THREE ESSAYS EXPLORING THE EFFECTS OF COVID-19 ADVERSITIES

FROM THE PERSPECTIVE OF RETIREMENT ADEQUACY, FINANCIAL BEHAVIOR,

AND BUSINESS HARDSHIP

by

Jia Qi

(Under the Direction of Swarn Chatterjee)

ABSTRACT

The worldwide COVID-19 pandemic has brought significant effects to economic and financial systems and have altered consumers' financial behaviors due to the negative financial consequences. This dissertation consists of three essays investigating how the COVID-19 pandemic adversities affect financial well-being and financial behaviors for individuals, families, and businesses. The three essays break down the analyses of retirement planning adequacy, financial behaviors, and business hardship. The targeted group of the essays is Baby Boomers, and the dissertation compares financial situations and behaviors of Baby Boomers to Gen Xers and Millennials. The first essay uses the life-cycle theory and the theory of planned behavior to investigate the relationships between COVID-19 adversities and retirement adequacy and identify generational differences. The results indicate that financial COVID-19 adversities and retirement adequacy are negatively related. Baby Boomers are better prepared for retirement than Gen Xers and Millennials. The second essay constructs its theoretical framework with the Financial Help-Seeking framework and the Stress and Coping theory to examine the relationship between financial self-efficacy (FSE) and financial behavior while considering the roles of

financial advice seeking and financial stress during the COVID-19 pandemic. The outcomes indicate that Baby Boomers have the highest financial stress and unemployment rate during the pandemic compared to Gen Xers and Millennials, and financial stress moderates the relationships among FSE, financial advice seeking, and financial behavior. The third essay mainly explores the relationships between COVID-19 adversity and business hardship of Baby Boomer business owners. COVID-19 adversity and business hardship were two latent variables constructed using the Exploratory Factor Analysis (EFA) technique. The model was then validated by the Confirmatory Factor Analysis (CFA). The results indicate that COVID-19 adversity and business hardship are positively correlated. The findings from the essays provide implications for financial service providers, policymakers, and government agencies on improving overall financial behaviors and financial well-being and providing guidance on enhancing financial resilience to survive and recover from a pandemic or similar worldwide adversity. Due to Baby Boomers' special timeline in life, more attention should be given to this generation to prevent them from substantial financial stress and unemployment during financial shocks.

INDEX WORDS: COVID-19 adversity, Retirement adequacy, Baby Boomers, Generational differences, Financial hardship, Financial self-efficacy, Financial advice seeking, Financial stress, Business hardship

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by

Jia Qi

BS, Baylor University - Waco, 2015

MS, Baylor University - Waco, 2017

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JIA QI

Major Professor: Swarn Chatterjee
Committee: Kristy Archuleta
                   Sheri Worthy

Electronic Version Approved:

Ron Walcott
Vice Provost for Graduate Education and Dean of the Graduate School
The University of Georgia
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CHAPTER 1

INTRODUCTION

This dissertation will include three essays mainly investigating the effects of COVID-19 adversities on retirement planning adequacy, financial behaviors, and business hardships. The primary population focus of the three essays is Baby Boomers, because Baby Boomers are close to their retirement age and are likely to be most impacted by the pandemic difficulties compared to the younger generational cohorts. The goal of the dissertation is to enhance understanding of consumers' behavioral finance and offer actionable insights to improve consumers' financial behavior and financial well-being during crisis related events. The overarching theme of the dissertation is to investigate the impacts of crisis related events such as a pandemic on consumers' financial behaviors, financial security, and the importance of enhancing financial resilience in the levels of individual, family, and business, with comparisons of generational differences. The dissertation also provides new theoretical models and measurement tools to assess financial well-being under crisis conditions. The findings of this study will deepen understandings of the measurement of retirement adequacy, the roles of financial advice seeking and financial stress during financial shocks, and business resilience during adverse worldwide events. The takeaways of the dissertation will help consumers improve their financial behaviors and financial well-being, and provide guidance to prepare for unexpected financial crises. The study will offer practical insights for financial service providers and policymakers to implement evidence-based policies and recommendations for consumers to survive and recover from the adverse effects of major events.

The first essay, entitled "The effects of COVID-19 on retirement planning adequacy: A cohort comparison", investigates how retirement adequacy is affected by COVID-19 adversities, including financial hardship, job loss, and trouble paying bills. This study mainly focuses on the oldest working adults who belong to the late Baby Boomers (60-67 years old) and explores this cohort's retirement adequacy relative to their Generation X and Millennial peers. By adopting the life-cycle framework and the theory of planned behavior, this research designs and tests a new measurement of retirement adequacy. The study also models cohort effects and identifies some other key factors affecting retirement adequacy. This essay aims to gain a better understanding of a pandemic or similar worldwide adversity affects individual's retirement adequacy with a new measurement of retirement baseline. The results should inform policymakers and financial planners to help improve people's retirement adequacy, especially during major events such as a pandemic.

