

The impact of socioemotional wealth on household net worth and subjective quality of life in the family farm business: An application of the REI model

by

Lloyd G. Zimmerman

B.S., University of Central Oklahoma, 1974
M.S., College for Financial Planning, 2005

AN ABSTRACT OF A DISSERTATION

submitted in partial fulfillment of the requirements for the degree

DOCTOR OF PHILOSOPHY

Department of Personal Financial Planning
College of Health and Human Services

KANSAS STATE UNIVERSITY
Manhattan, Kansas

2020

Abstract

Sustainable family farming depends on achieving both financial and nonfinancial goals of the family and business systems. The purpose of this study was three-fold: (a) to advance an understanding of socioemotional wealth (SEW) measurements, (b) to better understand farm family household net worth and subjective quality of life in relationship to SEW and return on business equity, and (c) to examine the generational stage of family farm ownership and farm business asset size as moderators between family farm socioemotional wealth and return on business equity.

Data for this cross-sectional study were obtained from the National Family Business Survey (NFBS) 1997 panel study, conducted by the National Information Management & Support System (NIMSS). The current study applied the REI model of SEW proposed by Hauck et al. (2016) to operationalize socioemotional wealth as a multi-dimensional construct. Findings of the current study revealed no significant relationship between SEW — as measured using the REI model — and farm family household net worth. However, return on business equity was found to be significantly and negatively associated with farm family household net worth. This result is not supported in the literature. Furthermore, two of the three REI dimensions (i.e., emotional attachment of family members and identification of family with the business) were found to be significantly and positively associated with subjective quality of life in family farming. This result is partially supported in the literature. Results of the present study indicated no significant relationship between return on business equity and subjective quality of life ($p < 0.05$). Also, generational stage of family farm ownership and farm business asset size were not found to moderate the relationship between family farm socioemotional wealth and return on

business equity. Future directions for research and implications for policymakers, educators, and researchers were discussed.

The impact of socioemotional wealth on household net worth and subjective quality of life in the family farm business: An application of the REI model

by

Lloyd G. Zimmerman

B.S., University of Central Oklahoma, 1974

M.S., College for Financial Planning, 2005

A DISSERTATION

submitted in partial fulfillment of the requirements for the degree

DOCTOR OF PHILOSOPHY

Department of Personal Financial Planning
College of Health and Human Services

KANSAS STATE UNIVERSITY
Manhattan, Kansas

2020

Approved by:

Co-Major Professor
Kristy L. Archuleta

Approved by:

Co-Major Professor
Martin C. Seay

Copyright

© Lloyd G. Zimmerman 2020.

Abstract

Sustainable family farming depends on achieving both financial and nonfinancial goals of the family and business systems. The purpose of this study was three-fold: (a) to advance an understanding of socioemotional wealth (SEW) measurements; (b) to better understand farm family household net worth and subjective quality of life in relationship to SEW and return on business equity; and (c) to examine the generational stage of family farm ownership and farm business asset size as moderators between family farm socioemotional wealth and return on business equity.

Data for this cross-sectional study were obtained from the National Family Business Survey (NFBS) 1997 panel study, which was conducted by the National Information Management & Support System (NIMSS). The current study applied the REI model of SEW proposed by Hauck et al. (2016) to operationalize socioemotional wealth as a multi-dimensional construct. Findings of the current study revealed no significant relationship between SEW, as measured using the REI model, and farm family household net worth. However, return on business equity was found to be significantly and negatively associated with farm family household net worth. This result is not supported in the literature. Furthermore, two of the three REI dimensions (i.e., emotional attachment of family members and identification of family with the business) were found to be significantly and positively associated with subjective quality of life in family farming. This result is partially supported in the literature. Results of this study indicated no significant relationship between return on business equity and subjective quality of life ($p < 0.05$). Also, generational stage of family farm ownership and farm business asset size were not found to moderate the relationship between family farm socioemotional wealth and

return on business equity. Future directions for research and implications for policymakers, educators, and researchers were discussed.

Table of Contents

List of Figures	xi
List of Tables	xii
Acknowledgements.....	xiii
Dedication	xiv
Preface.....	xv
Chapter 1 - Introduction.....	1
Statement of the Problem.....	1
Definitions	5
Purpose Statement.....	7
Research Questions and Hypotheses	9
Summary	11
Chapter 2 - Review of Literature and Theoretical Framework.....	13
Sustainable Family Business Theory	14
Socioemotional Wealth.....	18
The REI Model	24
Family Farm Business	26
Return on Business Equity	30
Family Farm Financial Conditions in 1996: Then and Now	31
Summary	37
Chapter 3 - Methodology	38
Introduction.....	38
Data and Sample	40
Measurements	42
Net Worth of Family Household.....	42
Subjective Quality of Life.....	43
Structure and Process Controls	43
Family Structure.....	43
Business Structure.....	44
Family Process Control.....	44
Business Process Control.....	44
Family and Business Process Controls	45

Return on Business Equity	46
Socioemotional Wealth	47
Regression Analyses	49
Missing Data	50
Hierarchical Multiple Regression	50
Ordinal Logistic Regression	52
Moderation Analyses	52
Summary	54
Chapter 4 - Results	55
Sample Characteristics	55
Principal Components Analysis	57
Analyses for Hypotheses	61
Research Questions 1 and 2	62
Research Questions 3 and 4	69
Research Questions 5 and 6	74
Moderation Analysis of Generational Level of Family Ownership.....	74
Moderation Analysis of Total Business Assets	77
Summary	80
Chapter 5 - Discussion	82
Introduction.....	82
Research Questions 1 and 2	83
Research Question 1.....	83
Research Question 2.....	84
Research Questions 3 and 4	85
Research Question 3.....	85
Research Question 4.....	86
Research Questions 5 and 6	87
Research Question 5.....	87
Research Question 6.....	88
Limitations	89
Implications	90
Future Directions	91
Conclusion	92

References..... 94

List of Figures

Figure 2.1. Applying stocks and flows to attain achievements in SFBT II (Danes et al., 2008)..	16
Figure 2.2. Theoretical model for this study adapted from SFBT (Danes et al., 2008; Stafford et al., 1999)	17
Figure 2.3. Family Farm Net Farm Income 1996-2018 (United States Department of Agriculture & National Agriculture Statistics Service, 2019).....	34
Figure 2.4. Family Farm Debt-to-Asset Ratio 1996-2018 (United States Department of Agriculture Economic Research Service & National Agriculture Statistics Service, 2019)	35
Figure 3.1. Three-block hierarchical multiple regression empirical model	51
Figure 3.2. Conceptual moderation model adapted from Baron & Kenny (1986)	53
Figure 3.3. Conceptual moderation model adapted from Baron & Kenny (1986)	54
Figure 4.1. Regression lines for Return on Business Equity Predicted by Socioemotional Wealth by the Categories of Generational Level of Family Ownership	77
Figure 4.2. Regression lines for Return on business equity predicted by Socioemotional Wealth by the categories of Total Business Assets	80

List of Tables

Table 2.1. Family Farms by Farm Size Class (Gross Sales).....	32
Table 2.2. Family Farm Return on business equity and Component Ratios 1996-2018	36
Table 4.1. Sample Characteristics of Continuous and Scale Variables (n = 101)	56
Table 4.2. Sample Characteristics of Categorical Variables (n = 101).....	57
Table 4.3. Factor Analysis of the Congruity Scale	58
Table 4.4. Factor Analysis of Renewal of Family Bonds.....	59
Table 4.5. Factor Analysis of the Emotional Attachment of Family Scale	60
Table 4.6. Factor Analysis of the Identification of Family with Business Scale	60
Table 4.7. Correlation Matrix of Independent Variables and Household Net Worth for Research Questions 1 and 2.....	64
Table 4.8. Model Comparisons for Variables predicting Family Farm Household Net Worth....	65
Table 4.9. Summary of Hierarchical Regression Analysis for Variables Predicting Family Farm Household Net Worth	67
Table 4.10. Correlation Matrix of Independent Variables with Subjective Quality of Life for Research Questions 3 and 4	72
Table 4.11. Ordinal Logistic Regression Results for Predicting Subjective Quality of Life.....	73
Table 4.12. Moderation Analysis Table with Return on Business Equity Predicted by Socioemotional Wealth Moderated by Generational Level of Family Ownership.....	76
Table 4.13. Linear Model Summary Table between the Non-Interaction and Interaction Model of Generational Level of Family Ownership.....	76
Table 4.14. Moderation Analysis Table with Return on business equity Predicted by Socioemotional Wealth Moderated by Total Business Assets.....	79
Table 4.15. Linear Model Summary Table between the Non-Interaction and Interaction Model for Total Business Assets.....	79

Acknowledgements

This dissertation is the culmination of countless hours of instruction, review and encouragement from my informative and knowledgeable committee: Dr. Kristy L. Archuleta, Dr. Martin C. Seay, Dr. Mykel R. Taylor, Dr. Margaret A. Fitzgerald and Dr. DeAnn R. Presley. My scholarly development is a direct result of the thoughtful guidance from these accomplished people. To Dr. Archuleta for constructively reviewing my writing progress while harvesting wheat on your family's farm in Oklahoma and guiding me to completion with your editorial expertise. To Dr. Seay for providing wisdom and statistical acumen during my tenure as your research assistant. I am eternally grateful for your guidance as my mentor. To Dr. Taylor for improving the quality of this study by recommending tables and figures to historically compare and contrast the dataset with current farm financial conditions. My special thanks to Dr. Fitzgerald, Dean of the College of Human Sciences and Education at North Dakota State University — your vast knowledge of family science and your insight as a guiding member of the NC 1030 group has been invaluable to the completion of this dissertation. And my thanks to Dr. Presley, for serving as the chair for my final examination and your encouragement to continue the study of family farming.

My thanks to the faculty and staff of the Department of Personal Financial Planning at Kansas State University. I am truly fortunate to be associated with such a highly respected program at a highly respected university. I also affectionately thank my cohort: David Allen Ammerman, Sarah Asebedo, Jamie Lynn Byram, Joy Clady, Linda Leitz, Derek Tharp and Cametra Thompson. In addition to your cherished friendship, I am grateful for many memorable experiences during our travels in Europe and your relentless pursuit of knowledge. You are extraordinary people. Your influence has become part of who I am.

Dedication

This dissertation is dedicated to my entire family. To my wife, Edna. Your loving support and understanding throughout the dissertation process were instrumental in the successful completion of my doctoral degree. You have taught me to embrace change and continually improve in mind and body. Thank you for accepting me for the person I am and encouraging me to become the person I strive to be. Your family has become mine, and this is especially true of Jude.

To my son, Charlie. You have always been a blessing in my life, and I am eternally thankful for the person you are. You have given me unconditional love and acceptance. You have blessed our family with two beautiful souls, Hannah and Ethan, and Hannah's gorgeous girl, Ivy. I am proud of all of you, and extraordinarily fortunate that you are in my life.

And to my parents, Merle and Rosie. Through good times and difficult times, your steadfast love has encouraged me, and your strength has sustained me. Merle and my brother, Don, died before this dissertation was finished but their love and acceptance remain a source of inspiration. The blessings of family are truly eternal.

Preface

Family farms are essential to human existence. Evidence indicates agricultural production by human families in North America has existed since the onset of the Holocene period, approximately 12,000 years ago (Zahid, Robinson, & Kelly, 2016) and, since that time, family farming has become essential to worldwide human survival. Feeding the current world population of over 7 billion people requires a unified effort between private agricultural businesses and governmental organizations (Nuthall & Old, 2017). Even though food production includes business and governmental cooperation, family farms remain indispensable to worldwide food security. This research is intended to advance a better understanding of the personal financial aspects of United States family farming, to gain a better understanding of the interrelationship between psychosocial and financial motivations in family farms, and promote an informed discourse relating to the future of the family farm business.

Chapter 1 - Introduction

Family farming has been the foundation of food production throughout recorded history. However, family farms are considered an “interesting enigma” (Glover & Reay, 2015, p. 163), remaining in business, often for many generations, despite inconsistent financial returns. In the United States, family farms comprise 99% of all farms and almost 90% of total farm production (MacDonald, Hoppe, & Newton, 2018; United States Department of Agriculture Economic Research Service, 2018). Similar to family businesses in general, family farm business decision-making and ownership are controlled by people related by blood, marriage, or adoption (MacDonald, Hoppe, & Newton, 2018). Moreover, farm families develop unique, nonfinancial physical and emotional attachments to their land, livestock, and business differentiating them from other categories of family businesses (Danes & Lee, 2004; Glover & Reay, 2015; Nuthall & Old, 2017). These “non-financial aspects of the firm that meet the family’s affective needs” are conceptualized in general family business literature as socioemotional wealth (Gómez-Mejía, Haynes, Nunez- Nickel, Jacobson, & Moyano-Fuentes, 2007, p. 106). The concept of socioemotional wealth (SEW) has been used to investigate nonfinancial resources and constraints, and their relationships to achievements are vital to sustaining the family farm business (Dressler & Tauer, 2015; Glover & Reay, 2015). However, measuring specific SEW endowments in the family farm business, which would facilitate a better understanding of the impact SEW has on vital family farm achievements, has yet to be accomplished.

Statement of the Problem

With family-owned farms dominating United States food production, it is reasonable to expect that family farm businesses are financially successful. However, research has indicated that family farm financial success has been affected both positively and negatively by

psychological and nonfinancial variables (Arbuckle & Kast, 2012; Coughenour & Swanson, 1988, 1992; Danes & Lee, 2004; Garrison, 1998; Glover & Reay, 2015; Howley, Dillon, Heanue, & Meredith, 2016; Molnar, 1985). The decision-making process involved in general family business operations often prioritizes components of socioemotional wealth (SEW) over financial outcomes, which can result in sub-optimal financial achievements (Glover & Reay, 2015; Gómez-Mejia et al., 2007; Howley, Dillon, Heanue, & Meredith, 2016).

When farm families do not attain vital financial and nonfinancial achievements, financial and emotional distress can result in depression (Torske, Bjørngaard, Hilt, Glasscock, & Krokstad, 2016; Truchot & Andela, 2018), suicide (McIntosh, Spies, Stone, Lokey, Trudeau, & Bartholow, 2016; Reed & Claunch, 2020; Truchot & Andela, 2018) or bankruptcy (Dinterman, Katchova, & Harris, 2018; Garcia & Sensenich, 2019). Alternatively, attaining good financial and nonfinancial achievements help emotionally bond farm families together, which results in sustaining the family farm business as an essential component of national economic prosperity and food security (Godfray et al., 2010; Graeub et al., 2016; Nuthall & Old, 2017; Van Vliet et al., 2015). Although family farm financial resources and constraints have been investigated (Dressler & Tauer, 2015; Glover & Reay, 2015; Graeub, Chappell, Wittman, Ledermann, Kerr, & Gemmill-Herren, 2016; Hoppe, 2017), specific nonfinancial resources and constraints of family farms have rarely been examined (Dressler & Tauer, 2015; Glover & Reay, 2015). Therefore, from a personal financial planning perspective through the lens of Sustainable Family Business Theory II (SFBT II), this study examined the impact of nonfinancial resources and constraints, which were then measured by three endowments of socioemotional wealth in relationship to farm household net worth and subjective quality of life in United States family farm businesses.

The current study emphasizes socioemotional wealth (SEW) as (a) a concept representing both nonfinancial resources and constraints, and (b) components in the SFBT II framework that are instrumental in attaining farm family achievements. The concept of SEW consists of social and emotional affective endowments resulting from business ownership, which are subjectively prioritized by family members during business decision-making events (Gómez-Mejia et al., 2007; Jiang et al., 2018) and are widely accepted as influential in general family business achievements (Gómez-Mejia et al., 2007; Berrone, Cruz, & Gómez-Mejia, 2012; Hauck, Suess-Reyes, Beck, Prügl, & Frank, 2016; Jiang, Kellermanns, Munyon, & Morris, 2018). The current study argues that investigating the impact of specific socioemotional wealth endowments on financial and nonfinancial achievements is vital to understanding family farm sustainability.

In general, family business operations and sustaining both family and business systems require attaining desirable financial achievements (Danes & Brewton, 2012; Danes, Stafford, Haynes, & Amarapurkar, 2009; Gómez-Mejia et al., 2007). To attain financial achievements important to the family system, financial advisors analyze family financial ratios and quantify family goals in timeframe and dollar amount (Lytton, Grable, & Klock, 2013). Similarly, attaining financial achievements vital to the business system requires prioritizing financial objectives simultaneously with socioemotional wealth objectives throughout the family business decision-making process (Martin & Gómez-Mejia, 2016). Research has indicated that the family farm business decision-making process involves weighing the benefits of financial versus nonfinancial resources to attain desirable achievements (Dressler & Tauer, 2015; Glover & Reay, 2015).

Family farm businesses exhibit wide variations in farm production, farmland, and gross cash farm income (GCFI) ranging from extensive to minimal financial resources (Hoppe, 2017;

Prager, 2017). In 2016, midsize and large-scale family farmers accounted for less than 9% of all U.S. farms, but those same farms created 68% of U.S. farm production using 39% of U.S. farmland and earned more than \$350,000 GCFI annually (Hoppe, 2017). However, almost 90% of all U.S. farms are classified as small family farms, representing 23% of U.S. farm production, operating 51% of all farmland, and earning as little as \$1,000 annually (Hoppe, 2017). A recent study of all U.S. farm operators found 25% have no annual sales, and about 30% have annual sales less than \$10,000 (Prager, 2017). Therefore, financial profit can be a small part of total family farm compensation (Dressler & Tauer, 2015; Glover & Reay, 2015). Nonfinancial returns, such as socioemotional wealth, represent important compensation for sustaining the family farm business and achieving a desirable quality of life.

The concept of “quality of life” is reported to be a multifaceted construct encompassing subjective well-being, human relationships, and financial prosperity (Diener, Oishi, & Lucas, 2015). Psychological, nonfinancial aspects of life are essential to achieving overall satisfaction and a desirable quality of life (Diener, 1984; Diener, Oishi, & Lucas, 2015; Glover & Reay, 2015). Increased levels of well-being and subjective quality of life are essential to sustaining a family farm business (Arbuckle & Kast, 2012; Coughenour & Swanson, 1988; 1992; Danes & Lee, 2004; Garrison, 1998; Molnar, 1985). The importance of subjective quality of life to family farm operations can be attributed, in part, to daily contact between the business and family and creating more intimate interaction than found in non-farm family businesses (Howley, Dillon, Heanue, & Meredith, 2016). Therefore, exploring the relationship between SEW and achieving higher levels of subjective quality of life will provide a better understanding of these nonfinancial aspects of family farming.

The survival of family farming is vital to maintaining food production in the U.S. and the world. The current world population of over 7 billion people is estimated to reach 8 billion by the year 2025, and 9 billion people by the year 2043 (United Nations, 2011). Feeding this growing population will pose major challenges for agriculture producers and worldwide government policymakers. Additionally, financial professionals assisting farm families such as agriculture bankers, personal financial planners, and financial therapy professionals will benefit from a greater awareness of nonfinancial behavior in family farming. This study helps to better understand the achievements essential to sustaining United States family farm businesses.

Definitions

This section defines relevant terms, concepts, and constructs to provide contextual meaning used throughout this study. Dependent variables were analyzed as (a) *household net worth*, and (b) *subjective quality of life*. Household net worth measured the farm family's household wealth, which is an indicator of personal financial performance (El-Osta, 2014). Subjective quality of life (SQOL) was considered an umbrella concept measuring the subjective overall well-being of a person's life including the general circumstances in which they live (Diener, 2006; Diener, Oishi, & Lucas, 2015). For this study, subjective quality of life included concepts such as life satisfaction and subjective well-being as found in the literature (Arbuckle & Kast, 2012; Diener, Oishi, & Lucas, 2015; Diener & Suh, 1997; Camfield & Skevington, 2008; Garrison, 1998). Measuring subjective quality of life as a dependent variable is consistent with household production theory (Becker, 1965) and neoclassical economic theory of the family, since families are assumed to achieve emotional satisfaction as efficiently as they achieve financial prosperity. Thus, the farm family's household net worth represents a personal financial achievement and SQOL represents a personal nonfinancial achievement.

Socioemotional wealth (SEW) was conceptualized as nonfinancial endowments that result from family business ownership, are affective, and serve as psychological motivators in the family business decision-making process (Berrone, Cruz, & Gómez- Mejía, 2012; Gómez-Mejia et al., 2007). In this study, SEW was operationalized with measurements for three endowments designated by the acronym REI in which (a) R denotes *renewal* of family bonds to the business through family succession; (b) E denotes *emotional* attachment of the family to each other; and (c) I denotes *identification* of family members with the business (Hauck et al., 2016).

Throughout this study, SEW was considered a concept of nonfinancial, affective endowments attributable to ownership of a family business (Gómez-Mejia et al., 2007).

The term *family farm business* was defined as a farming business owned by one or more operators and includes individuals related to the operator by blood, marriage, or adoption who may or may not live in the operator's household (United States Department of Agriculture Economic Research Service, 2015). The terms *family farm business* and *family farm* were considered synonymous throughout this study. However, the term *farm family* pertains to the family unit; in other words, the farm operator and individuals working on the farm are related to the farm operator by blood, marriage, or adoption who may or may not live in the operator's household (United States Department of Agriculture Economic Research Service, 2015).

Harmony between family and business systems was captured using the concept of *congruity* (Danes & Lee, 2004), and is found to be an important measure of interaction between family and business (Avery & Stafford, 1991; Danes & Brewton, 2012; Danes et al., 2009; Danes & Lee, 2004; Heck, Jasper, Stafford, Winter, & Owen, 2000). The present study applied indicators of tension between family and business, representing patterns of interpersonal relationships as measurements of *congruity* between the two systems (Danes & Brewton, 2012).

Business financial performance was measured using *return on business equity* (ROE) and was calculated using the DuPont System formula, which computed a separate measure of financial leverage that included total assets divided by common equity to measure business risk incurred through financial debt. Application of the DuPont System formula equation deconstructed the sources of farm profitability into three ratios as the following: (a) profitability of sales represented by the profit margin ratio; (b) asset use efficiency represented by the asset turnover ratio; and (c) financial leverage represented by the inverse of the solvency ratio (Mishra, Moss, & Erickson, 2009; Reilly & Brown, 2000).

Purpose Statement

The overarching purpose of this cross-sectional quantitative study was to measure socioemotional wealth (SEW) and examine relationships between SEW and United States farm family financial and nonfinancial achievements. Using 1997 National Family Business Survey (NFBS) data, socioemotional wealth was measured using three affective endowments, REI, as proposed by Hauck, et al. (2016) and discussed in Chapter 3. Dependent variables were investigated using two models, each examining an achievement from a personal financial planning perspective: (a) household net worth (a personal financial achievement), and (b) subjective quality of life (a personal nonfinancial achievement). Additionally, two variables, generational stage of farm family ownership and total farm business assets, were used to examine their moderating effect between socioemotional wealth and return on business equity in the family farm business. Therefore, the purpose of this study was to 1) measure family farm socioemotional wealth using three validated affective endowments, and 2) investigate the impact of SEW on personal financial and nonfinancial achievements of the farm family.

