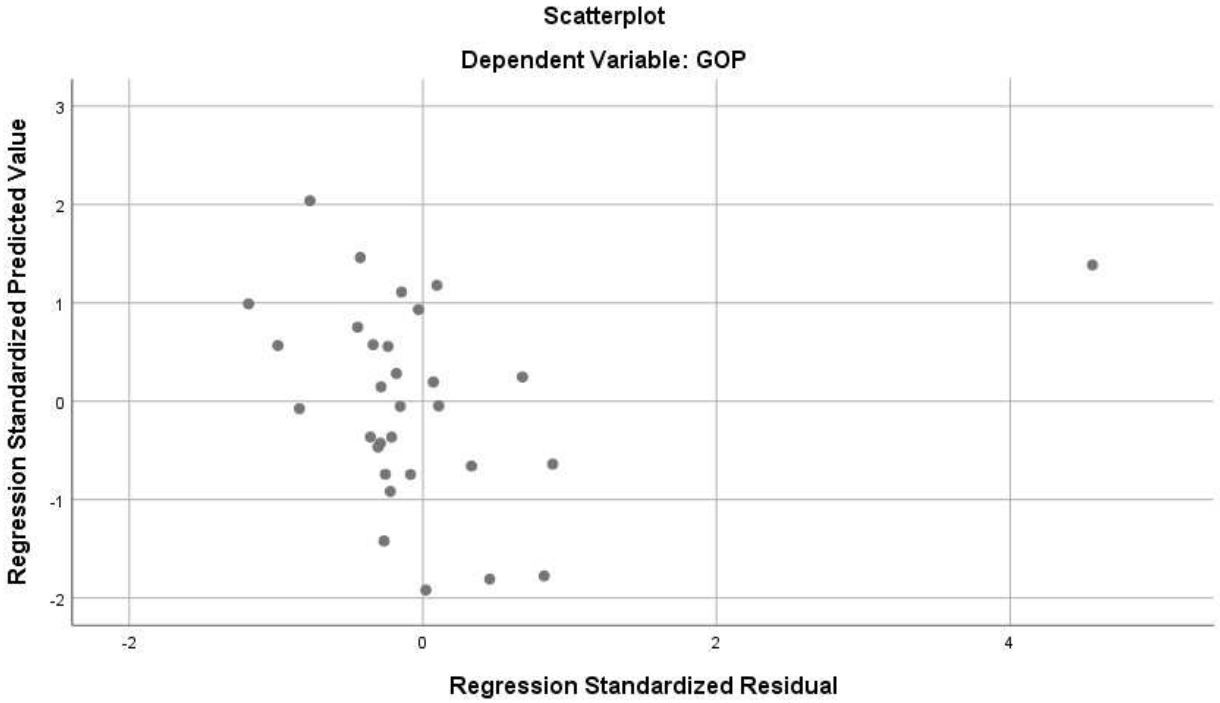
a. Dependent Variable: GOP

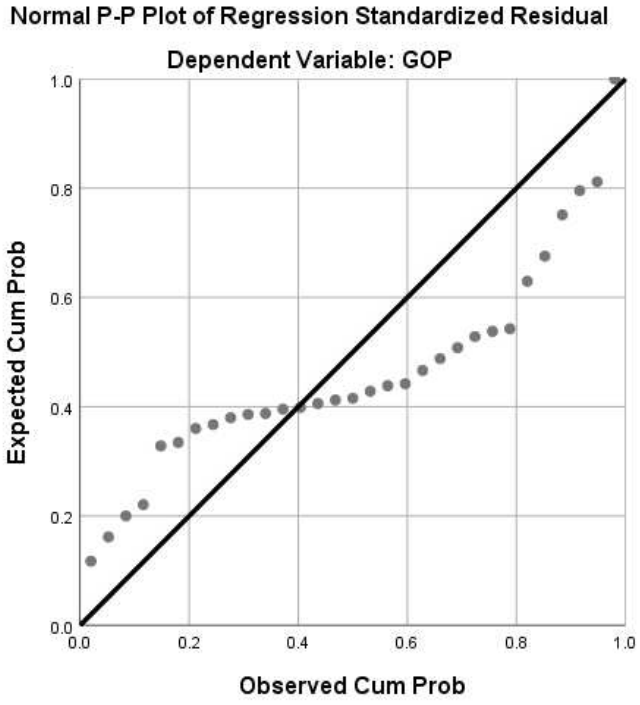
b. Predictors: (Constant), NRI, SRI

COEFFICIENTS

Unstandardized Standardized								
Coefficients					*Correlations*			
					Std. Zero			
B Error Beta t Sig Order Partial Part								
Constant .093 .044 2.140 .041								
Subsidized Rental Income .088 .277 .055 .317 .754 .063 .060 .055								
Non-rental Income 1.290 .557 .400 2.316 .028 .401 .401 .400								




Scatterplot
Dependent Variable: GOP
Regression Standardized Predicted Value
3
2
1
0
-1
-2
-2
0
2
4
Regression Standardized Residual


Normal P-P Plot of Regression Standardized Residual
Dependent Variable: GOP
Expected Cum Prob
1.0
0.8
0.6
0.4
0.2
0.0
0.0
0.2
0.4
0.6
0.8
1.0
Observed Cum Prob

Appendix C: IRB Approval Letter

Dear Mr. Simmons,

This email is to notify you that the Institutional Review Board (IRB) confirms that your doctoral capstone entitled, "Low Income Housing Tax Credit Profitability," meets Walden University's ethical standards. Since this project will serve as a Walden doctoral capstone, the Walden IRB will oversee your capstone data analysis and results reporting. Your IRB approval number is 10-30-19-0544500.

This confirmation is contingent upon your adherence to the exact procedures described in the final version of the documents that have been submitted to IRB@mail.waldenu.edu as of this date. This includes maintaining your current status with the university, and the oversight relationship is only valid while you are an actively enrolled student at Walden University. If you need to take a leave of absence or are otherwise unable to remain actively enrolled, this is suspended.

If you need to make any changes to the project staff or procedures, you must obtain IRB approval by submitting the IRB Request for Change in Procedures Form. You will receive confirmation with a status update of the request within 10 business days of submitting the change request form and are not permitted to implement changes prior to receiving approval. Please note that Walden University does not accept responsibility or liability for research activities conducted without the IRB's approval, and the University will not accept or grant credit for student work that fails to comply with the policies and procedures related to ethical standards in research.

When you submitted your IRB materials, you made a commitment to communicate both discrete adverse events and general problems to the IRB within 1 week of their occurrence/realization. Failure to do so may result in invalidation of data, loss of academic credit, and/or loss of legal protections otherwise available to the researcher.

Both the Adverse Event Reporting form and Request for Change in Procedures form can be obtained at the Documents & FAQs section of the Walden web site: http://academicguides.waldenu.edu/researchcenter/orec

You are expected to keep detailed records of your capstone activities for the same period of time you retain the original data. If, in the future, you require copies of the originally submitted IRB materials, you may request them from Institutional Review Board.

Both students and faculty are invited to provide feedback on this IRB experience at the link below:
http://www.surveymonkey.com/s.aspx?sm=qHBJzkJMUx43pZegKlmdiQ_3d_3d

Congratulations!

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