There are some relevant limitations to this study. Most U.S. family farm business literature was produced during the farm crises of the 1980's and 1990's; as a result, recent family farm research is sparse. Other weaknesses in this study included the following: (a) the age of the dataset (i.e., 1997 family business data), (b) small sample size ($n = 101$), and (c) limited proxies to measure REI — the three socioemotional wealth affective endowments. However, the author is not aware of another nationally representative data set available to test these models with financial and nonfinancial variables of farm family businesses.

Current government statistics indicate that U.S. farmers are experiencing debt loads similar to levels encountered during the farm crisis of the late 1970's and early 1980's. Inflation-adjusted debt for U.S. farmers has increased 79% between 1994 and 2016 (Key, Litkowski, & Williamson, 2018). The 1997 National Family Business Survey (NFBS) strengthens the current study by being designed as a nationally representative sample of family businesses and using specific variables unique to family business operations. NFBS variables represented financial and nonfinancial resources and constraints, as well as processes used to apply these resources and constraints to accomplish family business achievements. This study used natural logarithm (i.e., \log_e) to transform monetary variables when necessary to achieve statistically valid results with continuous variables. Composite indicators and reverse coding were used to achieve acceptable measurements of proxies for theoretically indicated variables.

This research used assumptions from Sustainable Family Business Theory II (SFBT II) as a theoretical framework (Danes, Lee, Stafford, & Heck, 2008), which is an extension of Sustainable Family Business Theory (Stafford, Duncan, Danes, & Winter, 1999). SFBT II has been previously used to study general family business financial and nonfinancial achievements (Danes, Stafford, Haynes, & Amarapurkar, 2009; Fitzgerald, Haynes, Schrank, & Danes, 2010).

Measurements of socioemotional wealth were conceptually applied to the present study as both resources and constraints in the SFBT II framework. This empirical analysis measured variables at the intersection of family and business, representing available resources and constraints transformed by processes into objective and subjective farm family achievements. Return on business equity (ROE) was conceptualized for this study by the DuPont System formula (Reilly & Brown, 2000) and used as an indicator of financial performance for the family farm business (Mishra, Harris, Erickson, Hallahan, & Detre, 2012; Mishra, Moss, & Erickson, 2009).

Therefore, an additional purpose of this study was to test the impact of return on business equity, along with three measurable SEW endowments, on objective and subjective family achievements in family farming.

The present study adds to family farm business literature by using a validated, reliable model, REI, to measure SEW endowments and test the relationship of these data to achievements vital to sustaining the farm family. Recent family farm business studies have made significant progress in the literature by investigating SEW as (a) an overall emotional effect on family farm decision-making (Glover & Reay, 2015), and (b) an emotional compensation in lieu of financial earnings (Dressler & Tauer, 2015). However, the present research investigated individual measurements of socioemotional wealth to operationalize specific affective endowments to better understand relationships between SEW and family farm achievements.

Research Questions and Hypotheses

The following research questions are addressed within this study:

RQ₁: What is the relationship between socioemotional wealth, measured using three dimensions of REI, and household net worth in the family farm business?

H₁: Lower levels of three measurements of socioemotional wealth, using the REI model, are associated with higher levels of family farm household net worth.

RQ₂: What is the relationship between return on business equity, measured using the DuPont System formula, and household net worth in the family farm business?

H₂: Higher levels of return on business equity are associated with higher levels of family farm household net worth.

RQ₃: What is the relationship between socioemotional wealth, measured using the three dimensions of REI, and subjective quality of life in the family farm business?

H₃: Higher levels of three measurements of socioemotional wealth, using the REI model, are associated with higher levels of family farm subjective quality of life.

RQ₄: What is the relationship between return on business equity, measured using the DuPont System formula, and subjective quality of life in the family farm business?

H₄: Higher levels of return on business equity, measured using the DuPont System formula, are associated with higher levels of family farm subjective quality of life.

RQ₅: What is the moderating effect of the generational stage of the family business between socioemotional wealth, measured using three dimensions of REI, and return on business equity, measured using the DuPont System formula, in the family farm business?

H5: Higher generational stage of the family farm business reduces strength of the relationship between socioemotional wealth and return on business equity in the family farm business.

RQ6: What is the moderating effect of total business assets between socioemotional wealth, measured using the three dimensions of REI, and return on business equity, measured using the DuPont System formula, in the family farm business?

H6: Higher total business asset size reduces strength of the relationship between socioemotional wealth and return on business equity in the family farm business.

Summary

Family farming has long-been a centerpiece of the United States economy, culture, and food production. Financial and nonfinancial compensation are considered vital ingredients to prosperity and sustainability of the family farm business (Dressler & Tauer, 2015; Glover & Reay, 2015). However, family farm finances vary widely from year-to-year due to many factors including changes in climate patterns, commodity prices, government policies, and general economic conditions (Hoppe, 2017). Therefore, nonfinancial compensation such as renewal of family bonds through dynastic succession, the emotional attachment of family members to each other, and the identification of family members with the farming business are valuable sources of remuneration, contributing to the accomplishment of achievements that are vital to sustaining the family farm (Dressler & Tauer, 2015; Glover & Reay, 2015). This study contributes to the literature by operationalizing nonfinancial sources of family farm business compensation through the REI model while using three validated, affective endowments of socioemotional wealth in

order to better understand the relationship between SEW and attaining family farm achievements.

Chapter 2 will provide a review of literature relevant to this study. Chapter 3 will describe the data, sample, and methods proposed to answer the research questions and investigate the hypotheses. Chapter 4 will report the results of the current investigation followed by a discussion of findings, limitations, implications, and future directions in Chapter 5.

Chapter 2 - Review of Literature and Theoretical Framework

Researchers have scrutinized the affective impact of nonfinancial motivation on business achievements in the family farm, particularly during times of financial decision-making and times of financial stress (Arbuckle & Kast, 2012; Coughenour & Swanson, 1988, 1992; Danes & Lee, 2004; Gasson, 1973; Garrison, 1998; Glover & Reay, 2015; Molnar, 1985; Suess-Reyes & Fuetsch, 2016; Tweeten, 1969; Van Hook, 1990). This chapter begins with an overview of literature relevant to Sustainable Family Business Theory II (Danes, Lee, Stafford, & Heck, 2008), which is rooted in General Systems Theory (von Bertalanffy, 1950), and is the theoretical framework that guides this study. The chapter continues with literature examining the concept of socioemotional wealth (SEW) as a measurement of nonfinancial motivation in general family businesses. SEW has emerged as an influential concept in general family business research beginning with its introduction by Gómez-Mejía, Haynes, Núñez-Nickel, Jacobson and Moyano-Fuentes (2007). Literature relating to the analyses of generational stage of family business ownership and business asset size as moderators of the relationship strength between SEW and return on business equity in family farms is also presented (Gómez-Mejía, Cruz, Berrone, & De Castro, 2011; Gottardo & Moisello, 2015). To better understand nonfinancial motivation in the family farm, this study used a validated, multidimensional measurement of SEW, the REI model, which operationalizes three affective endowments of SEW (Hauck, Suess-Reyes, Beck, Prügl, & Frank, 2016). The chapter continues with literature relevant to the family farm business, family farm household net worth, subjective quality of life, and return on business equity. This chapter concludes with an analysis of family farm financial conditions in 1996 compared with the current family farm financial environment.

Sustainable Family Business Theory

Theoretical framework for this study draws from Sustainable Family Business Theory II (SFBT II) submitted by Danes, Lee, Stafford and Heck (2008) as a revision of Sustainable Family Business Theory first introduced by Stafford, Duncan, Danes, and Winter (1999). The SFBT II revision by Danes et al. (2008) is used in this study to (a) include inputs, processes, and achievements for both family and business systems; (b) divide inputs into resources, structures, and constraints; (c) identify differences between short-term viability and long-term sustainability; and (d) specify financial soundness and functional integrity as family achievements. The origins of Sustainable Family Business Theory propose that family and business are separate but equal entities and examined in the same detail as equal systems with degrees of overlap between the two (Stafford et al., 1999). Stafford et al. (1999) proposed in SFBT that family business sustainability includes more than financial success. Family business sustainability assumes success of the two systems' results from a flow of human, social, and financial capital stocks between family and business. To examine the impact of financial performance and socioemotional wealth on family business achievements, SFBT II buttresses this study by operationalizing resources, structure, and constraints that are influenced by family and business processes to attain farm family achievements.

Sustainable Family Business Theory is rooted in General Systems Theory (von Bertalanffy, 1950); it depicts the family business as a dynamic, interdependent system comprised of the family and the business. Both the family and business systems may positively or negatively affect the other (Stafford et al., 1999). General Systems Theory (GST) was proposed by von Bertalanffy (1950), an Austrian biologist, to understand the dynamic interaction of phenomena, termed "systems," that occur in various branches of science. The concept of

“systems” is described as a complex of interacting elements that work together as individual subsystems of a larger structure (von Bertalanffy, 1950). GST includes the concept of hierarchy, which “layers” the subsystems into larger systems that are embedded in suprasystems (Whitchurch & Constantine, 1993). Two major assumptions of systems theory are interdependency and interrelatedness (Whitchurch & Constantine, 1993). This stratified view of interdependent, interrelated units informs this investigation of family farm businesses as an interaction between the (a) family system; (b) farm business system; and (c) the interface of both systems at multiple levels.

SFBT II is a widely accepted theory used to inform research in family business literature. Financial and nonfinancial family business capital and their relationships to short-term achievements and long-term sustainability of family businesses have been studied using SFBT II (Danes, Stafford, Haynes, & Amarapurkar, 2009). Danes et al. (2009) used hierarchical multiple regression to estimate models and investigate relationships between variables from 1997 and 2000 NFBS data. Additionally, Danes and Brewton (2012) applied SFBT II to track family capital resources and processes used to apply those resources in a family owned dairy equipment business case study.

Sustainable Family Business Theory II advances the current discourse by (a) including the structure of both family and business; (b) separating types of capital into resources and constraints; (c) specifying achievements; and (d) delineating short-term viability and long-term sustainability. See Figure 2.1 for a theoretical model depicting relationships between resources and constraints, processes, and achievements. Within the farm family, SFBT II suggests that achieving financial soundness through household net worth and functional integrity through subjective quality of life are the result of resources, constraints, and structure (i.e., stocks) that

are influenced by processes (i.e., flows) to accomplish short-term or long-term family business achievements (Danes et al., 2008). In other words, stocks are proposed as a repository of financial and nonfinancial resources and constraints, classified by parallel concepts in both systems as human capital, social capital, and financial capital. In contrast, the concept of flows refers to the process of using stocks through interpersonal or resource transactions (Danes et al., 2008). Sustainable Family Business Theory II can be used to examine the interactions between family and business systems, or specific activities inside either system (Danes et al., 2008). See Figure 2.2 for a depiction of the theoretical model used for this study.

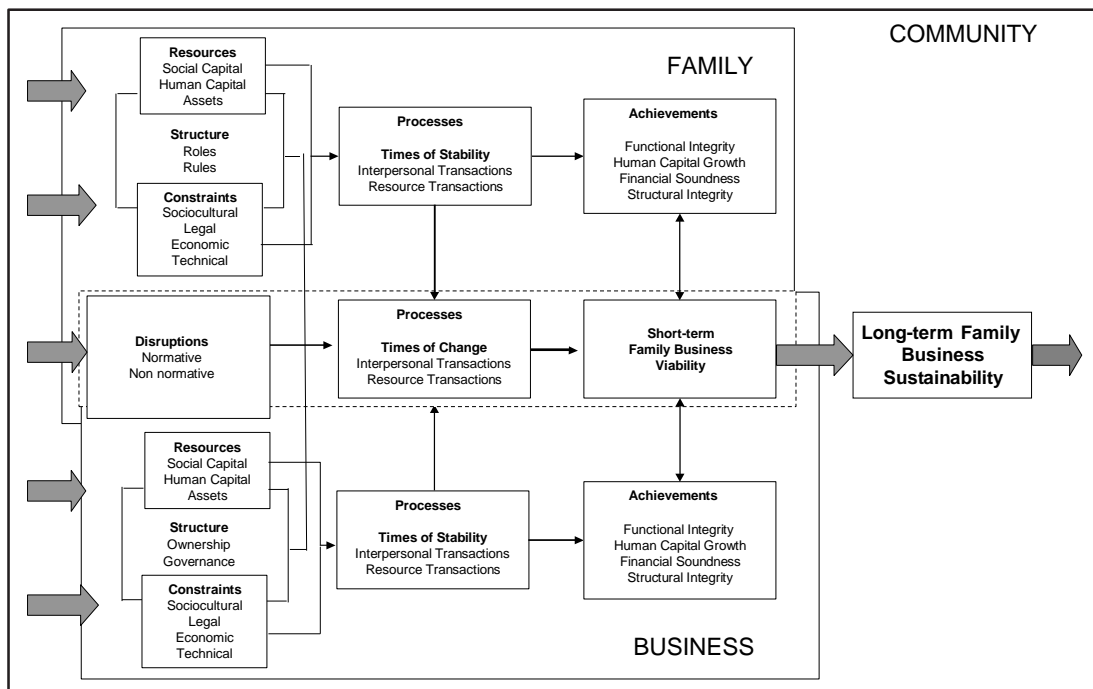


Figure 2.1. Applying stocks and flows to attain achievements in SFBT II (Danes et al., 2008)

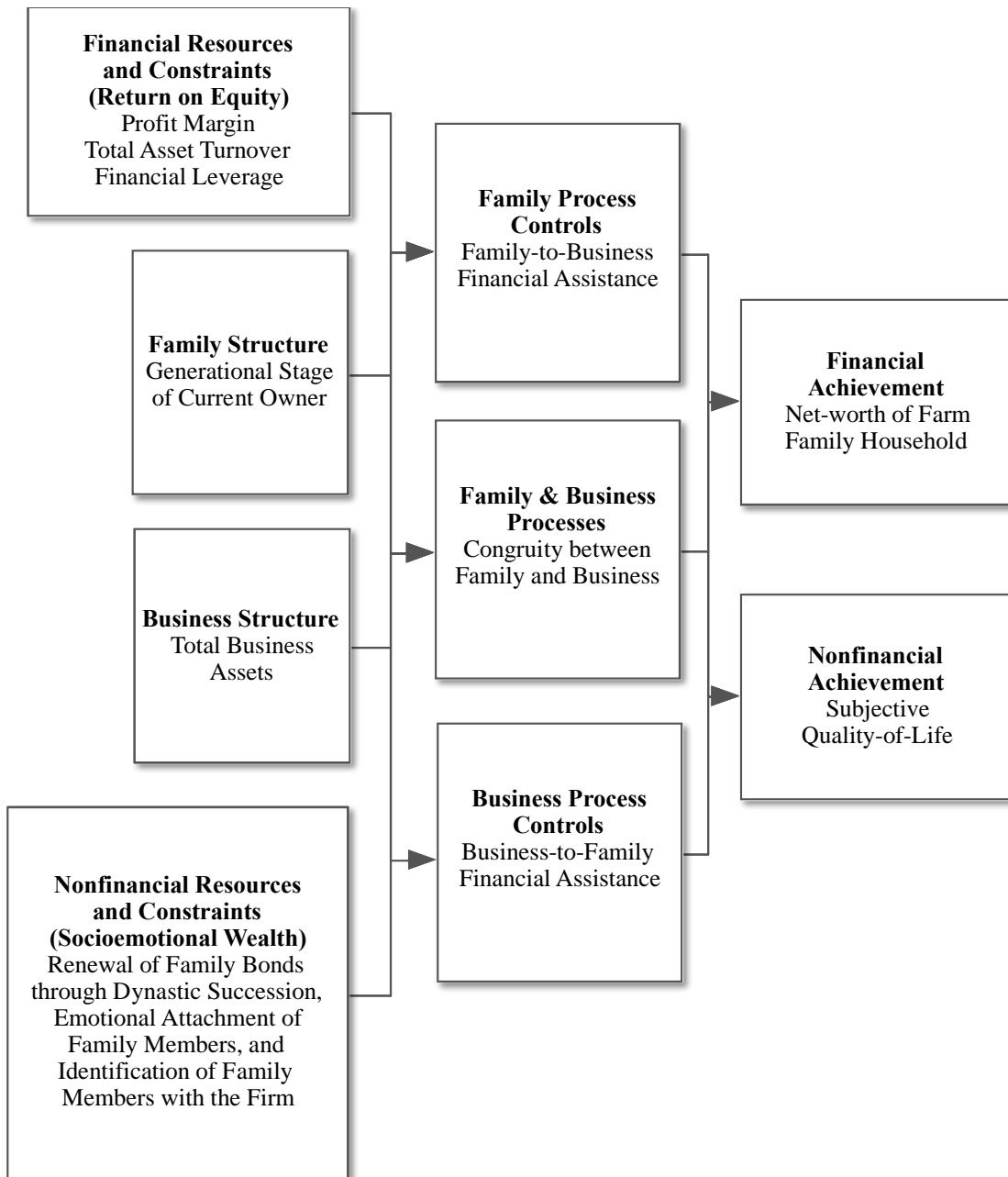


Figure 2.2. Theoretical model for this study adapted from SFBT (Danes et al., 2008; Stafford et al., 1999)

Socioemotional Wealth

Throughout this study, socioemotional wealth was included as a concept in the Sustainable Family Business Theory II model and operationalized using three endowments specified in the REI model, described later in this section. Theoretical and conceptual research of socioemotional wealth (SEW) has exposed the need to better understand nonfinancial factors influencing general family business decision-making (Evert, Martin, McLeod, & Payne, 2016; Gómez-Mejia, Haynes, Núñez-Nickel, Jacobson, & Moyano-Fuentes, 2007; Holt, Pearson, Carr, & Barnett, 2017; Jiang, Kellermanns, Munyon, & Morris, 2018). In a seminal study, socioemotional wealth was explained as “non-financial aspects of the firm that meet the family's affective needs, such as identity, the ability to exercise family influence, and the perpetuation of the family dynasty” (Gómez-Mejia et al., 2007, p. 106). In other words, SEW has been generally conceptualized as nonfinancial affective endowments resulting from family business ownership. However, measuring SEW has been inconsistent — ranging from merely identifying the respondent as a family business, to operationalizing tangential, ad hoc items in existing survey data (Berrone, Cruz, & Gómez-Mejia, 2012; Jiang, Kellermanns, Munyon, & Morris, 2018; Miller & Le Breton-Miller, 2014; Schultze & Kellermanns, 2015). The current study used the REI model, a validated, reliable model, to operationalize three separate endowments of socioemotional wealth (Hauck, Suess-Reyes, Beck, Prügl, & Frank, 2016). Operationalizing endowments of socioemotional wealth is a logical step forward in establishing SEW as a relevant theoretical and conceptual tool for family business research (Berrone et al., 2012; Hauck et al., 2016).

Early efforts to study nonfinancial motivation of human behavior used psychological constructs to conceptualize relevant aspects of decision-making (Gasson, 1973; Sjaastad, 1962).

These early studies examined nonfinancial factors such as emotional affect, non-money opportunity costs, and psychological incentives while investigating contextual human decision-making (Gasson, 1973; Sjaastad, 1962). For example, in a study of labor economics, Sjaastad (1962) suggested that, in addition to money costs, decision-making during human labor migration was influenced by non-money considerations, which were referred to as “psychic” costs. However, Sjaastad (1962) found measuring “psychic” costs was problematic; thus, the study defaulted to objective financial data when nonfinancial measurements were not available. A decade later, in a seminal study of farmer’s goals and values, Gasson (1973) found nonfinancial aspects of farming such as lifestyle, being self-employed, and enjoyment of farm work were influential factors in farmers’ decision-making. Additionally, Gasson (1973) observed that large farm businesses tended to be financially motivated, whereas small farm businesses were motivated by the “intrinsic aspects of work, particularly independence” (p. 534). Gasson concluded that farmers participating in the study were less financially motivated and more nonfinancially motivated when making farm business decisions. More recently, Dyer (2006) observed three types of family capital in general family businesses: (a) human capital, (b) social capital, and (c) physical and financial capital. Overall, Dyer (2006) conceptualized human and social capital that included dimensions echoed in recent socioemotional wealth literature that suggested future research investigate specific “behavioral definitions” to better understand the “family effect” on family business performance (p. 270). These early studies demonstrated financial motivation was only part of the decision-making story. Thus, nonfinancial motivation is an essential aspect of modeling family business decision-making behavior.

The field of family business research eventually embraced the concept of socioemotional wealth, which encompasses nonfinancial attributes unique to family business ownership. In a

landmark study of family-owned Spanish olive oil mills, Gómez-Mejia et al. (2007) borrowed from the behavioral agency model (Wiseman & Gómez-Mejía, 1998) to conceptualize socioemotional wealth as psychologically based, nonfinancial dimensions that influence family business decision-making. The behavioral agency model emphasizes prospect theory's assumption of loss aversion (Kahneman & Tversky, 1979) to better understand the effect of reference points and risk on business decision-making. Framing a business decision creates a base, or reference point, from which risk of positive or negative outcomes are determined (Gómez-Mejia et al., 2007). When framing this reference point, family decision-makers include various types of SEW endowments representing psychological affect such as intimacy, social status, and nonfinancial expectations of the family (Gómez-Mejia et al., 2007). Findings of the Gómez-Mejia et al. study indicated that, when including SEW in business decisions, the perception of losing family control of the business creates a decision-making reference point resulting in the acceptance of lower financial performance, or total business failure, rather than a potential loss of socioemotional wealth.

General family business research often applies propositions of the behavioral agency model such as establishing a gain or loss reference point for socioemotional wealth in the decision-making process (Gómez -Mejia, Campbell, Martin, Hoskisson, Makri, & Sirmon, 2014; Gómez-Mejia, Cruz, Berrone, & De Castro, 2011; Gómez-Mejia, Haynes, Núñez-Nickel, Jacobson, & Moyano-Fuentes, 2007; Schultze & Kellermanns, 2015; Wiseman & Gómez-Mejia, 1998). The behavioral agency model was developed to better understand business managerial risk-taking associated with incentive compensation (Wiseman & Gómez-Mejia, 1998). Borrowed from agency theory (Eisenhardt, 1989), business owners are assumed to possess diversified wealth, which results in a risk-neutral decision-making frame, while employees are focused on

remaining employed resulting in a risk-averse decision-making frame. However, agency theory failed to explain studies finding employee incentive compensation packages might result in both risk-seeking and risk-averse behavior (Wiseman & Gómez-Mejia, 1998). As stated by Wiseman and Gómez-Mejia (1998): “The risk preferences of loss-averse decision makers will vary with the framing of problems in order to prevent losses to accumulated endowment” (p. 135). Therefore, Wiseman and Gómez-Mejia (1998) explained incentive compensation decision-making resulted from loss-averse behavior, as proposed in prospect theory (Kahneman & Tversky, 1979). For example, an increase in incentive compensation growth results in decreased risk-seeking behavior to avoid a potential loss. Therefore, the preference for avoiding losses might cause decision-makers to stifle business growth.

Gómez-Mejia, Haynes, Núñez-Nickel, Jacobson and Moyano-Fuentes (2007) proposed that business risk seeking and risk averse behaviors originate with two categories of risk: (a) performance hazard, and (b) venturing risk. Performance hazard risk encompasses two possibilities: (a) below-target financial performance, and (b) total failure of the business. Family businesses tend to be loss averse when decisions negatively affect their SEW resources, even if decision-making increases the possibility of business failure or suboptimal financial performance (Gómez-Mejia et al., 2007). For example, Cyert and March (1963) observed below-target financial performance can result when comparing current business financial performance with past financial performance or the financial performance of similar businesses. Comparing financial performance in this way can result in rationalizing below-target profit in order to preserve nonfinancial priorities. Thus, loss-averse behavior can reduce financial performance due to the desire to avoid decreasing the family’s socioemotional wealth (Gómez-Mejia et al., 2007).

To maintain the desired level of SEW, reduced financial performance can be an acceptable outcome for the family farmer (Glover & Reay, 2015). Sustaining the family farm business requires examination of financial and nonfinancial incentives (Mishra, Fannin, & Joo, 2014). In a qualitative study of family-operated dairy farms, researchers found family farmers continued in business with minimal income due to a deep emotional attachment to their land and livestock (Glover & Reay, 2015). Glover and Reay (2015) found that farm family had emotional, noneconomic attachment to the farm, which influenced farm business decision-making. In other words, emotional attachment to the farm family, their land, and livestock establishes a meaningful reference point during business decision-making activity. Positive and negative valence of emotions have been found influential in family farm decisions (Glover & Reay, 2015). Therefore, nonfinancial resources such as SEW can replace financial considerations in business decision-making (Gómez-Mejía et al., 2007).

Research into family farming nonfinancial rewards has also been conceptualized in socioemotional wealth as a “non-pecuniary component” of family farming compensation (Dressler & Tauer, 2015, p. 405). The purpose of the Dressler and Tauer (2015) study was to measure an equivalent dollar amount of compensation attributable to SEW in the family farm business. In the longitudinal study of family farm managers’ compensation, Dressler and Tauer (2015) imputed the dollar amount of financial benefit that was attributable to nonfinancial compensation to quantify socioemotional wealth. Results of this empirical study of 230 family and non-family dairy farms indicated the pecuniary (i.e., financial) compensation attributable to socioemotional wealth was \$22,026, annually. Dressler and Tauer (2015) used regression models to estimate the dollar-equivalent value of SEW in family farming, which resulted in a finding that SEW was influential in family farm financial decision-making.

Investigating factors that moderate the strength of socioemotional wealth in family decision-making have also been investigated (Gottardo & Moisello, 2015; Suess-Reyes & Fuetsch, 2016). For example, family business asset size and generation of family ownership are found to have a moderating effect between SEW and financial performance in family businesses (Gómez-Mejia, Cruz, Berrone, & De Castro, 2011; Gottardo & Moisello, 2015; Suess-Reyes & Fuetsch, 2016). Generational stage of family ownership is reported to exhibit the strongest moderation effect in the founding stage, which lessens over successive generations (Gómez-Mejia et al., 2011). In family farming, generational stage of family ownership has been found to influence innovation and financial performance (Suess-Reyes & Fuetsch, 2016). Family farmers develop socioemotional connections with their business, producing nonfinancial motivation to sustain family ownership from generation-to-generation irrespective of financial returns (Suess-Reyes & Fuetsch, 2016). Therefore, the generational stage of family farm ownership is expected to reduce the strength of relationship between socioemotional wealth and return on business equity.

Family business asset size has also been found to have a moderating influence between socioemotional wealth and family business outcomes during business decision-making processes (Gottardo & Moisello, 2015). Decision-making in large asset size, family-owned businesses have been found to be influenced by socioemotional wealth considerations, which directly affect strategic financial outcomes (Gómez-Mejia et al., 2011). Additionally, Gómez-Mejia et al. (2011) also found that (a) financial performance hazard, and (b) non-family business owners were moderating factors that influence business decision-making when socioemotional wealth was a psychological reference point. However, in this study, only generational stage and business asset

size were examined as moderators between family farm business SEW and return on business equity.

Thus, researchers have found that the overall influence of SEW is integral to family business decision-making (Martin & Gomez-Mejia, 2016; Perry, Ring & Broberg, 2015). However, the literature is inconsistent when operationalizing socioemotional wealth, with researchers calling for measuring specific endowments attributable to business ownership (Chua, Chrisman, & De Massis, 2015; Jiang et al., 2018; Miller & Le Breton-Miller, 2014; Schulze & Kellermanns, 2015). This study moves the conversation forward by examining specific SEW endowments in relationship to financial and nonfinancial outcomes vital to sustaining the family farm business.

The REI Model

Operationalizing socioemotional wealth (SEW) has been inconsistent (Berrone, Cruz, & Gómez-Mejia, 2012; Debicki, Kellermanns, Chrisman, Pearson, & Spencer, 2016; Gómez-Mejia, Haynes, Núñez-Nickel, Jacobson, & Moyano-Fuentes, 2007; Hauck, Suess-Reyes, Beck, Prügl, & Frank, 2016), with calls for establishing widely accepted and operationalized theoretical arguments and concepts to model SEW phenomena (Jiang, Kellermanns, Munyon, & Morris, 2018; Miller & Le Breton-Miller, 2014; Schultze & Kellermanns, 2015). SEW has been conceptualized as various affective endowments representing nonfinancial attributes of family business ownership; however, generally accepted measurements for SEW have yet to be established (Jiang et al., 2018). Schultze and Kellermanns (2015) suggested improving future research models by operationalization specifying SEW-related endowments by remaining grounded in the behavioral agency model, which might improve connecting theoretical concepts to their empirical correlate.

In seminal work to operationalize SEW, Berrone, Cruz and Gómez-Mejia (2012) identified five dimensions of socioemotional wealth, which were construct into the model FIBER: (a) Family control, (b) Identification with the firm, (c) Binding social ties, (d) Emotional attachment of the family, and (e) Renewal of family bonds through family succession. However, the FIBER model has not been empirically validated. Therefore, borrowing three dimensions from the FIBER construct resulted in a shortened, empirically validated, reliable model, REI. This model was presented by Hauck, Suess-Reyes, Beck, Prügl and Frank (2016). The REI acronym represents three affective endowments: (a) R denotes *renewal* of family bonds to the business through family succession; (b) E denotes *emotional* attachment of the family; and (c) I denotes *identification* of family members with the business (Hauck et al., 2016). The following nine items — specified by Hauck et al. (2016, p. 139) as reliable, valid measurements of three SEW core affective endowments — guided this study in the selection of measurement proxies from NFBS data:

(R) renewal of family bonds to the business through family succession ($\alpha = 0.78$)

- (R1) “Continuing the family legacy and tradition is an important goal for my family business.”
- (R2) “Family owners are less likely to evaluate their investment on a short-term basis.”
- (R4) “Successful business transfer to the next generation is an important goal for family members.”

(E) emotional attachment of the family ($\alpha = 0.85$)

- (E3) “In my family business, the emotional bonds between family members are very strong.”

- (E5) “Strong emotional ties between family members help us maintain a positive self-concept.”
- (E6) “In my family business, family members feel warmth for each other.”

(I) identification of family members with the business ($\alpha = 0.72$)

- (I1) “Family members have a strong sense of belonging to my family business.”
- (I3) “My family business has a great deal of personal meaning for family members.”
- (I5) “Family members are proud to tell others that we are part of the family business.”

Family Farm Business

Family farm businesses are essential to global food production and economic prosperity (Graeub, Chappell, Wittman, Ledermann, Kerr, & Gemmill-Herren, 2016). Worldwide, there are approximately 570 million farms with 90 percent operated by a family of related individuals (Food and Agriculture Organization of the United Nations, 2014). Prosperous family farms are vital to reducing poverty and hunger for the world’s most vulnerable populations (Samberg, Gerber, Ramankutty, Herrero, & West, 2016). In the U.S., family farm businesses, farms where ownership and decision-making are controlled by people related by blood, marriage, or adoption, account for 99% of all farms and 90% of total farm production (MacDonald, Hoppe, & Newton, 2018; United States Department of Agriculture Economic Research Service, 2018a). However, even with this preeminent position in global agriculture, the economic well-being of family farms is inconsistent, often continuing for generations with meager incomes and are sustained by nonfinancial benefits such as emotional ties to the land, business, or maintaining family ownership (Arbuckle & Kast, 2012; Glover & Reay, 2015; Howley, Dillon, Heanue, & Meredith,

2016). Nonfinancial returns have been conceptualized as socioemotional wealth (SEW) in general family business literature (Gómez-Mejía, Haynes, Núñez-Nickel, Jacobson, & Moyano-Fuentes, 2007). Recently, socioemotional wealth has been studied in family farm literature; however, there are inconsistent usage of specific variables to capture SEW measurements (Dressler & Tauer, 2015; Glover & Reay, 2015). Given the reported impact of nonfinancial factors on general family business decisions, it is essential to better understand the relationship between socioemotional wealth and achievements vital to sustaining the family farm.

Minimal financial returns have been a problem in family farming for generations (Glover & Reay, 2015), yet researchers have claimed financial management has been a source of contention between farmer and farm business advisors (Hilkens, Reid, Klerkx, & Gray, 2018). Family farmers often rely on government payments and off-farm income to sustain the farm business during times of economic stress (Mishra, Fannin, & Joo, 2014). During the 1930's, United States farm subsidy programs were developed to stabilize the persistently variable and low income of family farms. In various forms, these subsidy programs continue to this day, sustaining family farmers during times of economic uncertainty (Jones, El-Osta, & Green, 2006). Tweeten (1969) observed two primary reasons for low financial returns in farm businesses: (a) financial adjustments to new technology, and (b) external economic pressures. Tweeten (1969) emphasized that financial costs of adapting to and using new farm production technology reduced net farm income. Financial stress often resulted from economic pressures outside of the farm business such as the following: (a) fluctuating commodity prices, (b) periods of national economic distress, (c) trade wars, and (d) inflation (Tweeten, 1969). Even though minimal financial returns have plagued family farm businesses, investigating the impact of

socioemotional wealth on family farm achievements remains understudied in family farm literature.

Nonfinancial family farm achievements such as overall well-being have been associated with farm income, but such nonfinancial attainments have been argued as separate from farm business success (Howley, Dillon, Heanue, & Meredith, 2016). During the United States “farm crisis” of the 1980’s and early 1990’s, considerable research examined farm financial stress and overall farmer well-being (Brooks, Stucker, & Bailey, 1986; Coughenour & Swanson, 1988, 1992; Molnar, 1985; Van Hook, 1990; Wozniak, Draughn, & Knaub, 1993), but recent investigations of family farm financial and nonfinancial stress have been sparse. Research has also indicated that nonfinancial factors were essential to family farm sustainability (Glover & Reay, 2015; Howley, Dillon, Heanue, & Meredith, 2016). Specifically, higher levels of overall well-being in farm families were associated with low levels of stress and increased community involvement (Arbuckle & Kast, 2012). Overall well-being has also been associated with farm family quality of life, farm income, and farm size (Brooks, Stucker, & Bailey, 1986; Coughenour & Swanson, 1992; Danes & Rettig, 1995; Howley et al., 2016; Molnar, 1985). Echoing these findings, total household wealth was found strongly associated with farm family quality of life (Coughenour & Swanson, 1992; Molnar, 1985). Therefore, the literature indicated that nonfinancial achievements such as subjective quality of life are vital to sustaining the family farm (Arbuckle & Kast, 2012; Coughenour & Swanson, 1988; Gasson, 1973; Piedra-Muñoz, Galdeano-Gómez & Pérez-Mesa, 2016).

Survival of family-owned businesses, in general, depend on successful business operations and minimally functional families (Stafford, Duncan, Danes, & Winter, 1999). In family business literature, specific family system financial outcomes have been associated with

business financial goals including percentage of family ownership, number of family-owned businesses, family stock market return, total family shareholder return, and family wealth (Holt, Pearson, Carr, & Barnett, 2017). Farm family household net worth measures achievement of family wealth by measuring financial and physical asset accumulation of the farm family (Danes, Stafford, Haynes, & Amarapurkar, 2009; Fitzgerald, Haynes, Schrank, & Danes, 2010).

Since family-owned businesses, in general, depend on minimally functional families and successful business operations to survive (Stafford, Duncan, Danes & Winter, 1999), families must successfully pursue satisfaction for the family household to survive (Becker, 1965). For this study, pursuit of satisfaction to sustain functional families was framed as a subjective measure of quality of life as defined by the World Health Organization: “An individuals’ perception of their position in life, in the context of the culture and value systems in which they live, and in relation to their goals, expectations, standards and concerns” (WHOQOL Group, 1995, p. 1405). Regardless how descriptive this definition is, quality of life and subjective well-being are inconsistently defined in the literature (Camfield, 2008; Diener, 2006). To differentiate between subjective well-being and quality of life, Diener (2006) claimed that quality of life is often measured objectively as desirable or undesirable living conditions such as physical health and income. However, the current study argues that subjective quality of life (SQOL) is a “broad ranging concept, affected in a complex way by the person’s physical health, psychological state, level of independence, social relationships, and their relationship to salient features of their environment.” (WHOQOL Group, 1995, p. 1405). In other words, SQOL is an overarching concept encompassing objective life circumstances, subjective well-being, and the individual’s evaluation of their life situation (Diener, 2006; WHOQOL Group, 1995). Therefore, a

nonfinancial achievement vital to sustaining the farm family system and intertwined with family farm business success is a subjective measure of quality of life.

Return on Business Equity

Return on business equity (ROE) captures business financial performance as a measurement of return on the owner's equity in the business (Reilly & Brown, 2000). Measuring financial performance, using ROE and calculated with the DuPont System formula, includes a measure of financial leverage — total assets divided by common equity — to measure business risk incurred through financial debt (Reilly & Brown, 2000). For this study, common equity was represented by calculating owner's equity (i.e., farm net worth) in the family farm business. Application of the DuPont System formula deconstructs the sources of farm profitability into three ratios: (a) profitability of sales as the profit margin ratio, (b) asset use efficiency as the asset turnover ratio, and (c) financial leverage as the inverse of the solvency ratio (Mishra, Moss, & Erickson, 2009). Both sides of the equation were transformed by taking the natural log (i.e., \log_e) of each ratio, which resulted in normally distributed variables for analysis (Mishra et al., 2009). The DuPont System formula has been previously applied to measure farm financial performance in the literature (Mishra, Harris, Erickson, Hallahan, & Detre, 2012; Mishra, Moss, & Erickson, 2009). Return on business equity is depicted in Equation 1, using the DuPont System formula. Ratio descriptions are shown in Equation 2 (Reilly & Brown, 2000). An empirical model was adapted from Reilly and Brown (2000) and used in this study is shown in Equation 3.

$$\text{ROE} = \frac{\text{Net Income}}{\text{Net Sales}} \times \frac{\text{Net Sales}}{\text{Total Assets}} \times \frac{\text{Total Assets}}{\text{Common Equity}} \quad (1)$$

$$\text{ROE} = \text{Profit Margin} \times \text{Total Asset Turnover} \times \text{Financial Leverage} \quad (2)$$

$$\text{ROE} = \frac{\text{Net Farm Profit}}{\text{Gross Farm Income}} \times \frac{\text{Gross Farm Income}}{\text{Total Farm Assets}} \times \frac{\text{Total Farm Assets}}{\text{Farm Net Worth}} \quad (3)$$

Family Farm Financial Conditions in 1996: Then and Now

Financial data for this research were taken from survey responses given for the 1996 calendar year, which was when farm financial conditions were continuing to recover from the “farm crisis” of the 1980’s. This section compares family farm financial conditions between 1996 and today using the following: (a) number and size of family farms; (b) net farm income; (c) debt-to-asset ratio; and (d) return on business equity. The number and gross sales of family farms illustrate general trends in farm businesses over the past two decades. Net farm income and debt-to-asset ratio are essential measures of family farm financial health. As stated earlier in this chapter, return on business equity captures financial performance in relationship to owner’s equity. Other farm sector data such as interest rates, commodity prices, off-farm income, and land values are addressed as part of family farm financial conditions, but a detailed examination of these important factors is beyond the scope of this study.

Since 1996, there has been substantial annual fluctuation in the number of U.S. family farms. A minor increase, from 1.96 million family farms in 1996 to 1.98 million in 2018, resulted from a decrease in lower-gross-sales on family farms and a corresponding increase in higher-gross-sales operations (United States Department of Agriculture Economic Research Service & National Agriculture Statistics Service, 2019). As seen in Table 2.1, the percentage of total farms represented by family farmers is almost unchanged (United States Department of Agriculture Economic Research Service & National Agriculture Statistics Service, 2019). Family

farms with higher-gross-sales, \$100,000 or more annually, tend to be more susceptible to financial stress since they have less off-farm income and comparatively more debt (Key, Burns, & Lyons, 2019). Therefore, the increased number of larger family farms could result in significant problems during times of economic stress in the farm sector (Iammartino & Dooley, 2018). Even though the number of family farms is similar to 1996, the financial characteristics and the financial environment of family farmers have evolved. These changes are primarily due to an increase in family farm debt, which was taken on largely for the purchase of farmland (Key et al., 2019).

Table 2.1. Family Farms by Farm Size Class (Gross Sales)

Year	Number of family farms	Less than \$50,000 (percent of family farms)	\$50,000 - \$249,999 (percent of family farms)	\$250,000 - \$499,999 (percent of family farms)	\$500,000 - \$999,999 (percent of family farms)	\$1,000,000 or more (percent of family farms)	Family farms as a percent of total farms
1996	1,961,659	74.3	17.8	4.9	2.0	1.0	97.6
1997	2,011,571	74.7	19.1	3.9	1.5	0.7	98.2
1998	2,022,422	75.7	16.7	4.5	2.0	1.0	98.0
1999	2,147,575	77.1	16.5	3.6	1.7	1.1	98.2
2000	2,121,491	76.0	17.7	3.7	1.7	0.8	97.9
2001	2,094,322	76.2	16.8	4.0	1.8	1.2	97.4
2002	2,114,826	76.2	16.7	4.1	1.9	1.1	98.3
2003	2,084,715	76.6	16.1	4.1	2.0	1.2	98.3
2004	2,060,822	76.4	15.9	4.2	2.0	1.5	97.8
2005	2,034,048	76.5	15.9	4.1	2.0	1.5	97.1
2006	2,021,903	76.8	15.4	4.3	2.1	1.5	97.1
2007	2,143,398	77.1	13.4	4.4	3.2	1.9	97.6
2008	2,129,869	76.5	13.6	4.4	3.3	2.1	97.2
2009	2,131,007	76.2	13.9	4.5	3.3	2.1	97.2
2010	2,143,063	76.7	13.3	4.5	3.4	2.0	97.7
2011	2,114,668	76.3	13.3	4.6	3.6	2.2	97.3

Year	Number of family farms	Less than \$50,000 (percent of family farms)	\$50,000 - \$249,999 (percent of family farms)	\$250,000 - \$499,999 (percent of family farms)	\$500,000 - \$999,999 (percent of family farms)	\$1,000,000 or more (percent of family farms)	Family farms as a percent of total farms
2012	2,043,483	74.9	13.4	4.4	3.4	3.9	97.2
2013	2,045,352	74.6	13.5	4.5	3.2	4.1	97.6
2014	2,053,008	73.2	14.5	4.6	3.5	4.2	98.9
2015	2,032,300	72.9	14.7	4.6	3.9	3.8	98.7
2016	2,027,269	73.4	14.2	4.6	3.9	3.8	98.8
2017	1,989,574	75.7	12.9	4.3	3.5	3.6	97.8
2018	1,979,368	76.1	12.6	4.2	3.4	3.6	97.9

Source: United States Department of Agriculture Economic Research Service & National Agricultural Statistics Service. (1996-2018). *Agricultural Resource Management Survey*. Data as of November 27, 2019.

Net farm income, a widely accepted measure of profitability, has been increasing for family farmers since 1996, as illustrated in Figure 2-3. Commodity prices pushed net farm income higher, achieving record highs in 2012 and 2013 before decreasing more than 30 percent by 2018 (Key, Burns, & Lyons, 2019). This plunge in net farm income, however, is less serious than the decline that ushered-in the 1980’s “farm crisis” when net cash farm income collapsed by 52 percent (Key, Burns, & Lyons, 2019). Some farmers adjusted to lower income during recent years by reducing their inventory of crops and livestock, which resulted in greater income than would otherwise have been reported (Key, Burns, & Lyons, 2019). It is interesting to note that net *cash* farm income is currently at levels similar to 1996 when comparing both timeframes in 2018 dollars and adjusting for inflation using a chain-type GDP deflator (Key, Burns, & Lyons, 2019; United States Department of Agriculture Economic Research Service, 2018b).

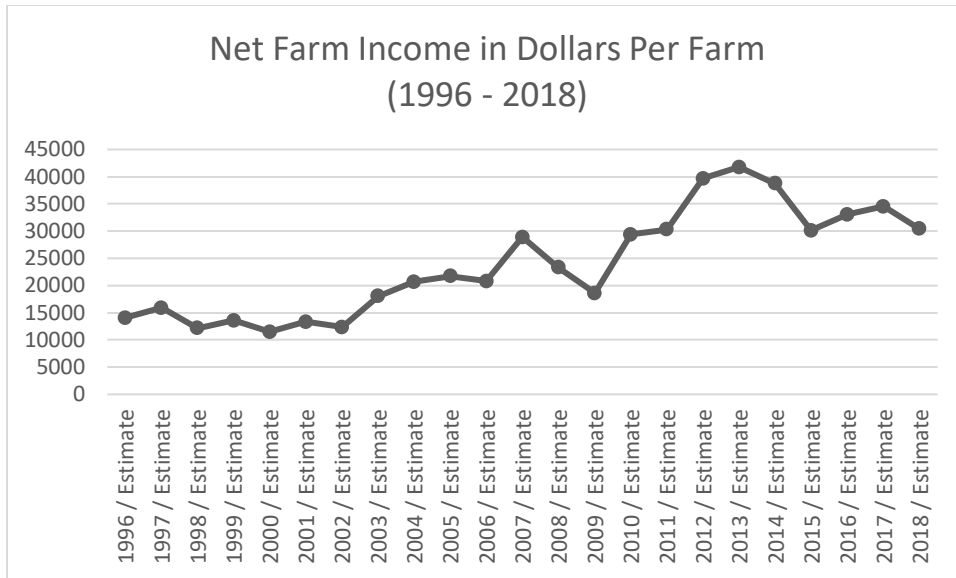


Figure 2.3. Family Farm Net Farm Income 1996-2018 (United States Department of Agriculture & National Agriculture Statistics Service, 2019)

Debt-to-asset ratio, an indicator of financial well-being and a widely used measure of financial leverage and bankruptcy risk, as seen in Figure 2-4, has improved since 1996 levels even though household farm debt is near 30-year highs (Key, Burns, & Lyons, 2019; United States Department of Agriculture Economic Research Service & National Agriculture Statistics Service, 2019). This improvement in the debt-to-asset ratio can be attributed, at least in-part, to an increase in farm assets, particularly land values, which comprise more than 80 percent of assets in the farm sector (Key, Burns, & Lyons, 2019). An increase in land values since 1996 has made it possible for farmers to take-on more debt, but even though increased debt can reduce the farm’s financial strength, the debt-to-asset ratio can indicate financial improvement (Iammartino & Dooley, 2018). Additionally, agricultural lending policies have become more restrictive since 1996, which has resulted in lower loan-to-value ratios and have improved farmer’s debt-to-asset ratio (Zhang & Tidgren, 2018). However, in recent years the demand for farmland has decreased and resulted in somewhat lower land values and a slight increase, or worsening, of farmers’ debt-

to-asset ratio (Key, Burns, & Lyons, 2019). Even so, the agricultural debt-to-asset ratio is currently better than farmers experienced in 1996.

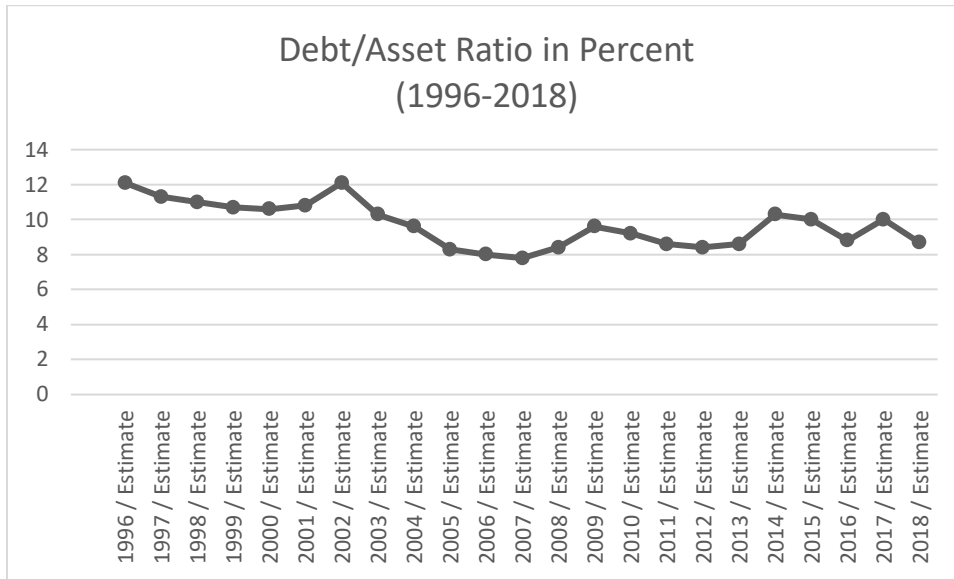


Figure 2.4. Family Farm Debt-to-Asset Ratio 1996-2018 (United States Department of Agriculture Economic Research Service & National Agriculture Statistics Service, 2019)

In this study, return on business equity (ROE) was used to measure family farm profitability, indicating farm business financial performance by measuring return on owner’s equity (Reilly & Brown, 2000). As seen in Table 2.2, agricultural ROE is slightly better in recent years than in 1996, e.g., -0.60 in 1996 versus 0.00 in 2018 (United States Department of Agriculture Economic Research Service & National Agriculture Statistics Service, 2019). This minimal improvement in ROE for the past 22 years has been the result of several recent factors: (a) the drop in commodity prices from a 2012 peak leading to; (b) a precipitous drop in net farm income combined with; (c) a more favorable interest rate environment (long-term lending with interest rates at around 4 percent) that resulted in record high farm sector debt (Key, Burns, & Lyons, 2019). In contrast to 1996, as mentioned earlier, family farms have grown in land acreage and gross sales; both changes have been made possible by higher commodity prices and lower

interest rates, even though interest rates have recently trended upward (Key, Burns, & Lyons, 2019).

Table 2.2. Family Farm Return on business equity and Component Ratios 1996-2018

Year	Operating Profit Margin (percent)	Asset Turnover Ratio (number of times)	Assets / Net Worth (percent)	Return on business equity (percent)
1996	3.60	0.20	1.14	-0.60
1997	2.20	0.20	1.12	-0.80
1998	-0.10	0.20	1.12	-1.10
1999	1.20	0.20	1.12	-0.90
2000	-2.30	0.10	1.12	-1.40
2001	-2.80	0.20	1.12	-1.50
2002	-5.90	0.20	1.13	-2.00
2003	-1.70	0.10	1.11	-1.00
2004	-1.10	0.10	1.11	-0.80
2005	3.00	0.10	1.09	-0.20
2006	2.20	0.10	1.08	-0.30
2007	7.60	0.10	1.08	0.50
2008	2.40	0.10	1.09	-0.30
2009	-1.00	0.10	1.10	-0.80
2010	6.80	0.10	1.10	0.50
2011	6.80	0.10	1.09	0.60
2012	10.60	0.20	1.09	1.40
2013	8.80	0.20	1.09	1.10
2014	7.10	0.20	1.11	0.80
2015	2.90	0.10	1.11	0.00
2016	3.90	0.10	1.10	0.20
2017	5.70	0.10	1.11	0.40
2018	2.90	0.10	1.09	0.00

Source: United States Department of Agriculture Economic Research Service and National Agricultural Statistics Service. (1996-2018). *Agricultural Resource Management Survey*. Data as of December 10, 2019.

Summary

Researchers have scrutinized the effect of nonfinancial motivation in relationship to sustaining the family farm business (Arbuckle & Kast, 2012; Coughenour & Swanson, 1988; Gasson, 1973; Piedra-Muñoz, Galdeano-Gómez & Pérez-Mesa, 2016). Within the past decade, studies of nonfinancial motivation in family business decision-making have focused on socioemotional wealth (SEW) as both a theory and a concept in general family business literature. Based on the behavioral agency model, the theory of SEW has demonstrated socioemotional wealth to be a vital psychological reference point in general family business research (Gómez -Mejia, Campbell, Martin, Hoskisson, Makri, & Sirmon, 2014; Gómez-Mejia, Cruz, Berrone, & De Castro, 2011; Gómez-Mejia, Haynes, Núñez-Nickel, Jacobson, & Moyano-Fuentes, 2007; Schultze & Kellermanns, 2015; Wiseman & Gómez-Mejia, 1998). Researchers have positioned socioemotional wealth as a theory, a concept, or both, in various studies of social and emotional affective endowments unique to family business ownership (Evert, Martin, McLeod, & Payne, 2016; Gómez-Mejia, Haynes, Núñez-Nickel, Jacobson, & Moyano-Fuentes, 2007; Holt, Pearson, Carr, & Barnett, 2017; Jiang, Kellermanns, Munyon, & Morris, 2018). However, to better understand socioemotional wealth as nonfinancial motivators in the family farm business decision-making, this research uses a validated, multidimensional measurement of SEW, the REI model. This study is guided by Sustainable Family Business Theory II (SFBT), which is grounded in general systems theory and supports the theoretical framework. This study also analyzes the generational stage of family business ownership and business asset size as moderating variables between SEW and return on business equity in the family farm business.

Chapter 3 - Methodology

Introduction

Achieving desirable levels of household net worth and subjective quality of life were investigated as indicators of personal financial success in the family farm business. Studying relationships between these achievements and measurements of socioemotional wealth helped to inform a better understanding of family farm sustainability. Research design and measurement of independent variables were guided by: (a) Sustainable Family Business Theory II (SFBT II); (b) the DuPont System formula for calculating return on business equity as a measurement of financial performance of the family farm business; and (c) the REI model of socioemotional wealth. This chapter explains elements of the research design, data, sample, and measurements used in this study. Family farm literature, guided by theoretical framework, informed the following research questions and hypotheses:

RQ₁: What is the relationship between socioemotional wealth, measured using three dimensions of REI, and household net worth in the family farm business?

H₁: Lower levels of three measurements of socioemotional wealth, using the REI model, are associated with higher levels of family farm household net worth.

RQ₂: What is the relationship between return on business equity, measured using the DuPont System formula, and household net worth in the family farm business?

H₂: Higher levels of return on business equity are associated with higher levels of family farm household net worth.

RQ₃: What is the relationship between socioemotional wealth, measured using the three dimensions of REI, and subjective quality of life in the family farm business?

H₃: Higher levels of three measurements of socioemotional wealth, using the REI model, are associated with higher levels of family farm subjective quality of life.

RQ₄: What is the relationship between return on business equity, measured using the DuPont System formula, and subjective quality of life in the family farm business?

H₄: Higher levels of return on business equity, measured using the DuPont System formula, are associated with higher levels of family farm subjective quality of life.

RQ₅: What is the moderating effect of generational stage of the family business between socioemotional wealth, measured using three dimensions of REI, and return on business equity, measured using the DuPont System formula, in the family farm business?

H₅: Generational stage of the family farm business reduces strength of the relationship between socioemotional wealth and return on business equity in the family farm business.

RQ₆: What is the moderating effect of total business assets between socioemotional wealth, measured using the three dimensions of REI, and return on business equity, measured using the DuPont System formula, in the family farm business?

H₆: Total business asset size reduces strength of the relationship between socioemotional wealth and return on business equity in the family farm business.

Data and Sample

Data were obtained from the 1997 National Family Business Survey (NFBS). The NFBS is a nationally representative sample of family businesses containing financial and nonfinancial data for both households and businesses. More recent data measuring family farm households and businesses variables could not be found. NFBS was developed to study processes and interactions between family and business systems in U.S. family-owned businesses and currently consists of three waves: 1997, 2000, and 2007. The 2000 wave surveyed aspects of owner/managers involvement in continuing their business, as well as overall business continuation, using parallel but not identical variables from 1997 (Danes, Stafford, Haynes, & Amarapurkar, 2009; Winter, Danes, Koh, Fredericks, & Paul, 2004). The 2007 wave focused on data relevant to the effect of natural disasters on family businesses (NIMSS, 2016). Therefore, the 2000 and 2007 waves do not contain all variables used in this study (e.g., measuring the REI dimensions of socioemotional wealth), so cross-sectional analyses of the 1997 data was used. A fourth wave of NFBS data, the 2016 survey, was not available as of the writing of this research study.

Over 14,000 U.S. family business households were screened as potential participants in the 1997 NFBS, resulting in 1,116 eligible households with 673 participants identified for inclusion at completion of the interviews (Heck & Trent, 1999; Winter, Fitzgerald, Heck, Haynes, & Danes, 1998). Of the eligible family business households in the 1997 NFBS, fifteen percent of respondents self-identified as agricultural businesses ($n = 101$) and were identified as usable for this study. It is interesting to note that in this subsample all household managers were married to the business manager of the family farm. Survey questions were selected to measure the following variables: (a) net worth of household (a financial outcome); (b) subjective quality

of life (a nonfinancial outcome); (c) return on business equity (i.e., calculated using the DuPont System formula); (d) socioemotional wealth (i.e., measured with proxies for three REI core affective endowments); and (e) predictor variables (i.e., generational stage of ownership, total business assets, family-to-business financial assistance, business-to-family financial assistance, and congruity between family and business) informed by Sustainable Family Business Theory II and family farm business literature.

Even though the proposed data originated from a 1997 survey, present-day U.S. farm families confront financial and nonfinancial conditions similar to the 1980's and 1990's, which has led some researchers to label the current situation in agriculture as a "new farm crisis" (Garcia & Sensenich, 2019, p. 14). More specifically, government statistics recently indicated that U.S. farmers are experiencing debt loads at similar levels to those encountered during the 1980's "farm crisis" era, and farmers' debt-to-asset ratios are historically low (Key, Litkowski, & Williamson, 2018), which suggests financial and emotional stress similar to the 1980's and 1990's. See Chapter 2 for a comparison of financial conditions from 1996 to the present day.

Family involvement in day-to-day operations such as organizational and leadership decisions are necessary to define a family business as an economic entity (Chua, Chrisman, & Sharma, 1999). The NFBS provides exclusive data relevant to family business research.

Participation in the 1997 NFBS was determined using the following guidelines:

"To qualify as a family business, the owner-manager had to have been in business for a least a year, worked at least six hours per week year-round or a minimum of 312 hours a year in the business, been involved in its day-to-day management, and resided with another family member" (Winter et al., 1998, p. 242).

Therefore, significant interaction between the family and business systems was verified before inclusion in the 1997 survey. This sample informs the present study with insights and detail into both family farm household and business.

The 1997 NFBS used a household sampling frame consisting of three types of questionnaires used by telephone interviewers: (a) household manager, (b) business manager, and (c) a combination questionnaire including both household and business manager questions (Heck & Trent, 1999; Winter, Fitzgerald, Heck, Haynes, & Danes, 1998). The present study used only responses containing both household and business questionnaires for the same household, and combination questionnaires. Data obtained from one household using either the household or business questionnaire only, were not used.

Measurements

Net Worth of Family Household

Family household net worth measured success of the farm family at achieving personal financial wealth by measuring financial and physical asset accumulation (Danes, Stafford, Haynes, & Amarapurkar, 2009; Fitzgerald, Haynes, Schrank, & Danes, 2010). Net worth of the family household was calculated by subtracting total family debt (including mortgage) from total household assets. Total household assets were asked with two questions: (a) “What was the approximate market value of your home as of December 31, 1996?”; and (b) “What is the total market value of your family’s (household’s) (other) assets?”. These items were coded to the nearest thousand dollars, and then added to create a single variable. Total household debt (including mortgage) was asked with the question, “What is the total amount of debt owed by your family as of December 31, 1996? This could include a home mortgage as well as any other debt”. Therefore, net worth of the family household was calculated by subtracting total debt from

the calculated amount of total assets. To adjust for zero amounts and negative numbers, this continuous variable was transformed by taking the natural log (i.e., \log_e) of the response (Curran-Everett, 2018; Gelman & Hill, 2007).

Subjective Quality of Life

Although prominent researchers have established guidelines for measuring subjective quality of life (SQOL), specific measurements have yet to be achieved (Diener, 2006). Conversely, it has been suggested that SQOL should be considered as synonymous with subjective well-being (Camfield, 2008), which is further indication that specific measurements are not widely accepted. However, the World Health Organization (WHO) defines quality of life as a “broad ranging concept, affected in a complex way by the person’s physical health, psychological state, level of independence, social relationships, and their relationship to salient features of their environment” (WHOQOL Group, 1995, p. 1405). Therefore, this study followed WHO guidance for conceptualizing quality of life as a broad ranging measurement. Subjective quality of life was asked with the question “How satisfied are you with the overall quality of your life?” and measured using a five-point Likert-type scale ranging from 1 (*very dissatisfied*) to 5 (*very satisfied*). The concept of “quality of life” was not defined for survey respondents; therefore, this variable measured a broad range of well-being for the farm family.

Structure and Process Controls

Family Structure

Family structure was measured using generational stage of family farm business ownership and was asked with the question, “Are you a...” and measured with response categories of: 1 (*first generation owner, includes founding generation, includes owners who purchased or inherited business from relative of the same generation*), 2 (*second generation*), 3

(*third*), or 4 (*fourth generation or more*). Dummy coding was used to reduce the number of model parameters for this variable due to the small sample size, so that *first generation* was 1, otherwise was 0.

Business Structure

Total business asset size has been found to be a moderating factor between socioemotional wealth and family business achievements during business decision-making (Gottardo & Moisello, 2015). Decision-making in large-asset size family-owned businesses were found to be influenced by socioemotional wealth considerations, which directly affect strategic financial outcomes (Gómez-Mejia et al., 2011). This variable representing business structure measured total business assets was asked with the question, “What were the total assets of business as of December 31, 1996?”. This continuous variable was coded with the dollar value of the response. A natural log (i.e., \log_e) transformation was used to adjust for zero amounts and negative numbers and rescale the theoretical distribution of the sample mean consistent with a normal distribution (Curran-Everett, 2018; Gelman & Hill, 2007).

Family Process Control

Family business literature indicates family-to-business financial assistance, also known as financial intermingling, is associated with lower measurements of subjective success (Danes et al., 2009). Financial assistance from family-to-business was measured with the question, “In 1996, did you ever meet your business cash flow problems by using household income to meet business needs?”. Responses were measured with 0 (*no*) or 1 (*yes*), creating a dichotomous variable that indicated presence or absence of family-to-business financial assistance.

Business Process Control

Financial assistance, or financial intermingling, from business-to-family was measured with the question, “In 1996, did you ever meet your families cash flow problems by using business income to meet household needs?”. Responses were measured with 0 (*no*) or 1 (*yes*), creating a dichotomous variable that indicated presence or absence of business-to-family financial assistance.

Family and Business Process Controls

This study applied the concept of congruity as a measurement of tension between family and business to represent patterns of interpersonal relationships between the two systems (Danes & Brewton, 2012). Congruity captures harmony between the family and business systems (Danes et al., 2009), and is found to be an important measure of interaction between family and business (Avery & Stafford, 1991; Danes & Brewton, 2012; Danes et al., 2009; Heck, Jasper, Stafford, Winter, & Owen, 2000). Responses were from the Business Manager Interview. Congruity between family and business systems was asked with, “Please indicate the level of tension that each issue generates in your home life, using a scale from 1 to 5 where 1 means no tension at all and 5 means a great deal of tension.” The following statements followed: (a) “Confusion among family members over who does what in the business;” (b) “Confusion over who has authority to make decisions;” (c) “Unequal ownership of the business by family members;” (d) “Unfair compensation for family members;” (e) “Failure to resolve business conflicts;” (f) “Unfair workloads among family members, due to the business;” and (g) “Competition for resources between family and business.” This item was measured on a five-point Likert-type scale ranging from 1 (*no tension at all*)” and 5 (*great deal of tension*). Responses were reverse coded and summed, ranging from 20 to 35, with higher scores indicating higher levels of congruity between

family and business systems. This scale was found to have good internal consistency (7 items; $\alpha = .84$).

Return on Business Equity

Return on business equity (ROE) has been used in agricultural literature as a measure of farm financial performance and profitability (Mishra, Harris, Erickson, Hallahan, & Detre, 2012; Mishra, Moss, & Erickson, 2009). Calculated with the DuPont System formula, return on business equity captures business financial performance as measured by return on the owner's total investment in the business (Reilly & Brown, 2000). ROE was measured using the DuPont System formula to specifically include financial leverage when comparing family farm business financial performance. Natural log (i.e., \log_e) transformation was applied to three variables used in calculating ROE (i.e., profit margin, asset turnover, and financial leverage) producing, "a linear multiplicative system of variables amenable to analysis using the multivariate normal distribution" (Mishra, Moss, & Erickson, 2009, p. 52).

First, the profit margin ratio was calculated using profit divided by gross income. Profit was asked with the question, "What was the profit for this business in 1996?", and gross income was asked with, "What was the gross income of business in 1996?". Both were measured as continuous variables with a response of total dollar amount. Second, the asset turnover ratio was calculated using gross income divided by total assets. Gross income was measured as listed above. Total assets were asked with, "What were the total assets of business as of December 31, 1996?" This item was measured as a continuous variable with a response of total dollar amount. Third, the financial leverage ratio was calculated using total assets divided by net worth. Total assets were measured as listed above. Net worth was calculated by subtracting total liabilities from total assets. Total liabilities were asked with, "What were the total liabilities, including

debt, of business as of December 31, 1996?”. This item was measured as a continuous variable with a response of total dollar amount. Return on business equity was then calculated by multiplying the three ratios described above to create one composite ROE score ranging from .00 to 23.21. This composite score measured ROE in Block 2 of the hierarchical multiple regression, and measured ROE in the ordinal logistic regression.

Socioemotional Wealth

Socioemotional wealth (SEW) was operationalized for this study using proxies that represented each of the three REI core affective endowments evaluated by Hauck, Suess-Reyes, Beck, Prügl, and Frank (2016): (a) R - denotes *renewal* of family bonds through dynastic succession; (b) E - denotes *emotional* attachment of family members; and (c) I - denotes *identification* of family members with the firm. To operationalize socioemotional wealth, variables listed below were found in NFBS 1997 data and used as proxies to create scales that capture the SEW affective endowments (as described in Chapter 2) informed by the REI model (Hauck et al., 2016).

Renewal of family bonds through dynastic succession was measured using the following statements, with possible responses ranging from 1 (*extremely unimportant*) to 5 (*extremely important*): (a) “getting one or more of your children started in the family business;” and (b) “keeping the business within the extended family.” Scores from this two-item scale ranged from 2 to 10, with a marginally acceptable Spearman-Brown coefficient ($r = .68$).

Emotional attachment of family members was measured using a five-item scale known as the Family APGAR. This scale is a reliable, valid measure of family functional integrity introduced by Smilkstein, Ashworth, and Montano (1982). The scale contains the following statements, with possible responses ranging from 1 (*never*) to 5 (*always*): (a) “You are satisfied

that you can turn to your family for help when something is troubling you;” (b) “You are satisfied with the way your family talks over things with you and shares problems with you;” (c) “You are satisfied that your family accepts and supports your wishes to take on new activities or directions;” (d) “You are satisfied with the way your family expresses affection and responds to your emotions, such as anger, sorrow, or love;” and (e) “You are satisfied with the way your family and you share time together.” Scores ranged from 11 to 25 with a Cronbach’s alpha ($\alpha = .87$), which demonstrated good internal reliability.

Identification of family members with the firm was measured with a scale used by Danes and Lee (2004) to measure tension in farm-business owning couples. This question was identical to the measurement of congruity, but these responses were taken from the Household Manager Interview. Responses ranged from 1 (no tension at all) to 5 (great deal of tension) to the following statements: (a) “Confusion among family members over who does what in the business;” (b) “Confusion over who has authority to make decisions;” (c) “Unequal ownership of the business by family members;” (d) “Unfair compensation for family members;” (e) “Failure to resolve business conflicts;” (f) “Unfair workloads among family members due to the business;” and (g) “Competition for resources between family and business.” Responses were reverse coded so that higher scores indicated lower family tension on these items, thus, increased identification of family members with the firm. Scores ranged from 18 to 35 with good reliability indicated by Cronbach’s alpha ($\alpha = .81$).

Principal Component Analysis (PCA) was conducted to evaluate construct validity of the four scales analyzed as independent variables: (a) congruity, (b) renewal of family bonds through dynastic succession, (c) emotional attachment of family members, and (d) identification of family members with the business. Communalities were identified using PCA extraction method

within factor analysis to better understand strength of loading for each variable in the scale (Field, 2018). Results of these factor analyses were compared to findings in the literature.

Regression Analyses

A hierarchical multiple regression was run to determine if the addition of return on business equity and then three measures of socioemotional wealth improved the prediction of household net worth over family and business structure and process controls alone. A cumulative odds ordinal logistic regression with proportional odds was run to determine the effect of family and business structure and process controls, return on business equity, and three measures of socioemotional wealth on subjective quality of life. Assumptions were tested before conducting the regression and moderation models. Data were tested for (a) independence of residuals, (b) linearity, (c) homoscedasticity, (d) multicollinearity, (e) inspection for outliers and leverage points, and (f) normal distribution of residuals. The Durbin-Watson statistic, with a target level between 1.5 and 2.5 (Field, 2018), was used to check for independence of residuals and was found to be 1.63 for the hierarchical multiple regression model. A straight-line relationship between variables establishes linearity, and this was met by examining bivariate partial regression plots. The assumption of homoscedasticity was met by examining a scatterplot of studentized residuals against unstandardized predicted values. The data did not show multicollinearity, satisfying the assumption, since all variables had Tolerance values above 0.2 and VIF values below 10 (Field, 2018). Finally, the assumption of normally distributed residuals was satisfied by examining a P-P Plot of the residuals.

Outliers, data with a z-score of ± 3.29 or more (Field, 2018), were examined using the aggregated data set after multiple imputation. Variables measuring the value of home real estate were winsorized (i.e., outlier substituted with highest non-outlier value) for one respondent, and

the value of other family assets were winsorized for three respondents from zero values as suggested by Field (2018). Two variables, (a) total household debt and (b) total business debt, were assigned a value of \$1,000 for all zero responses, thereby showing a pragmatic value of debt for any household or business answering the survey as an existing farm operation. The dependent variable, subjective quality of life, had no responses for value 1 (*very dissatisfied*). To meet the assumption of proportional odds for ordinal logistic regression, value 2 (*somewhat dissatisfied*) was combined with value 3 (*neither satisfied nor dissatisfied*) because value 2 had only three responses. These characteristics resulted in three measurement categories for subjective quality of life, not five. To adjust for zero amounts and negative numbers, continuous variables were transformed by taking the natural log (\log_e) of the response.

Missing Data

Missing values and nonresponse data were replaced with multiple imputation using $m = 10$ imputations, which are recommended when as much as 50% of values are missing (Acock, 2005). Variables were inspected for patterns of missing values to determine the best alternative for working with missing data (Field, 2018). The Bar Procedure (Baranzini, 2018) was conducted to create a single, aggregated set of imputed variables that was used for all regression and moderation analyses. Guided by Baranzini (2018), missing data were replaced with multiple imputed mean for continuous variables and multiple imputed mode for nominal and ordinal variables.

Hierarchical Multiple Regression

Hierarchical multiple regression provides information about the predicting power of independent variables consecutively entered in sets or blocks guided by theory (Field, 2018). The three-block hierarchical multiple regression model was guided by SFBT II, advanced by Danes,

Lee, Stafford, and Heck (2008). progressively added the following blocks of variables: (a) family and business resources, constraints, structure, and process controls; (b) return on business equity, measured using DuPont System formula return on business equity component ratios (Reilly & Brown, 2000); and (c) socioemotional wealth, measured using the REI model (Hauck, Suess-Reyes, Beck, Prügl, & Frank, 2016). Figure 3-1 shows the results of the hierarchical multiple regression model that were investigated by observing change in R^2 , not adjusted R^2 , to determine change in variance explained by the model, since the model R^2 is the sum of R^2 for each block (Field, 2018). Statistically significant change in R^2 indicated that variance of the entered block lends explanatory power in family farm household net worth.

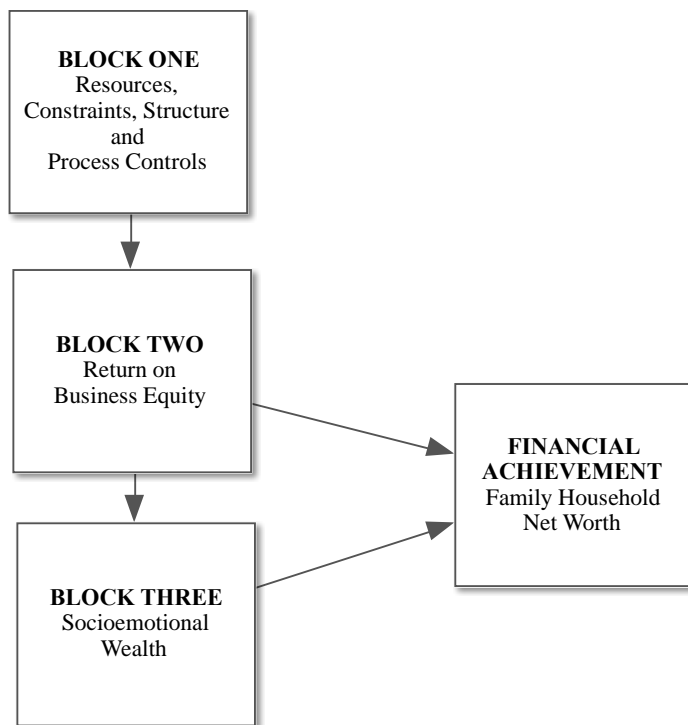


Figure 3.1. Three-block hierarchical multiple regression empirical model

Ordinal Logistic Regression

Ordinal logistic regression was used to test Research Questions 4 and 5 by analyzing the odds of being in a higher level of subjective quality of life given independent variables identical to those used for the hierarchical multiple regression model. This model was formed by Sustainable Family Business Theory II (Danes et al., 2008) and family farm literature. SPSS PLUM (i.e., polytomous logit universal model) produced output for the main ordinal logistic regression procedure and tested the assumption of proportional odds. Additionally, SPSS GENLIN (i.e., generalized linear model) was used to provide detailed output including omnibus statistical tests for categorical variables and parameter estimates as odds ratios (Field, 2018; Menard, 2002). All VIF values were much less than 10, indicated no multicollinearity. There were proportional odds, as assessed by a full likelihood ratio test comparing the fitted model to a model with varying location parameters, $X^2(9) = 9.075, p = .430$. The deviance goodness of fit test indicated that the model was a good fit to the observed data, $X^2(191) = 179.637, p = .712$, but most cells were sparse with zero frequencies in 66.7% of cells. However, the final model was statistically significantly and predicted the dependent variable over and above the intercept-only model, $X^2(9) = 35.743, p < .001$.

Moderation Analyses

Two moderation analyses were conducted to study the moderating effects of (a) generational stage of family ownership and (b) total business assets between socioemotional wealth. These analyses were measured using a composite score from the REI model (Hauck et al., 2016) and total return on business equity measured using the DuPont System formula (Reilly & Brown, 2000). The socioemotional wealth composite score was calculated using a weighted sum of the REI variables to give equal importance to each of the three components. These

moderating relationships have been indicated in family business literature (Gottardo & Moisello, 2015). In their analysis, Gottardo and Moisello (2015) found that family businesses consider the moderating effects of both the generational stage of ownership and business asset size when examining relationships between SEW and financial performance.

PROCESS v3.4 plug-in for SPSS was used to analyze the relationship of predictor and moderator variables, with the outcome variable (Hayes, 2018). As indicated by Hayes (2018), a moderating variable is not a predictor variable and only has significance in the presence of another independent variable in a moderation model. In moderation modeling, a moderation relationship exists when an independent variable is associated with a dependent variable only while interacting with another independent variable (Field, 2018; Hayes 2018). Therefore, a moderating effect is supported when the moderator variable is found significant and then observed affecting the strength of relationship between two other variables (Baron & Kenny, 1986; Hayes 2018). Conceptual models are depicted in Figure 3-2 and Figure 3-3.

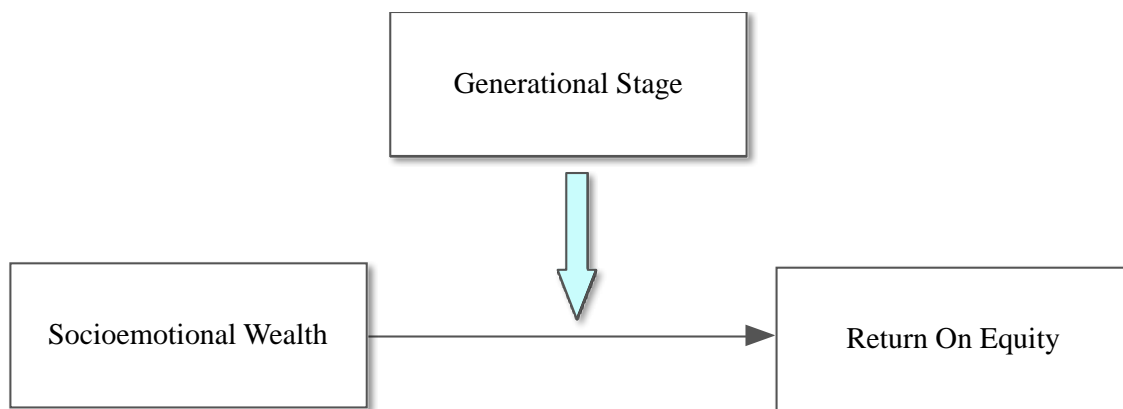


Figure 3.2. Conceptual moderation model adapted from Baron & Kenny (1986)

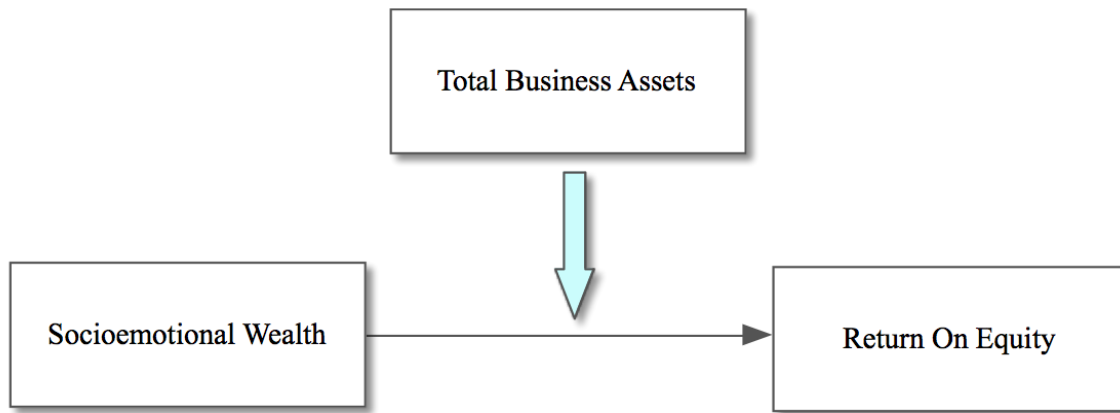


Figure 3.3. Conceptual moderation model adapted from Baron & Kenny (1986)

Summary

To investigate research questions and hypotheses relating to the impact of socioemotional wealth on financial and nonfinancial outcomes in the family farm business, data were taken from the 1997 National Family Business Survey (NFBS). One continuous outcome variable, household net worth, was analyzed using hierarchical multiple regression, and one ordinal variable, subjective quality of life, was analyzed using ordinal logistic regression. The hierarchical multiple regression model investigated the amount of additional variation in household net worth that can be explained by three blocks of financial and nonfinancial predictors. Ordinal logistic regression estimated the probability of achieving increased subjective quality of life given the independent variables, which were also used throughout the hierarchical multiple regression model. Additionally, two moderation analyses were conducted to assess if: (a) generational level of family ownership moderates the relationship between socioemotional wealth and return on business equity; and (b) total business assets moderate the relationship between socioemotional wealth and return on business equity.

Chapter 4 - Results

Data were taken from the 1997 National Family Business Survey (NFBS) to answer research questions and test hypotheses. Over 14,000 U.S. family business households were screened as potential participants in the 1997 survey, which resulted in 1,116 eligible households with 673 participants identified for inclusion at completion of the interviews (Heck & Trent, 1999; Winter, Fitzgerald, Heck, Haynes, & Danes, 1998). Of the eligible family business households, fifteen percent of respondents self-identified as agricultural businesses ($n = 101$) and were identified as usable for this study.

This chapter begins with sample characteristics to better understand survey respondents and variables used in the analyses. No control variables were used in these analyses due to the statistical power limitations of the small data set. Next, results of principal components analyses were presented. The chapter continues with analyses of hypotheses beginning with application of hierarchical multiple regression analyzing the amount of additional variation in household net worth explained by entering structure and process controls in the first block, then adding return on business equity in the second block, followed by adding socioemotional wealth in the third block. Next, results of an ordinal logistic regression were presented to examine subjective family farm quality of life in relationship to socioemotional wealth and return on business equity. This chapter concludes with an investigation of the moderating effects of: (a) generational stage of the family farm, and (b) total business assets, between socioemotional wealth and return on business equity in the family farm.

Sample Characteristics

Descriptive statistics for the NFBS subsample of family farm businesses were listed in Table 4.1 and Table 4.2. Initially, the 1997 NFBS selected and interviewed 673 respondents,

which is a nationally representative sample of United States family-owned and -operated businesses (Winter, Fitzgerald, Heck, Haynes, & Danes, 1998). Two sampling frames were used, household data and business data, to measure contextual variables and interactions between the family and business systems. This subsample of family farm businesses (n = 101) was fifteen percent of the NFBS national sample and consisted of married couples (i.e., each household manager was married to the business manager).

In this sample, family farm household managers' average age was 47.37 years (SD = 11.27), and the business managers' average age was 49.9 years (SD = 12.54). Years of education of both groups was similar with household managers averaging 13.20 years of education (SD = 2.00), and business managers averaging 13.14 years of education (SD = 2.20). When asked about business management decisions, 69.30 percent of the business managers indicated that the household manager was a major decision maker in the business. The mean age of the farm business in this sample was 32.99 years (SD = 28.91), with almost half less than 24 years in operation. Approximately 60 percent of family farms in this sample were sole proprietorships, and 51 percent were first-generation family farms.

Table 4.1. Sample Characteristics of Continuous and Scale Variables (n = 101)

Variable	Mean	se	Min	Max	Reliability
Dependent Variable					
Family household net worth	12.30	0.24	5.66	18.60	-
Independent Variables					
Total business assets	12.43	0.14	9.90	15.42	-
Congruity - family and business	31.28	0.42	20.00	35.00	-
Return on business equity	4.27	0.04	2.52	5.79	-

Variable	Mean	se	Min	Max	Reliability
Renewal of family bonds	6.35	0.27	2.00	10.00	0.68 (S-B)
Emotional attachment of family	20.48	0.36	11.00	25.00	0.87 (α)
Identification - family to business	29.22	0.47	18.00	35.00	0.81 (α)
Socioemotional wealth	60.62	0.78	41.00	74.00	-

Note: Reliability determined with Spearman-Brown Coefficient (S-B) or Cronbach's Alpha (α)

Table 4.2. Sample Characteristics of Categorical Variables (n = 101)

Variable	%	<i>M</i>	<i>SD</i>
Dependent Variable			
Subjective quality of life		4.15	0.83
Very unsatisfied	0		
Somewhat unsatisfied	3		
Neither satisfied nor unsatisfied	19		
Somewhat satisfied	38		
Very satisfied	40		
Independent Variables			
Generation of family		1.68	0.84
First generation	51		
Second generation	33		
Third generation	12		
Fourth generation	4		
Family process controls			
Use household income to meet business cash flow			
Yes	28		
No	72		
Business process controls			
Meet family cash flow using business income			
Yes	28		
No	72		

Principal Components Analysis

Four principal components analysis (PCA) tests were run on four different scales used in this study. The first PCA was used to examine the Congruity scale measuring tension between

family and business as applied by Danes and Lee (2004). The PCA was run on a seven-item question, measuring family and business tension. Table 4.3 presents factor loadings for each variable. Suitability of PCA was assessed prior to analysis. Inspection of the correlation matrix showed all variables had at least one correlation coefficient greater than 0.3. The overall Kaiser-Meyer-Olkin (KMO) measure was 0.78, which is classified as “middling” but not “unacceptable,” according to Kaiser (1974). Bartlett's Test of Sphericity was statistically significant ($p < .001$), indicating the data were correlated and capable of being summarized into one or more factors. A one-component solution was extracted, explaining 51.8% of the total variance, so no rotation was required. All loadings were greater than 0.512 as suggested by Stevens (2009) for a sample of 100 responses; therefore, construct validity was confirmed.

Table 4.3. Factor Analysis of the Congruity Scale

Item	Factor
Tension role clarity	.822
Tension decision authority	.660
Tension unequal ownership	.632
Tension unfair compensation	.633
Tension failure to resolve	.807
Tension unfair workloads	.761
Tension competition between fam and bus	.696

Second, PCA was run on three proxy measurements for the REI affective endowments proposed by Hauck et al. (2016). Renewal of family bonds through dynastic succession was measured using a two-item scale. Table 4.4 presents factor loadings for each variable. One question from the proposed three-item measurement was found uncorrelated and was dropped

from this scale, which resulted in a two-item measure. Suitability of PCA was assessed and inspection of the correlation matrix showed correlation coefficients greater than 0.3. The overall Kaiser-Meyer-Olkin (KMO) measure was 0.50, which is classified as “miserable” but not “unacceptable,” according to Kaiser (1974). Bartlett’s Test of Sphericity was statistically significant ($p < .001$), indicating that the data were correlated and capable of being summarized into one or more factors. A one-component solution was extracted explaining 75.6% of the total variance, so no rotation was required. All loadings were greater than 0.512 as suggested by Stevens (2009) for a sample of 100 responses; therefore, construct validity was confirmed.

Table 4.4. Factor Analysis of Renewal of Family Bonds

Item	Factor
Important to keep the business within family	.869
Important to get your children started in business	.869

Third, PCA was run on the five-item Family APGAR scale (Smilkstein, Ashworth, & Montano, 1982) to proxy the second REI affective endowment — emotional attachment of family members (Hauck et al., 2016). Table 4.5 presents factor loadings for each variable. Suitability of PCA was assessed prior to analysis. Inspection of the correlation matrix showed all variables had correlation coefficients greater than 0.3. The overall Kaiser-Meyer-Olkin (KMO) measure was 0.85, which is classified as “meritorious,” according to Kaiser (1974). Bartlett's Test of Sphericity was statistically significant ($p < .001$), indicating the data were correlated and capable of being summarized into one or more factors. A one-component solution was extracted explaining 66.0% of the total variance, so no rotation was required. All loadings were greater

than 0.512 as suggested by Stevens (2009) for a sample of 100 responses, confirming construct validity.

Table 4.5. Factor Analysis of the Emotional Attachment of Family Scale

Item	Factor
Help from family when something	.774
Family talks over things and shares	.850
Family accepts and supports your wishes	.827
Expresses affection and responds to your	.794
The way you and your family share time	.814

The fourth PCA was run on a seven-item scale to measure identification of family members with the business, the third REI affective endowment (Hauck et al., 2016). Table 4.6 presents factor loadings for each variable. Suitability of PCA was assessed. The overall Kaiser-Meyer-Olkin (KMO) measure was 0.79, which is classified as “middling,” according to Kaiser (1974). Bartlett's Test of Sphericity was statistically significant ($p < .001$), indicating that the data were correlated and capable of being summarized into one or more factors. A one-component solution was extracted explaining 48.8% of the total variance, so no rotation was required. All loadings were greater than 0.512 as suggested by Stevens (2009) for a sample of 100 responses, confirming construct validity.

Table 4.6. Factor Analysis of the Identification of Family with Business Scale

Item	Factor
Unfair compensation of family members	.774
Failure to resolve business conflicts	.767

Item	Factor
Lack of role clarity	.738
Unequal ownership of business by family	.733
Confusion of who has authority to make	.667
Competition for family or business	.622
Unfair workloads among family members	.557

Analyses for Hypotheses

Hierarchical multiple regression was used to investigate relationships between household net worth and (a) return on business equity and (b) socioemotional wealth (SEW) as measured by the REI model. To answer Research Questions 1 and 2, and test hypotheses, change in R^2 was observed to determine the change in model variance explained by adding return on business equity and then adding three components of socioemotional wealth to the first block of five variables that were informed by Sustainable Family Business Theory II (SFBT II). These five variables were: (a) generation of current owner (i.e., family structure); (b) total assets of the business (i.e., business structure); (c) household income used to meet business needs (i.e., family process controls); (d) business income used to meet household needs (i.e., business process controls); and (e) congruity between family and business (i.e., family and business process controls). Ordinal logistic regression was performed to test hypotheses in Research Questions 3 and 4 to determine the odds of higher levels of subjective quality of life per unit increase in socioemotional wealth and return on business equity. Hypotheses for Research Questions 5 and 6 were tested using PROCESS v3.4 plug-in for SPSS 24 to run two moderation analyses (Hayes, 2018). As described in Chapter 3, regression assumptions were examined to verify the strength and validity of these analyses.

Research Questions 1 and 2

Answering Research Questions 1 and 2 and testing the hypotheses began with examining the standardized covariance (i.e., correlation) of all variables. Examination of the correlation matrix revealed three significant correlations in the relationships between household net worth and independent variables. A somewhat negative correlation ($r = -0.23$) was found statistically significant ($p < 0.05$) between household net worth and business income used for family needs. The second finding was a negative correlation ($r = -0.45$) that was found statistically significant ($p < 0.01$) between household net worth and return on business equity. The third finding was a positive correlation ($r = 0.39$) between household net worth and the identification component of SEW at a statistically significant level of $p < 0.01$. Additionally, statistically significant correlations among independent variables were found between the generational level of family and business assets ($r = 0.23$); business assets and family income used for business needs ($r = -0.20$); business assets and return on business equity ($r = 0.21$); family income used for business needs and business income used for family needs ($r = 0.36$); family income used for business needs and identification component of SEW ($r = -0.24$); and business income used for family needs and congruity between family and business ($r = -0.24$). Statistical significance was also found between the business income used for family needs and identification component of SEW ($r = -0.22$); congruity between family and business and return on business equity ($r = -0.27$); congruity between family and business and emotional component of SEW ($r = 0.21$); congruity between family and business and identification component of SEW ($r = 0.44$); return on business equity and identification component of SEW ($r = -0.47$); and emotional component of SEW and identification component of SEW ($r = 0.32$). All correlations were lower than .80, below +/- 0.47, a further indication that no multicollinearity exists in the regression model (Field, 2018).

Table 4.7 shows the correlation matrix of dependent and independent variable relationships calculated with SPSS 24.

A three-block hierarchical multiple regression was conducted. The first block entered variables representing family structure (i.e., generational stage of owner), business structure (i.e., total assets of business), family process controls (i.e., family-to-business financial assistance), business process controls (i.e., business-to-family financial assistance), and family and business process controls (i.e., congruity between family and business) into the null model as independent variables. The second block added return on business equity (ROE), as calculated using the DuPont System formula. The third block added socioemotional wealth containing REI measurements (Hauck et al., 2016) of: (a) renewal of family bonds through dynastic succession; (b) emotional attachment of family members; and (c) identification of family members with the business. An alpha of 0.05 was used to interpret model comparisons. Previous blocks were compared using F-tests in the hierarchical multiple regression model and interpreted with beta coefficients. The empirical model is as follows:

$$\text{HHNW}_i = b_0 + b_2\text{Gen}_i + b_3\text{BusAssets}_i + b_4\text{FIB}_i + b_5\text{BIF}_i + b_6\text{Congruity}_i + b_7\text{ROE}_i + b_8\text{Renew}_i + b_9\text{Emotion}_i + b_{10}\text{Identification}_i + e$$

Table 4.7. Correlation Matrix of Independent Variables and Household Net Worth for Research Questions 1 and 2

	Household Net Worth	Gen1 and Non1	Business Assets	Family Income for Business	Business Income for Family	Congruity Fam and Bus	Return on business equity	Renewal Scale	Emotional Scale
Household Net Worth									
Gen1 and Non1	0.14								
Business Assets	-0.10	0.23*							
Family Income for Business	-0.14	-0.11	-0.20*						
Business Income for Family	-0.23*	0.11	-0.05	0.36**					
Congruity Fam and Bus	0.10	-0.01	-0.02	-0.15	-0.24*				
Return on business equity	-0.45**	0.05	0.21*	0.13	0.12	-0.27**			
Renewal Scale	0.04	0.10	0.11	-0.01	0.09	-0.08	-0.11		
Emotional Scale	0.07	-0.01	-0.07	0.01	-0.06	0.21*	-0.17	0.17	
Identification Scale	0.39**	-0.02	-0.12	-0.24*	-0.22*	0.44**	-0.47**	-0.00	0.32**

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

In Block 1, the F -test was significant, $F(5, 95) = 2.40, p = .043, \Delta R^2 = 0.11$. This finding indicates that adding generation of the family, total business assets, use of family income for business needs, use of business income to meet family needs, and congruity between family and business to the null model explained 11.20% of the variation in family farm household net worth. The F -test for Block 2 was also significant, $F(1, 94) = 22.18, p < .001, \Delta R^2 = 0.17$, indicating that adding return on business equity to the model explained an additional 16.90% of the variation in family farm household net worth. The F -test for Block 3 was not significant, $F(3, 91) = 1.77, p = .158, \Delta R^2 = 0.04$, indicating that adding socioemotional wealth measurements of renewal of family bonds through dynastic succession, emotional attachment of family members, and identification of family members with the business did not account for a statistically significant amount of additional variation in family farm household net worth. Comparisons of the three models are found in Table 4.8.

Table 4.8. Model Comparisons for Variables predicting Family Farm Household Net Worth

Model	R^2	df_{mod}	df_{res}	F	p	ΔR^2
Block 1	0.11	5	95	2.40	.043	0.11
Block 2	0.28	1	94	22.18	< .001	0.17
Block 3	0.32	3	91	1.77	.158	0.04

Results from Block 1 of the model indicate that generation of family ownership was significantly and positively associated with family farm household net worth, $B = 0.98, t(91) = 1.98, p = 0.05$, which suggests that a respondent identifying as first-generation farm owner tends to have higher household net worth by an average of .98 units. Respondents answering yes to

using business income for family household cash flow problems were significantly and negatively related to family farm household net worth, $B = -1.29$, $t(91) = -2.19$, $p = .031$, indicating that use of family farm business income to solve household cash flow problems is associated with a lower level of household net worth by 1.29 units.

In Block 2, return on business equity was added. Results from Block 2 of the model indicate that generation of family ownership was significantly and positively associated with family farm household net worth, $B = 1.00$, $t(91) = 2.25$, $p = 0.03$, suggesting that a respondent identifying as a first-generation farm owner tends to have a higher household net worth. Respondents answering yes to using business income for family household cash flow problems were significantly and negatively related to family farm household net worth, $B = -1.24$, $t(91) = -2.33$, $p = .022$, indicating that use of family farm business income to solve household cash flow problems is associated with a lowered level of household net worth by 1.24 units. Return on business equity, computed using the DuPont System formula, was significantly and negatively associated with family farm household net worth, $B = -0.17$, $t(91) = -4.71$, $p < .001$, indicating that higher levels of return on business equity are related to lower, not higher, levels of household net worth. Therefore, Hypothesis 2 was not supported.

In Block 3, three measurements of SEW (i.e., REI) were added. Results from Block 3 of the model indicated that generation of family ownership was significantly and positively associated with family farm household net worth, $B = 0.99$, $t(91) = 2.24$, $p < .028$. This finding suggested that a respondent identifying as a first-generation farm owner tends to have a higher household net worth. A respondent answering yes to the use of business income to meet family needs was significantly and negatively associated with family farm household net worth, $B = -1.17$, $t(91) = -2.21$, $p = .030$, indicating that the use of business income to meet family needs is

related to lower levels of household net worth. Return on business equity, computed using the DuPont System formula equation, was significantly and negatively associated with family farm household net worth, $B = -0.14$, $t(91) = -3.54$, $p < .001$, indicating that higher levels of return on business equity are related to lower levels of household net worth, which continued to not support Hypothesis 2. One component of the REI model (i.e., identification of family members with business) was found significantly and positively associated with family farm household net worth, $B = 0.13$, $t(91) = 2.30$, $p < .024$, indicating that a higher level of family members identifying with the farm business are associated with higher levels of household net worth. Therefore, Hypothesis 1 was not supported. The results for each block are shown in Table 4.9.

Table 4.9. Summary of Hierarchical Regression Analysis for Variables Predicting Family Farm Household Net Worth

Variable	R^2	ΔR^2	B	$SE B$	β
Block 1	0.11*	0.11*			
Constant			15.36	2.96	
Family structure					
Generation of family			0.98	0.49	0.20*
Business structure					
Total business assets			-0.30	0.18	-0.17
Family process controls					
Family income for business needs			-0.32	0.58	-0.06
Business process controls					
Business income to meet family needs			-1.29	0.59	-0.24*
Family and business process controls					
Congruity between family and business			0.02	0.06	0.04
Block 2	0.28***	0.17***			
Constant			15.86	2.68	
Family structure					

Variable	R^2	ΔR^2	B	$SE B$	β
Generation of family			1.00	0.45	0.21*
Business structure					
Total business assets			-0.11	0.17	-0.06
Family process controls					
Family income for business needs			0.02	0.53	0.00
Business process controls					
Business income to meet family needs			-1.24	0.53	-0.23*
Family and business process controls					
Congruity between family and business			-0.04	0.05	-0.07
Return on business equity			-0.17	0.04	-0.44***
Block 3	0.32	0.04			
Constant			13.34	3.07	
Family structure					
Generation of family			0.99	0.44	0.20*
Business structure					
Total business assets			-0.83	0.17	-0.05
Family process controls					
Family income for business needs			0.23	0.54	0.04
Business process controls					
Business income to meet family needs			-1.17	0.53	-0.21*
Family and business process controls					
Congruity between family and business			-0.08	0.06	-0.14
Return on business equity			-0.14	0.04	-0.36***
Socioemotional Wealth					
Renew family bonds through succession			0.00	0.08	0.00
Emotional attachment of family members			-0.04	0.06	-0.05
Identification of family with business			0.13	0.06	0.26*

* $p < .05$, ** $p < .01$, *** $p < .001$

Research Question 1 was designed to investigate the relationship between socioemotional wealth and family farm household net worth. Results from this model and these data indicated

that the REI measurement of socioemotional wealth was not significantly associated with household net worth in the family farm. Research Question 2 was designed to investigate the relationship between return on business equity and household net worth in the family farm. Results from this model and these data indicated return on business equity was significantly and negatively associated with household net worth in the family farm.

Research Questions 3 and 4

Ordinal logistic regression was conducted to answer Research Questions 3 and 4. Research Question 3 was answered and the hypothesis tested by ascertaining the odds of being in a higher category of subjective quality of life per unit increase in three dimensions of socioemotional wealth (i.e., renewal of family bonds through dynastic succession, emotional attachment of family members, and identification of family members with the business). The ordinal logistic regression output was also used to answer Research Question 4 and to test the hypothesis by ascertaining the odds of being in a higher category of subjective quality of life per unit increase in return on business equity measured using the DuPont System formula. The results of the model were significant, $\chi^2(9) = 35.74, p < .001$, indicating the observed effects of the independent variables significantly predicted subjective quality of life, rejecting the null hypothesis. Pearson and Deviance goodness-of-fit indicators were not significant, indicating acceptable model fit (Field, 2018).

Examination of the correlation matrix revealed three significant findings in relationships between subjective quality of life and independent variables. A somewhat negative correlation ($r = -0.22$) was found statistically significant ($p < 0.05$) between subjective quality of life and return on business equity. The second finding was a positive correlation ($r = 0.39$) that was found statistically significant ($p < 0.01$) between subjective quality of life and the emotional component

of SEW. The third finding was a positive correlation ($r = 0.36$) between subjective quality of life and the identification component of SEW at a statistically significant level of $p < 0.01$.

Additionally, statistically significant correlations among independent variables were found between business assets and family income used for business needs ($r = -0.20$); family income used for business needs and business income used for family needs ($r = 0.36$); family income used for business needs and identification component of SEW ($r = -0.24$); business income used for family needs and congruity between family and business ($r = -0.24$); and business income used for family needs and identification component of SEW ($r = -0.22$). Statistical significance was also found between congruity between family and business and return on business equity ($r = -0.28$); congruity between family and business and emotional component of SEW ($r = 0.21$); congruity between family and business and identification component of SEW ($r = 0.44$); and emotional component of SEW and identification component of SEW ($r = 0.32$). Since all correlations were below ± 0.44 , therefore lower than .80, this further indicates that no multicollinearity exists in the regression model (Field, 2018). Table 4.10 shows the correlation matrix of dependent and independent variable relationships calculated using SPSS 24. The empirical model is as follows:

$$SQOL_i = b_0 + b_2Gen_i + b_3BusAssets_i + b_4FIB_i + b_5BIF_i + b_6Congruity_i + b_7ROE_i + b_8Renew_i + b_9Emotion_i + b_{10}Identification_i + e$$

Regression results for predicting farm family subjective quality of life using this model are listed in Table 4.11. In this model, three variables significantly predicted subjective quality of life. Higher levels of subjective quality of life were significantly associated with total business assets, $B = 0.44$, $\chi^2 = 7.16$, $p = .007$, indicating that a one-unit increase in total business assets resulted in an increase of the odds of the respondent being in a higher category of subjective

quality of life. The remaining significant variables in the model were two of the three REI components for measuring socioemotional wealth. The first was emotional attachment of family

Table 4.10. Correlation Matrix of Independent Variables with Subjective Quality of Life for Research Questions 3 and 4

	Subjective Quality of Life	Gen1 and Non1	Business Assets	Family Income for Business	Business Income for Family	Congruity Fam and Bus	Return on business equity	Renewal Scale	Emotional Scale
Subjective Quality of Life									
Gen1 and Non1	0.01								
Business Assets	0.15	0.12							
Family Income for Business	-0.09	0.05	-0.20*						
Business Income for Family	-0.09	0.16	-0.05	0.36**					
Congruity Fam and Bus	0.12	-0.01	-0.02	-0.15	-0.24*				
Return on business equity	-0.22*	-0.08	0.00	0.19	0.11	-0.28**			
Renewal Scale	0.09	0.12	0.11	-0.01	0.09	-0.08	-0.07		
Emotional Scale	0.39**	-0.07	-0.07	0.01	-0.06	0.21*	0.02	0.17	
Identification Scale	0.36**	0.02	-0.12	-0.24*	-0.22*	0.44**	-0.18	-0.00	0.32**

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

members, $B = 0.20$, $\chi^2 = 9.75$, $p = .002$, which significantly indicated that a one-unit increase in the emotional attachment scale would increase the odds of the respondent being in a higher category of subjective quality of life. Identification of family members within the business, $B = 0.14$, $\chi^2 = 6.16$, $p = .013$, significantly indicated that a one-unit increase in identification of family members within the business increased the odds of a respondent being in a higher category of subjective quality of life. Therefore, Hypothesis 3 was partially supported since higher levels of two of the three dimensions of the REI measurement of socioemotional wealth, (a) emotional attachment of family members, and (b) identification of family members with the business were found significantly and positively associated with higher levels of subjective quality of life. These findings also indicated that return on business equity was not significantly associated with subjective quality of life, and, therefore, Hypothesis 4 was not supported by this data.

Table 4.11. Ordinal Logistic Regression Results for Predicting Subjective Quality of Life

Predictor	<i>B</i>	<i>SE</i>	95% CI	χ^2	<i>p</i>	<i>OR</i>
[QualityOfLife = 3]	9.69	3.07	[3.67, 15.70]	9.95	.002	
[QualityOfLife = 4]	11.92	3.16	[5.74, 18.11]	14.27	.000	
Generation of family	-0.48	0.43	[-1.32, 0.36]	1.24	.265	0.62
Total business assets	0.44	0.17	[0.12, 0.77]	7.16	.007	1.56
Family income for business needs	0.14	0.49	[-0.82, 1.09]	0.08	.776	1.15
Business income for family needs	-0.07	0.49	[-0.89, 1.03]	0.02	.888	1.07
Congruity - family and business	-0.06	0.06	[-0.17, 0.05]	1.23	.268	0.94
Return on business equity	-0.07	0.04	[-0.14, 0.01]	2.97	.085	0.94
Renewal of family bonds	0.01	0.07	[-0.14, 0.16]	0.03	.874	1.01

Predictor	<i>B</i>	<i>SE</i>	95% CI	χ^2	<i>p</i>	<i>OR</i>
Emotional attachment family	0.20	0.07	[0.08, 0.33]	9.75	.002	1.23
Identification family to business	0.14	0.06	[0.03, 0.25]	5.91	.015	1.15

Research Question 3 was designed to investigate the relationship between socioemotional wealth and subjective quality of life in the family farm business. Results from this model and these data indicated that the REI measurement of socioemotional wealth was significantly, but only partially, associated with subjective quality of life in the family farm, since two of the three REI endowments (i.e., emotional attachment of family members and identification of family to the business) were found significant. Research Question 4 was designed to investigate the relationship between return on business equity and subjective quality of life in the family farm business. Results from this model and these data indicated that return on business equity was not a significant predictor of subjective quality of life in the family farm.

Research Questions 5 and 6

Two analyses were conducted to study the moderating effect of (a) generational stage of family ownership, and (b) total business assets, between socioemotional wealth, as measured using a weighted sum of the REI variables, and return on business equity, calculated using the DuPont System formula.

Moderation Analysis of Generational Level of Family Ownership

Moderation analysis was conducted using PROCESS v3.4 by Andrew F. Hayes in SPSS 24 to determine if generational level of farm family ownership moderates the relationship between socioemotional wealth and return on business equity. Linear regression assumptions were checked and considered acceptable for the three variables being analyzed. The interaction variables, socioemotional wealth and generational level of farm family ownership, were mean

centered to avoid multicollinearity with the interaction term (Hayes, 2018). Bootstrapping was used, with 5,000 bootstrap samples, to calculate standard errors and confidence intervals (Hayes, 2018). A heteroscedasticity consistent standard error and covariance matrix was used to compute robust standard errors (Davidson & MacKinnon, 1993).

The moderation analysis began with a simple non-interaction model using linear regression with return on business equity as the dependent variable and socioemotional wealth as the independent variable. All regressions in this moderation analysis were examined using an alpha of 0.05. Next, an interaction variable was created by adding the mean centered variable of generational level of farm family ownership to the mean centered variable of socioemotional wealth resulting in an interaction model, which includes three variables predicting return on business equity, (a) socioemotional wealth, (b) generational level of farm family ownership, and (c) the newly created interaction variable (i.e., socioemotional wealth x generational level of the farm family).

To support the moderation hypothesis, two conditions must be met (Hayes, 2018). First, the independent variable, socioemotional wealth, must significantly predict return on business equity in the non-interaction model. Next, significantly more variance in return on business equity must be explained by the interaction model than the non-interaction model. Both of these conditions must be accomplished for moderation to be supported. Socioemotional wealth did not significantly predict return on business equity, $b = -0.00$, $t(97) = -0.99$, $p = .323$, thus, not achieving the first requirement for moderation. Since the first requirement was not met, moderation of the generational level of the family business between socioemotional wealth and return on business equity was not supported. Therefore, Hypothesis 5 was not supported. The moderation analysis results can be found in Table 4.13, and summary results between non-

interaction and interaction models are presented in Table 4.14. Figure 4.1 illustrates the regression lines for return on business equity predicted by socioemotional wealth for each category of generational level of the farm family.

Table 4.12. Moderation Analysis Table with Return on Business Equity Predicted by Socioemotional Wealth Moderated by Generational Level of Family Ownership

Variable	<i>B</i>	<i>se</i>	<i>t</i>	<i>p</i>
(Constant)	4.26	0.04	105.03	< .001
Socioemotional Wealth	-0.01	0.01	-0.99	.323
Generation of Family	-0.06	0.08	-0.77	.445
Interaction Variable	0.01	0.01	0.99	.320

Table 4.13. Linear Model Summary Table between the Non-Interaction and Interaction Model of Generational Level of Family Ownership

Model	R^2	<i>F</i>	<i>df</i>	<i>p</i>
Non-Interaction	0.03			
Interaction	0.01	0.99	1	.320

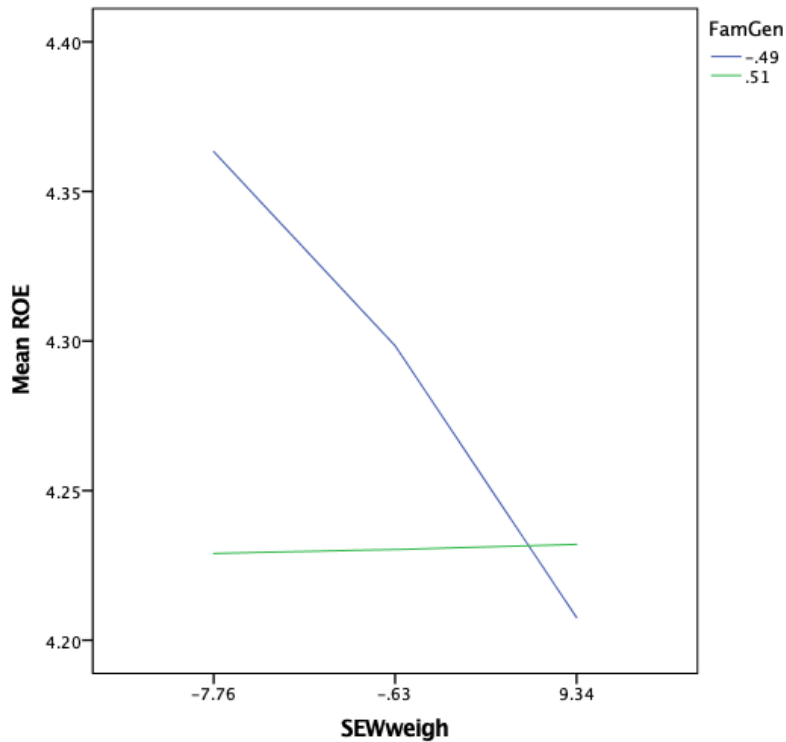


Figure 4.1. Regression lines for Return on Business Equity Predicted by Socioemotional Wealth by the Categories of Generational Level of Family Ownership

Moderation Analysis of Total Business Assets

Moderation analysis was conducted using PROCESS v3.4 by Andrew F. Hayes in SPSS 24 to determine if total business assets moderates the relationship between socioemotional wealth and return on business equity. Linear regression assumptions were checked and considered acceptable for the three variables being analyzed. The interaction variables, socioemotional wealth and total business assets, were mean centered to avoid multicollinearity with the interaction term (Hayes, 2018). Bootstrapping was used, with 5,000 bootstrap samples, to calculate standard errors and confidence intervals (Hayes, 2018). A heteroscedasticity consistent standard error and covariance matrix was used to compute robust standard errors (Davidson & MacKinnon, 1993).

The moderation analysis began with a simple non-interaction model using linear regression with return on business equity as the dependent variable and socioemotional wealth as the independent variable. All regressions in this moderation analysis were examined using an alpha of 0.05. Next, an interaction variable was created by adding the mean centered variable of total business assets to the mean centered variable of socioemotional wealth resulting in an interaction model, which includes three variables predicting return on business equity, (a) socioemotional wealth, (b) total business assets, and (c) the newly created interaction variable (i.e., socioemotional wealth x total business assets).

To support the moderation hypothesis, two conditions must be met (Hayes, 2018). First, the independent variable, socioemotional wealth, must significantly predict return on business equity in the non-interaction model. Next, significantly more variance in return on business equity must be explained by the interaction model than the non-interaction model. Both of these conditions must be accomplished for moderation to be supported. Socioemotional wealth did not significantly predict return on business equity, $B = -0.01$, $t(97) = -1.21$, $p = .230$, not achieving the first requirement for moderation. Since the first requirement, moderation, was not met, Hypothesis 6 was not supported. The moderation analysis results can be found in Table 4.8, and summary results between non-interaction and interaction models are presented in Table 4.9. Regression lines for return on business equity predicted by socioemotional wealth for each category of total business assets are illustrated in Figure 4.2.

Table 4.14. Moderation Analysis Table with Return on business equity Predicted by Socioemotional Wealth Moderated by Total Business Assets

Variable	<i>B</i>	<i>se</i>	<i>t</i>	<i>p</i>
(Constant)	4.26	0.04	104.99	< .001
Socioemotional Wealth	-0.01	0.01	-1.21	.230
Total Business Assets	-0.00	0.03	-0.05	.960
Interaction Variable	0.00	0.00	0.99	.323

Table 4.15. Linear Model Summary Table between the Non-Interaction and Interaction Model for Total Business Assets

Model	<i>R</i> ²	<i>F</i>	<i>df</i>	<i>p</i>
Non-Interaction	0.02			
Interaction	0.01	0.99	1	.323

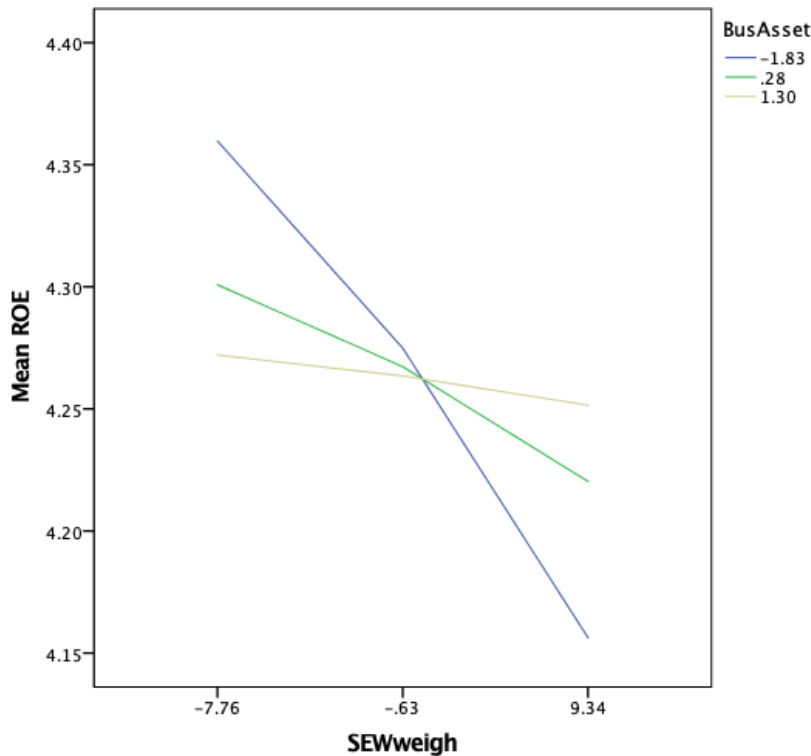


Figure 4.2. Regression lines for Return on business equity predicted by Socioemotional Wealth by the categories of Total Business Assets

Summary

To investigate research questions and hypotheses, a continuous outcome variable (i.e., household net worth) was analyzed using hierarchical multiple regression and an ordinal outcome variable (i.e., subjective quality of life) was analyzed using ordinal logistic regression. Additionally, two moderation analyses were conducted to assess if (a) generational level of family ownership, and (b) total business assets moderate the relationship between socioemotional wealth and return on business equity. To answer Research Question 1, results from the hierarchical multiple regression model indicated the three REI measurements of socioemotional wealth were not significantly associated with household net worth in the family farm. These findings do not support Hypothesis 1 since lower levels of socioemotional wealth were not found to be significantly associated with higher levels of family farm household net worth. To answer

Research Question 2, results from the hierarchical multiple regression model indicated return on business equity was significantly and negatively associated with household net worth in the family farm. However, findings did not support Hypothesis 2 since return on business equity was found significantly associated with lower, not higher, levels of family farm household net worth. To answer Research Question 3, results from the ordinal logistic regression model indicated the REI measurements of socioemotional wealth were partially, but significantly, associated with subjective quality of life (SQOL) in the family farm, since two of the three REI endowments (i.e., emotional attachment of family members and identification of family to the business) were found to be significant and positively associated with SQOL. Hypothesis 3 was partially supported since higher levels of two REI endowments were significantly and positively associated with subjective quality of life. To answer Research Question 4, results indicated return on business equity was not a significant predictor of subjective quality of life in the family farm business; therefore, findings did not support Hypothesis 4 since higher levels of return on business equity were not found to be significantly associated with higher levels of family farm subjective quality of life. Finally, in answer to Research Questions 5 and 6, no moderating effects were found between socioemotional wealth and return on business equity for either (a) generational stage of the family business, or (b) total business assets. Thus, Hypotheses 5 and 6 were not supported.

Chapter 5 - Discussion

Introduction

Achieving a better understanding of nonfinancial compensation (i.e., socioemotional wealth) and important family farm achievements is vital to improving knowledge of how to sustain this important industry (Dressler & Tauer, 2015; Glover & Reay, 2015). To accomplish this goal, the present study included research questions designed to examine the relationships between socioemotional wealth (SEW), return on business equity, and household net worth in the family farm business. Hypotheses proposed lower levels of SEW would result in higher levels of household net worth, and higher levels of return on business equity would result in higher levels of household net worth. Research questions were also designed to examine the relationships between socioemotional wealth, return on business equity, and subjective quality of life. Hypotheses proposed higher levels of SEW would result in higher levels of subjective quality of life, and higher levels of return on business equity would result in higher levels of subjective quality of life. To further investigate the relationship of SEW and financial achievements, the moderating effects of generational level of the farm family and total business asset size were examined between SEW and return on business equity. Both moderators were hypothesized to reduce the strength of the relationship. Relevant literature was reviewed, and relevant theories were examined, with methods of analysis and measurement of variables established. Statistical analyses were conducted, and results were reported. This chapter begins with a discussion of the research findings, followed by limitations and implications, concluding with recommendations for future research.

The relationship of SEW on financial and nonfinancial achievements in family farming has rarely been investigated, even though the phenomenon of nonfinancial compensation is a

widely accepted area of interest in farm business literature (Arbuckle & Kast, 2012; Coughenour & Swanson, 1988, 1992; Danes & Lee, 2004; Glover & Reay, 2015; Howley, Dillon, Heanue, & Meredith, 2016). The present study adds to family farm literature by applying a validated, reliable REI model (Hauck et al., 2016) to measure SEW endowments and study the relationships reported as vital to sustaining the family farm business. Family farm researchers have made significant progress in the literature by investigating SEW as an (a) emotional influence on family farm decision-making (Glover & Reay, 2015), and (b) emotional compensation in lieu of financial earnings (Dressler & Tauer, 2015). The overarching goals of the present study were two-fold: (a) to advance an understanding of socioemotional wealth measurements, and (b) to better understand the relationship between SEW, return on business equity, and family farm achievements.

Research Questions 1 and 2

Research Question 1

Research Question 1 was designed to investigate the relationship between socioemotional wealth, measured using three dimensions of REI, and household net worth in the family farm business. Results indicated that the REI measurement of SEW is not significantly associated with household net worth in the family farm. This result was surprising since SEW was found to be associated with family business operators' willingness to accept reduced financial compensation to achieve gains in SEW (e.g., pride of ownership and remaining an independent operator; Gómez-Mejía, Haynes, Núñez-Nickel, Jacobson, & Moyano-Fuentes, 2007). It is interesting to note that, based on the sample of the present study, the REI measurement of identification of family members with the farm business was the only SEW variable found statistically significant in predicting family farm household net worth. The positive significance of this variable

indicates that family members identifying themselves with the business — proud that they are family farmers — will, on average, increase their household net-worth, which does not agree with prior literature (Glover & Reay, 2015). Perhaps proxies used in this study to measure SEW did not provide an accurate psychometric measurement of each REI affective endowment, which influenced variable correlations and statistical significance of the regression analysis.

The feeling of loss aversion created by socioemotional wealth reference points informed Hypothesis 1, proposing that lower levels of socioemotional wealth would be associated with higher levels of household net-worth (Kahneman & Tversky, 1979; Wiseman & Gómez-Mejía, 1998). However, there was not a statistically significant relationship between the REI measurement and household net worth, so Hypothesis 1 was not supported.

Research Question 2

Research Question 2 was designed to examine the relationship between return on business equity (ROE), measured using the DuPont System equation, and household net worth in the family farm business. Results indicated that return on business equity was significantly and negatively associated with family farm household net worth. Adding return on business equity in Block 2, and in Block 3 of the full model, suggested higher levels of return on business equity are related to lower, not higher, levels of household net worth. Hypothesis 2 proposed higher levels of return on business equity would be associated with higher levels of family farm household net worth; however, this finding does not support Hypothesis 2 (El-Osta, Mishra, & Morehart, 2007; Glover & Reay, 2015; Mishra, Moss, & Erickson, 2009).

This finding does not support Sustainable Family Business Theory II or findings of previous literature. For example, finding higher return on business equity is significantly associated with lower household net worth challenges findings in the literature that suggested

family control over business decisions (i.e., return on business equity) significantly and positively affects overall financial achievements (Gómez-Mejia, Cruz, Berrone, & De Castro, 2011). Variables in Block 1 were informed by Sustainable Family Business Theory II (Danes, Stafford, Haynes, & Amarapurkar, 2009), which proposes both family and business entities use structure and process controls to implement resources (e.g., return on business equity) in order to accomplish positive, beneficial financial and nonfinancial achievements (Danes, Lee, Stafford, & Heck, 2008). Additionally, previous literature indicated that family businesses strive to achieve financial prosperity for both family and business (El-Osta, Mishra, & Morehart, 2007; Glover & Reay, 2015; Holt, Pearson, Carr, & Barnett, 2017). One possible reason for the negative relationship between return on business equity and household net worth could be that participants of the present study were more focused on business financial prosperity and less focused on family financial prosperity. Another possible reason, although not part of the DuPont System formula for calculating ROE, could be the high debt-to-asset ratio prevalent in the year the survey data was obtained (Key, Burns, & Lyons, 2019). A high debt-to-asset ratio of the farm business, which would indicate lower financial well-being and higher bankruptcy risk, could result in personal financial stress for the farm family causing higher household liabilities, thus lower net worth.

Research Questions 3 and 4

Research Question 3

Research Question 3 was designed to investigate the relationships between socioemotional wealth, measured using the three dimensions of REI, and subjective quality of life in the family farm business. Results indicated that two of the three REI dimensions (i.e., emotional attachment of family members and identification of family with the business)

measuring socioemotional wealth (SEW) were significantly and positively associated with subjective quality of life in the family farm. This finding suggested that a partial relationship exists between SEW and subjective quality of life. Hypothesis 3 proposed that higher levels of the three measurements in the REI model were associated with higher levels of family farm subjective quality of life. Previous literature indicated that farm family emotional, noneconomic (i.e., SEW) attachment to the family farm is found to be influential in farm business satisfaction (Glover & Reay, 2015), informing Hypothesis 3, which was partially supported by the findings of this study.

Sustainable Family Business Theory II (SFBT II) proposed that family business sustainability requires both financial and nonfinancial achievements (Danes, Lee, Stafford, & Heck, 2008; Stafford, Duncan, Danes, & Winter, 1999). Findings of the present study indicated that two of the three measures of socioemotional wealth, emotional attachment of family members and identification of family members with the business, significantly and positively predict a nonfinancial achievement, subjective quality of life. This finding is in agreement with Arbuckle and Kast (2012), who found that subjective feelings about farm family quality of life were positively associated with SEW (e.g., emotional attachment to their land, community and other community members) and referred to these affective endowments as “non-farming elements” (p. 106). Renewal of family bonds, the third REI construct, was not found to be a significant predictor of subjective quality of life, which could have resulted from an unreliable proxy used to measure this psychometric construct.

Research Question 4

Research Question 4 was designed to investigate the relationships between return on business equity, measured using the DuPont System equation, and subjective quality of life in the

family farm business. Results indicated that return on business equity was not a significant predictor of subjective quality of life in the family farm. Therefore, Hypothesis 4 was not supported; however, it is important to note that if the significance level of this study were increased from 0.05 to 0.10, return on business equity would have been found significant ($p = 0.085$). The nonsignificant result might be a consequence of the small dataset. Previous literature indicated that higher levels of return on business equity, a measure of business financial success, were associated with higher levels of subjective quality of life (Coughenour & Swanson, 1992; Howley, Dillon, Heanue, & Meredith, 2016; Molnar, 1985).

Research Questions 5 and 6

Research Question 5

Research Question 5 was designed to investigate whether the generational stage of the family farm business moderates between socioemotional wealth, measured using three dimensions of REI, and return on business equity, measured using the DuPont System formula equation, in the family farm business. Hypothesis 5 proposed the strength of the relationship between socioemotional wealth and return on business equity is reduced by increased generational level of family ownership (Schultze & Kellermanns, 2015; Suess-Reyes & Fuetsch, 2016). The relationship between socioemotional wealth and return on business equity was not found significant in the initial regression; therefore, results from this sample did not support that the generational level of family business moderates between socioemotional wealth and return on business equity.

One possible reason that socioemotional wealth (SEW) did not significantly predict return on business equity is the proxies used to represent REI dimensions might not be reliable measurements. Since the exact dimensions proposed for use in the REI model were not available

in NFBS survey data, measurements of similar psychometric constructs were selected from existing scales or created from proxy variables. These measurements were not identical to the dimensions proposed by Hauck, Suess-Reyes, Beck, Prügl, and Frank (2016), and could have failed to operationalize SEW as proposed in the original study. Also, even if the REI dimensions used for this study were reliable, a nonfinancial variable (i.e., SEW) might not significantly predict a financial variable (i.e., return on business equity). As explained in Chapter 4, since the independent variable did not significantly predict the dependent variable, the moderating effect of generational level of the family farm business could not be investigated with these data.

Research Question 6

Research Question 6 was designed to investigate whether total business assets moderate between socioemotional wealth, measured using the three dimensions of REI, and return on business equity, measured using the DuPont System formula equation, in the family farm business. Hypothesis 6 proposed the strength of the relationship between socioemotional wealth and return on business equity was reduced by higher levels of total business assets (Suess-Reyes & Fuetsch, 2016). The relationship between socioemotional wealth and return on business equity was not found significant in the initial regression; therefore, results from this sample did not support that total business assets moderate between socioemotional wealth and return on business equity.

The results were similar to those obtained for Research Question 5. A possible reason that socioemotional wealth (SEW) did not significantly predict return on business equity is the proxies used to represent REI dimensions might not be reliable measurements. The three REI proxies were not identical to the dimensions proposed by Hauck, Suess-Reyes, Beck, Prügl, and Frank (2016), and could have failed to operationalize SEW as proposed in the original study.

Also, even if the REI dimensions used for this study were reliable, a nonfinancial variable (i.e., SEW) might not significantly predict a financial variable (i.e., return on business equity). Also, as explained in Chapter 4, since the independent variable did not significantly predict the dependent variable, the moderating effect of total business assets could not be investigated with these data.

Limitations

Every study has its own limitations, and the present study is no exception. Similar to other researchers using a secondary dataset, variables were selected as proxies to test the concepts and constructs proposed in the literature. For example, the variables identified as proxies for the REI model were intended to measure other concepts. Similarly, the REI construct of emotional attachment of family members used the proxy of the Family APGAR scale instead of individual scale items. Using proxies to capture a psychometric measurement is common when researchers use secondary data. However, selecting a proxy for a newly proposed construct such as the REI measurement of socioemotional wealth can be especially problematic due to its limited use as a measurement.

The 1997 National Family Business Survey (NFBS) includes data referencing the year 1996. During this period of time, agricultural economic conditions were relatively stable following the “farm crisis” of the 1980s; however, local and international financial conditions, government trade policies, and diverse weather conditions impacted family farms differently each year. Even though, as explained in Chapter 2, current conditions in the agriculture economy are similar to today, agriculture financial conditions in 1996 were essentially unique and impacted family farm businesses differently than current international trade sanctions, economic stress resulting from COVID-19, and recent global weather patterns.

The NFBS was developed as a nationally representative sample of family and business systems. The subsample of NFBS data used for this study contained only family farm business households located in United States; therefore, these findings are not generalizable outside of the United States. Adding other countries to a survey of family farmers would lead to a stronger, more global study (Bernard, 2013).

Sample size issues also might have affected the findings of the study (Field, 2018). In the present study, the small sample size reduced statistical power and effect sizes, and increased false positive, type II error. Another limitation related to the small sample size is the limited number of variables that can be analyzed with regression. A larger sample size would have increased the number of variables available to test the entire model. In the present study, the use of the Sustainable Family Business Theory II informed the inclusion of five variables to represent theoretical constructs: family structure, business structure, family process controls, business process controls, and family and business process controls. Even though a limited number of variables represented these constructs, reducing the number of variables in both regressions improved statistical power in this small sample. Additionally, the SFBT II proposes that the boundaries between family and business are not always clearly defined, so assigning a single variable to represent one family or business structure or process control can be vague (Danes, Stafford, Haynes, & Amarapurkar, 2009). However, every effort was made in this study to clearly represent the concepts and constructs in all models.

Implications

Study findings can be especially useful for agricultural lenders and other financial services professionals. The findings indicated that the identification of family members within their farm business was a strong predictor of increased personal financial success. Financial

therapists, psychologists, and marriage and family therapists can apply these findings when aiding farm families in times of economic stress. Since emotional attachment of family members with their farm and identification of family members with the farm business are significant predictors of subjective quality of life, it would be beneficial to provide counseling by characterizing farm families as uniquely agricultural people. Professionals working with farm families can provide a higher level of assistance from understanding that non-economic and nonfinancial elements of family farming such as emotional family ties and pride in their profession are just as important to a successful farm business as good financial results.

It is understandable that current agricultural education focuses on economic and financial factors related to successfully operating the farm business. However, this study revealed that nonfinancial socioemotional wealth is, at least partly, associated with achieving good nonfinancial outcomes. While it remains important for family farmers to gain economic and financial education to make decisions that improve the viability of the farm, emphasis in education should also be placed on the non-economic aspects of family farming. Promoting overall farm family well-being and quality of life should be as important as promoting financial success.

Future Directions

To further explore the impact of socioemotional wealth on farm families, future research would benefit from continued studies using both quantitative data and qualitative methods. Devoting the time and resources to collect qualitative data could provide important in-depth information on family farm socioemotional wealth in relationship to a wide range of outcomes. In addition, future researchers should explore individual ratios comprising ROE while using a larger sample size to detect the impact of financial leverage on family farm achievements. Future

studies might also include models based on the theory of planned behavior to examine social norms, behavioral intentions, and perceived behavioral controls in the family farm decision-making process (Nuthall & Old, 2017).

Additionally, specific groups of family farm businesses, (e.g., grain farmers and livestock producers) should be studied in future research to analyze socioemotional wealth variables in relationship to household net worth across various sizes and types of family farms. An investigation of family farm SEW in relationship to total acres of farm operation would be especially interesting. An interesting finding of the present study was that first-generation family farmers were found to be significantly associated with higher levels of household net worth. Future researchers should also investigate the relationship between generational levels of family farms and household net worth. Although this was not the purpose of the current study, investigation into this relationship may be warranted in future research.

Conclusion

Capturing psychometric properties of socioemotional wealth (SEW) is a widely accepted subject for further development in family business research. Solid theoretical and methodological foundations are needed to establish a “dominant paradigm” for measuring SEW (Berrone, Cruz, & Gómez-Mejia, 2012, p. 258), even though significant progress has already been made (Berrone et al., 2012; Gómez-Mejia, Cruz, Berrone, & De Castro, 2011; Hauck, Suess-Reyes, Beck, Prügl, & Frank, 2016). The present study moves the conversation forward by applying a validated and reliable REI model to measure SEW in farm family business research.

Findings of the current study revealed that return on business equity is significantly and negatively associated with farm family household net worth. This finding is surprising since a positive correlation between these variables has been found in the literature (El-Osta, Mishra, &

Morehart, 2007; Glover & Reay, 2015; Mishra, Moss, & Erickson, 2009). A possible reason for this finding is a greater emphasis given to business financial management over personal financial management by survey respondents. Furthermore, two of the three REI dimensions (i.e., emotional attachment of family members, and identification of family with the business) were found to be significantly and positively associated with subjective quality of life in family farming. This result is not surprising, since previous research has established a strong association between any measurement of SEW and increased levels of quality of life in the family farm (Dressler & Tauer, 2015; Glover & Reay, 2015). The only REI dimension that was not found to have a significant association with subjective quality of life (i.e., renewal of family bonds through dynastic succession) might have resulted from an unreliable proxy to represent the dimension.

This study revealed the importance of psychometric measurements that accurately represent valid and reliable dimensions of socioemotional wealth. A precise measurement for each of the three REI dimensions could have improved statistical detection of relationships between SEW and the two dependent variables (i.e., household net worth and subjective quality of life). Additionally, the weighted composite variable of SEW, calculated using three REI variables, was used in this study with two moderation analyses, and the composite SEW variable was not found to be a significant predictor of return on business equity. It is possible that an accurate psychometric measurement of SEW could have found a statistically significant relationship between socioemotional wealth and return on business equity if a significant relationship actually exists. Findings of this study provide evidence that further development is needed to advance the analytical models necessary to operationalization socioemotional wealth.

References

- Acock, A. C. (2005). Working with missing values. *Journal of Marriage and Family*, 67(4), 1012-1028. <https://doi.org/10.1111/j.1741-3737.2005.00191.x>
- Arbuckle, Jr., J. G., & Kast, C. (2012). Quality of life on the agricultural treadmill: Individual and community determinants of farm family well-being. *Journal of Rural Social Sciences*, 27(1), 84-113. Retrieved from [http://www.ag.auburn.edu/auxiliary/srsa/pages/Articles/JRSS 2012 27/1/JRSS 2012 27 1 84-113.pdf](http://www.ag.auburn.edu/auxiliary/srsa/pages/Articles/JRSS%2012%2027/1/JRSS%2012%2027%201%2084-113.pdf)
- Avery, R. J., & Stafford, K. (1991). Toward a scheduling congruity theory of family resource management. *Journal of Family and Economic Issues*, 12(4), 325-344. <https://doi.org/10.1007/BF00986850>
- Baranzini, D. (2018). *The bar procedure*. <https://doi.org/10.13140/RG.2.2.33750.70722>
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6), 1173-1182.
- Becker, G. S. (1965). A theory of the allocation of time. *The Economic Journal*, 75(299), 493-517. <https://doi.org/10.2307/2228949>
- Bernard, H. R. (2013). *Social research methods: Qualitative and quantitative approaches*. Thousand Oaks, CA: Sage Publications, Inc.
- Berrone, P., Cruz, C., & Gómez-Mejía, L. R. (2012). Socioemotional wealth in family firms: Theoretical dimensions, assessment approaches, and agenda for future research. *Family Business Review*, 25(3), 258-279. <https://doi.org/10.1177/0894486511435355>

- Brooks, N. L., Stucker, T. A., & Bailey, J. A. (1986). Income and well-being of farmers and the farm financial crisis. *Rural Sociology*, 51(4), 391-405. Retrieved from <http://search.proquest.com/openview/339f72a7e194e89a23080a8dd0832a4e/1?pq-origsite=gscholar&cbl=1817355>
- Camfield, L., & Skevington, S. M. (2008). On subjective well-being and quality of life. *Journal of Health Psychology*, 13(6), 764-775. <https://doi.org/10.1177/1359105308093860>
- Chua, J. H., Chrisman, J. J., & De Massis, A. (2015). A closer look at socioemotional wealth: Its flows, stocks, and prospects for moving forward. *Entrepreneurship: Theory and Practice*, 39(2), 173-182. <https://doi.org/10.1111/etap.12155>
- Chua, J. H., Chrisman, J. J., & Sharma, P. (1999). Defining the family business by behavior. *Entrepreneurship: Theory & Practice*, 23(4), 19-39. Retrieved from <https://doi.org/10.1177/104225879902300402>
- Coughenour, C. M., & Swanson, L. E. (1988). Rewards, values, and satisfaction with farm work. *Rural Sociology*, 53(4), 442-459.
- Coughenour, C. M., & Swanson, L. E. (1992). Determinants of farmers' satisfactions with farming and with life: A replication and extension. *Southern Rural Sociology*, 9(1), 45-70.
- Curran-Everett, D. (2018). Explorations in statistics: The log transformation. *Advances in Physiology Education*, 42(2), 343-347. <https://doi.org/10.1152/ADVAN.00018.2018>
- Cyert, R. M., & March, J. G. (1963). *A behavioral theory of the firm*. Englewood Cliffs, NJ: Prentice-Hall, Inc.
- Danes, S. M., & Brewton, K. E. (2012). Follow the capital: Benefits of tracking family capital across family and business systems. In A. Carsrud & M. Brännback (Eds.),

- Understanding Family Businesses* (Vol. 15, pp. 227-250). New York, NY: Springer Science+Business Media, LLC. https://doi.org/10.1007/978-1-4614-0911-3_14
- Danes, S. M., Lee, J., Stafford, K., & Heck, R. K. Z. (2008). The effects of ethnicity, families and culture on entrepreneurial experience: An extension of sustainable family business theory. *Journal of Developmental Entrepreneurship*, 13(03), 229-268. <https://doi.org/10.1142/S1084946708001010>
- Danes, S. M., & Lee, Y. G. (2004). Tensions generated by business issues in farm business-owning couples. *Family Relations*, 53(4), 357-366. <https://doi.org/10.1111/j.0197-6664.2004.00042.x>
- Danes, S. M., & Rettig, K. D. (1995). Economic adjustment strategies of farm men and women experiencing economic stress. *Journal of Financial Counseling and Planning*, 6, 59-76. Retrieved from <http://www.scopus.com/inward/record.url?eid=2-s2.0-27744474089&partnerID=tZOtx3y1>
- Danes, S. M., Stafford, K., Haynes, G., & Amarapurkar, S. S. (2009). Family capital of family firms: Bridging human, social, and financial capital. *Family Business Review*, 22(3), 199-215.
- Davidson, R., & MacKinnon, J. G. (1993). *Estimation and inference in econometrics*. New York, NY: Oxford University Press.
- Diener, E. (1984). Subjective well-being. *Psychological Bulletin*, 95(3), 542-575. <https://doi.org/10.1037/0033-2909.95.3.542>
- Diener, E. (2006). Guidelines for national indicators of subjective well-being and ill-being. *Applied Research in Quality of Life*, 1(2), 151-157. <https://doi.org/10.1007/s11482-006-9007-x>

- Diener, E., Oishi, S., & Lucas, R. E. (2015). National accounts of subjective well-being. *American Psychologist*, 70(3), 234-242. <https://doi.org/10.1037/a0038899>
- Diener, E., & Suh, E. (1997). Measuring quality of life: Economic, social, and subjective indicators. *Social Indicators Research*, 40(1), 189-216. <https://doi.org/10.1023/A:1006859511756>
- Dinterman, R., Katchova, A. L., & Harris, J. M. (2018). Financial stress and farm bankruptcies in US agriculture. *Agricultural Finance Review*, 78(4), 441-456. <https://doi.org/10.1108/AFR-05-2017-0030>
- Dressler, J. B., & Tauer, L. (2015). Socioemotional wealth in the family farm. *Agricultural Finance Review*, 75(3), 403-415. Retrieved from <http://dx.doi.org/10.1108/AFR-12-2014-00390039>
- Dyer, W. G. (2006). Examining the “family effect” on firm performance. *Family Business Review*, 19(4), 253-273. <https://doi.org/10.1111/j.1741-6248.2006.00074.x>
- Eisenhardt, K. M. (1989). Agency theory: An assessment and review. *The Academy of Management Review*, 14(1), 57-74. Retrieved from <http://links.jstor.org/sici?sici=0363-7425%28198901%2914%3A1%3C57%3AA%3E2.0.CO%3B2-P>
- El-Osta, H. S. (2014). An index of socio-economic well-being of U.S. farm households. *Modern Economy*, 5(12), 1120-1131. Retrieved from <http://dx.doi.org/10.4236/me.2014.512104>
- El-Osta, H. S., Mishra, A. K., & Morehart, M. J. (2007). Determinants of economic well-being among U.S. farm operator households. *Agricultural Economics*, 36(3), 291-304. <https://doi.org/10.1111/j.1574-0862.2007.00207.x>

- Evert, R. E., Martin, J. A., McLeod, M. S., & Payne, G. T. (2016). Empirics in family business research: Progress, challenges, and the path ahead. *Family Business Review*, 29(1), 17-43. <https://doi.org/10.1177/0894486515593869>
- Food and Agriculture Organization of the United Nations. (2014). *Innovation in family farming. The state of food and agriculture*. Retrieved from <http://www.fao.org/3/a-i4040e.pdf>
- Field, A. (2018). *Discovering statistics using IBM SPSS statistics* (5th Ed.). Thousand Oaks, CA: Sage Publications, Inc.
- Fitzgerald, M. A., Haynes, G. W., Schrank, H. L., & Danes, S. M. (2010). Socially responsible processes of small family business owners: Exploratory evidence from the national family business survey. *Journal of Small Business Management*, 48(4), 524-551. <https://doi.org/10.1111/j.1540-627X.2010.00307.x>
- Garcia, R. R., & Sensenich, J. M. (2019). Chapter 12 and the challenge of the new farm crisis. *American Bankruptcy Institute Journal*, 38(2), 14-15,55. Retrieved from <http://search.proquest.com.er.lib.k-state.edu/docview/2182368153?accountid=11789>
- Garrison, M. E. B. (1998). Determinants of the quality of life of rural families. *Journal of Rural Health*, 14(2), 146-153. Retrieved from <http://www.scopus.com/inward/record.url?eid=2-s2.0-13144262797&partnerID=tZOtx3y1>
- Gasson, R. (1973). Goals and values of farmers. *Journal of Agricultural Economics*, 24(3), 521-542. <https://doi.org/10.1111/j.1477-9552.1973.tb00952.x>
- Gelman, A., & Hill, J. (2007). *Data analysis using regression and multilevel/hierarchical models*. New York, NY: Cambridge University Press.

- Glover, J. L., & Reay, T. (2015). Sustaining the family business with minimal financial rewards: How do family farms continue? *Family Business Review*, 28(2), 163-177.
<https://doi.org/10.1177/0894486513511814>
- Godfray, H. C. J., Beddington, J. R., Crute, I. R., Haddad, L., Lawrence, D., Muir, J. F., ... Toulmin, C. (2010). Food security: The challenge of feeding 9 billion people. *Science*, 327(5967), 812-818. <https://doi.org/10.1126/science.1185383>
- Gómez-Mejia, L. R., Cruz, C., Berrone, P., & De Castro, J. (2011). The bind that ties: Socioemotional wealth preservation in family firms. *The Academy of Management Annals*, 5(1), 653-707. <https://doi.org/10.1080/19416520.2011.593320>
- Gómez-Mejia, L. R., Haynes, K. T., Núñez Nickel, M., Jacobson, K. J. L., & Moyano Fuentes, J. (2007). Socioemotional wealth and business risks in family-controlled firms: Evidence from Spanish olive oil mills. *Administrative Science Quarterly*, 52(1), 106-137.
<https://doi.org/10.2189/asqu.52.1.106>
- Gómez-Mejia, L. R., Campbell, J. T., Martin, G., Hoskisson, R. E., Makri, M., & Sirmon, D. G. (2014). Socioemotional wealth as a mixed gamble: Revisiting family firm R&D investments with the behavioral agency model. *Entrepreneurship: Theory and Practice*, 38(6), 1351-1374. <https://doi.org/10.1111/etap.12083>
- Gottardo, P., & Moisello, A. M. (2015). The impact of socioemotional wealth on family firms' financial performance. *Problems and Perspectives in Management*, 13(1). Retrieved from https://businessperspectives.org/images/pdf/applications/publishing/templates/article/assets/6331/PPM_2015_01_Gottardo.pdf

- Graeb, B. E., Chappell, M. J., Wittman, H., Ledermann, S., Kerr, R. B., & Gemmill-Herren, B. (2016). The state of family farms in the world. *World Development*, 87, 1-15.
<https://doi.org/10.1016/j.worlddev.2015.05.012>
- Hauck, J., Suess-Reyes, J., Beck, S., Prugl, R., & Frank, H. (2016). Measuring socioemotional wealth in family-owned and managed firms: A validation and short form of the FIBER scale. *Journal of Family Business Strategy*, 7(3), 133-148.
<https://doi.org/10.1016/j.jfbs.2016.08.001>
- Hayes, A. F. (2018). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach* (2nd Ed.). New York, NY: Guilford Press.
- Heck, R. K. Z., Jasper, C. R., Stafford, K., Winter, M., & Owen, A. J. (2000). Using a household sampling frame to study family businesses: The 1997 national family business survey. In J. K. Katz & A. C. Corbett (Eds.), *Databases for the study of entrepreneurship (Advances in entrepreneurship, firm emergence and growth)* (Vol. 4, pp. 229-287). Bingley, UK: Emerald Group Publishing Limited. Retrieved from
<http://www.emeraldinsight.com/doi/pdfplus/10.1016/S1074-7540%2800%2904007-1>
- Heck, R. K. Z., & Trent, E. S. (1999). The prevalence of family business from a household sample. *Family Business Review*, 12(3), 209-219. <https://doi.org/doi:10.1111/j.1741-6248.1999.00209.x>
- Hilkens, A., Reid, J. I., Klerkx, L., & Gray, D. I. (2018). Money talk: How relations between farmers and advisors around financial management are shaped. *Journal of Rural Studies*, 63(February), 83-95. <https://doi.org/10.1016/j.jrurstud.2018.09.002>

- Holt, D. T., Pearson, A. W., Carr, J. C., & Barnett, T. (2017). Family firm(s) outcomes model: Structuring financial and nonfinancial outcomes across the family and firm. *Family Business Review*, 30(2), 182-202. <https://doi.org/10.1177/0894486516680930>
- Hoppe, R. A. (2017). *America's diverse family farms: 2017 edition*. Retrieved from <https://www.ers.usda.gov/webdocs/publications/86198/eib-185.pdf?v=43083>
- Howley, P., Dillon, E., Heanue, K., & Meredith, D. (2016). Worth the risk? The behavioural path to well-being. *Journal of Agricultural Economics*, (Online Version), 1-19. <https://doi.org/10.1111/1477-9552.12202>
- Iammartino, M. T., & Dooley, D. F. (2018). The coming U.S. farm crisis. *American Bankruptcy Institute Journal*, 37(5), 32,68-71.
- Jiang, D. S., Kellermanns, F. W., Munyon, T. P., & Morris, M. L. (2018). More than meets the eye: A review and future directions for the social psychology of socioemotional wealth. *Family Business Review*, 31(1), 125-157. <https://doi.org/10.1177/0894486517736959>
- Jones, C. A., El-Osta, H. S., & Green, R. (2006). *Economic well-being of farm households* (Economic Brief Number 7). Retrieved from <https://core.ac.uk/download/pdf/6678554.pdf>
- Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica*, 47(2), 263-292. Retrieved from <https://www.jstor.org/stable/1914185>
- Kaiser, H. F. (1974). An index of factorial simplicity. *Psychometrika*, 39(1), 31-36.
- Key, N., Burns, C., & Lyons, G. (2019). Financial conditions in the U.S. agricultural sector: Historical comparisons. *Economic Information Bulletin – USDA Economic Research Service*. Retrieved from <https://www.ers.usda.gov/webdocs/publications/95238/eib-211.pdf?v=8745.1>

- Key, N., Litkowski, C., & Williamson, J. (2018, July). Current indicators of farm sector financial health. *USDA-ERS Amber Waves: The Economics of Food, Farming, Natural Resources, & Rural America*. Retrieved from <https://www.ers.usda.gov/amber-waves/2018/july/current-indicators-of-farm-sector-financial-health/>
- Lytton, R. H., Grable, J. E., & Klock, D. D. (2013). Decision making. In *The process of financial planning: Developing a financial plan* (Second, pp. 153-177). Erlanger, KY: National Underwriter Company.
- MacDonald, J. M., Hoppe, R. A., & Newton, D. (2018). *Three decades of consolidation in U.S. agriculture*. Retrieved from <https://www.ers.usda.gov/webdocs/publications/88057/eib-189.pdf?v=43172>
- Martin, G., & Gómez-Mejía, L. (2016). The relationship between socioemotional and financial wealth. *Management Research: Journal of the Iberoamerican Academy of Management*, *14*(3), 215-233. <https://doi.org/10.1108/MRJIAM-02-2016-0638>
- McIntosh, W. L., Spies, E., Stone, D. M., Lokey, C. N., Trudeau, A. R. T., & Bartholow, B. (2016). Suicide rates by occupational group — 17 states, 2012. *Morbidity and Mortality Weekly Report*, *65*(25), 641-645. <https://doi.org/10.15585/mmwr.mm6525a1>
- Miller, D., & Le Breton-Miller, I. (2014). Deconstructing socioemotional wealth. *Entrepreneurship: Theory and Practice*, *38*(4), 713-720. <https://doi.org/10.1111/etap.12111>
- Mishra, A. K., Fannin, J. M., & Joo, H. (2014). Off-farm work, intensity of government payments, and farm exits: Evidence from a national survey in the United States. *Canadian Journal of Agricultural Economics*, *62*(2), 283-306. <https://doi.org/10.1111/cjag.12027>

- Mishra, A. K., Harris, J. M., Erickson, K. W., Hallahan, C., & Detre, J. D. (2012). Drivers of agricultural profitability in the USA: An application of the Du Pont expansion method. *Agricultural Finance Review*, 72(3), 325-340.
<https://doi.org/10.1108/00021461211277213>
- Mishra, A. K., Moss, C. B., & Erickson, K. W. (2009). Regional differences in agricultural profitability, government payments, and farmland values: Implications of DuPont expansion. *Agricultural Finance Review*, 69(1), 49-66.
<https://doi.org/10.1108/00021460910960462>
- Molnar, J. J. (1985). Determinants of subjective well-being among farm operators: Characteristics of the individual and the firm. *Rural Sociology*, 50(2), 141-162.
- NIMSS. (2016). NC _ OLD1030 : Family Firms and Policy in Times of Disruption (NC1030). Retrieved March 26, 2020, from <https://www.nimss.org/projects/view/mrp/outline/13176>
- Nuthall, P. L., & Old, K. M. (2017). Will future land-based food and fibre production be in family or corporate hands? An analysis of farmland ownership and governance considering farmer characteristics as choice drivers. The New Zealand case. *Land Use Policy*, 63, 98-110. <https://doi.org/10.1016/j.landusepol.2017.01.018>
- Perry, J. T., Ring, J. K., & Broberg, J. C. (2015). Which type of advisors do family businesses trust most? An exploratory application of socioemotional selectivity theory. *Family Business Review*, 28(3), 211–226. <https://doi.org/10.1177/0894486514538652>
- Piedra-Muñoz, L., Galdeano-Gómez, E., & Pérez-Mesa, J. C. (2016). Is Sustainability Compatible with Profitability? An Empirical Analysis on Family Farming Activity. *Sustainability*, 8(893), 1–15. <https://doi.org/10.3390/su8090893>

- Prager, D. (2017). *Farm household well-being*. Retrieved from <https://www.ers.usda.gov/topics/farm-economy/farm-household-well-being/>
- Reed, D. B., & Claunch, D. T. (2020). Risk for depressive symptoms and suicide among U.S. primary farmers and family members: A systematic literature review. *Workplace Health & Safety*, 68(5), 236-248. <https://doi.org/10.1177/2165079919888940>
- Reilly, F. K., & Brown, K. C. (2000). Analysis of financial statements. In M. Reynolds & J. Davies (Eds.), *Investment analysis and portfolio management* (6th ed., pp. 400-404). Jefferson City, MO: Thompson Learning, Inc.
- Samberg, L. H., Gerber, J. S., Ramankutty, N., Herrero, M., & West, P. C. (2016). Subnational distribution of average farm size and smallholder contributions to global food production. *Environmental Research Letters*, 11(12), 1-12. <https://doi.org/10.1088/1748-9326/11/12/124010>
- Schulze, W. S., & Kellermanns, F. W. (2015). Reifying socioemotional wealth. *Entrepreneurship: Theory and Practice*, 39(3), 447-459. <https://doi.org/10.1111/etap.12159>
- Sjaastad, L. A. (1962). The costs and returns of human migration. *Journal of Political Economy*, 5, Part 2(70), 80-93. Retrieved from <http://www.nber.org/books/univ62-3>
- Smilkstein, G., Ashworth, C., & Montano, D. (1982). Validity and reliability of the family APGAR as a test of family function. *The Journal of Family Practice*, 15(2), 303-311. Retrieved from <http://psycnet.apa.org/record/1983-04789-001>
- Stafford, K., Duncan, K. A., Danes, S. M., & Winter, M. (1999). A research model of sustainable family businesses. *Family Business Review*, 12(3), 197-208. <https://doi.org/10.1111/j.1741-6248.1999.00197.x>

- Suess-Reyes, J., & Fuetsch, E. (2016). The future of family farming: A literature review on innovative, sustainable and succession-oriented strategies. *Journal of Rural Studies*, 47, 117-140. <https://doi.org/10.1016/j.jrurstud.2016.07.008>
- Torske, M. O., Bjørngaard, J. H., Hilt, B., Glasscock, D., & Krokstad, S. (2016). Farmers' mental health: A longitudinal sibling comparison - The HUNT study, Norway. *Scandinavian Journal of Work, Environment and Health*, 42(6), 547-556. <https://doi.org/10.5271/sjweh.3595>
- Truchot, D., & Andela, M. (2018). Burnout and hopelessness among farmers: The farmers stressors inventory. *Social Psychiatry and Psychiatric Epidemiology*, 53(8), 859-867. <https://doi.org/10.1007/s00127-018-1528-8>
- Tweeten, L. G. (1969). Theories explaining the persistence of low resource returns in a growing farm economy. *American Journal of Agricultural Economics*, 51(4), 798-817. Retrieved from <https://www.jstor.org/stable/1237775>
- United States Department of Agriculture Economic Research Service. (2018a). *America's diverse family farms 2018 edition*. Retrieved from <https://www.ers.usda.gov/webdocs/publications/90985/eib-203.pdf?v=6080>
- United States Department of Agriculture Economic Research Service. (2018b). *Farm income and wealth statistics*. Retrieved from <https://www.ers.usda.gov/data-products/farm-income-and-wealth-statistics/>
- United States Department of Agriculture Economic Research Service, & National Agriculture Statistics Service. (2019). *Agricultural Resource Management Survey*. Retrieved on December 10, 2019 from <https://www.ers.usda.gov/data-products/arms-farm-financial-and-crop-production-practices/?modal=17882>

- United States Department of Agriculture & National Agriculture Statistics Service. (2019). *ARMS farm financial and crop production practices*. Retrieved February 1, 2020 from <https://www.ers.usda.gov/data-products/arms-farm-financial-and-crop-production-practices/?modal=17882>
- Van Hook, M. (1990). Family response to the farm crisis: A study in coping. *Social Work, 35*(5), 425-431.
- Van Vliet, J. A., Schut, A. G. T., Reidsma, P., Descheemaeker, K., Slingerland, M., Van de Ven, G. W. J., & Giller, K. E. (2015). De-mystifying family farming: Features, diversity and trends across the globe. *Global Food Security, 5*, 11-18.
<https://doi.org/10.1016/j.gfs.2015.03.001>
- von Bertalanffy, L. (1950). An outline of general systems theory. *The British Society for the Philosophy of Science, 1*(2), 134-165.
<https://doi.org/http://dx.doi.org/10.1093/bjps/I.2.134>
- Whitchurch, G. G., & Constantine, L. L. (1993). Systems theory. In P. G. Boss, W. Doherty, R. LaRossa, W. R. Schumm, & S. K. Steinmetz (Eds.), *Sourcebook of family theories and methods: A contextual approach* (pp. 325-352). New York, NY: Springer Science+Business Media, Inc.
- WHOQOL Group. (1995). The World Health Organization quality of life assessment (WHOQOL): Position paper from the World Health Organization. *Social Science & Medicine, 41*(10), 1403-1409. Retrieved from [http://dx.doi.org/10.1016/0277-9536\(95\)00112-K](http://dx.doi.org/10.1016/0277-9536(95)00112-K)
- Winter, M., Danes, S. M., Koh, S. K., Fredericks, K., & Paul, J. J. (2004). Tracking family businesses and their owners over time: Panel attrition, manager departure and business

- demise. *Journal of Business Venturing*, 19(4), 535-559. Retrieved from [https://doi.org/10.1016/S0883-9026\(03\)00061-2](https://doi.org/10.1016/S0883-9026(03)00061-2)
- Winter, M., Fitzgerald, M. A., Heck, R. K. Z., Haynes, G. W., & Danes, S. M. (1998). Revisiting the study of family businesses: Methodological challenges, dilemmas, and alternative approaches. *Family Business Review*, 11(3), 239-252. <https://doi.org/10.1111/j.1741-6248.1998.00239.x>
- Wiseman, R. M., & Gómez-Mejia, L. R. (1998). A behavioral agency model of managerial risk taking. *Academy of Management Review*, 23(1), 133-153. Retrieved from <https://doi.org/10.5465/amr.1998.192967>
- Wozniak, P. J., Draughn, P. S., & Knaub, P. K. (1993). Domains of subjective well-being in farm men and women. *Journal of Family and Economic Issues*, 14(2), 97-114. <https://doi.org/10.1007/BF01013800>
- Zahid, H. J., Robinson, E., & Kelly, R. L. (2016). Agriculture, population growth, and statistical analysis of the radiocarbon record. *Proceedings of the National Academy of Sciences of the United States of America*, 113(4), 931-935. <https://doi.org/10.1073/pnas.1605181113>
- Zhang, W., & Tidgren, K. (2018). The current farm downturn vs the 1920s and 1980s farm crises: An economic and regulatory comparison. *Agricultural Finance Review*, 78(4), 396-411. <https://doi.org/10.1108/AFR-08-2017-0075>