The second essay, entitled "Financial self-efficacy and financial behaviors: Investigating the role of financial advice seeking during the COVID-19 pandemic," employs a theoretical framework that integrates the Financial Help-Seeking theory with the Stress and Coping theory to explore the relationship between financial self-efficacy (FSE) and financial behaviors under economic uncertainties. A moderated mediation model will be used to analyze the relationship with the technique of Structural Equation Modeling (SEM). This study mainly focuses on Baby Boomers and investigates how their financial advice seeking behaviors and financial stress sustained during the COVID pandemic affect their financial behaviors. The findings should have practical implications for consumers, financial service providers, and policymakers in preparing for unexpected financial shocks and enhancing financial resilience.

The purpose of the third essay, entitled "An examination of COVID-19 adversities on business hardships," is to investigate the relationship between the unprecedented COVID-19 pandemic adversities and business-related hardships of Baby Boomer business owners. This study draws on organization theory (Shepherd & Williams, 2020) to develop a framework for understanding adverse events and entrepreneurial responses to change. Additionally, it incorporates the challenge-hindrance stressor (CHS) framework (Cavanaugh et al., 2020) to explain how COVID-19-related financial stressors influence entrepreneurs' intentions to distance themselves from such stressors. The techniques of Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) are introduced for variable selection and confirmation to examine how COVID-19 adversities are associated with business hardships by the Structural Equation Model (SEM). The results from this study will have practical implications for policymakers and government agencies in implementing timely policies to help Baby Boomer business owners build their financial resilience so that they can survive and rapidly recover from the adverse outcomes of unexpected financial events.

CHAPTER 2

ESSAY 1: THE EFFECTS OF COVID-19 ON RETIREMENT PLANNING ADEQUACY: A

COHORT COMPARISON

2.1 INTRODUCTION

The COVID-19 pandemic has affected consumers' abilities to manage their finances due to the negative financial consequences of the COVID-19 adversities since 2020. The adversities caused by the pandemic and the resulting inflation have forced many consumers to reevaluate their retirement planning goals. Retirement planning is vital and necessary for almost every working individual. After retirement, individuals' income from work stops; however, they still have various expenses, including housing, groceries, medical, and other ordinary expenses in life. In this sense, people need to prepare in advance to fulfill their future financial needs. Retirement savings provide a source of financial security in retirement to help maintain people's pre-retirement lifestyle and well-being.

However, the pandemic lowered the retirement quality for current retirees and near-retirees by cutting resources for retirement (Baily et al., 2020). According to a survey by Penny Hoarder, about 17% of Americans saved less money for retirement due to the pandemic (Christian, 2022). To be more specific, consumers experienced payment cuts, job loss, and declines in revenues and returns of retirement assets (Rappaport, 2021) and became less confident in having adequate retirement savings and investing their savings properly (Yakoboski, 2020). Therefore, there is a need to investigate how pandemic-related adversities affected

consumers' retirement adequacy in order to develop strategies that can protect consumers from the negative effects of economic uncertainties that may impact consumers' financial wellness.

According to the U.S. Census records, 40% of the population is aged between 35 and 64. This statistic means that a substantial percentage of the nation's population is in the wealth-formation phase of their life cycle and should be saving toward their retirement goals. Hence, the demand for retirement planning is anticipated to increase over the next decade. The retired share of the U.S. population was nearly 1.5 percent higher than its pre-pandemic level as of 2022, and the excess retirement mainly concentrated on Baby Boomers (Montes et al., 2022). The report by the Schwartz Center for Economic Policy Analysis also indicated that older workers were more likely to have retired if they were unemployed for a prolonged period of time (Schuster et al., 2022). However, many economists and policymakers are concerned that a substantial number of American households are not well prepared for retirement and are adversely affected by periods of economic uncertainty, such as job loss and income drop during the pandemic. The Retirement Confidence Survey of the Employee Benefit Research Institute (2018) found that 36% of workers do not have any retirement savings. During the COVID-19 pandemic, 23% of health workers have decreased their retirement savings amount (Yakoboski, 2020).

This essay focuses on working late Baby Boomers (60-67 years old) and investigates whether this cohort is prepared for retirement compared to Generation X and Millennials. The demarcations of time range defining the generations are closely formulated by the literature: Baby Boomers were born between 1946 and 1964, Generation Xers were born between 1965 and 1980, and Millennials were born between 1981 and 1996 (Cennamo & Gardner, 2008; Dimock, 2019; Twenge, 2010). The reason to select Baby Boomers as the focused population is that Baby Boomers are the generation closest to their retirement age and are most likely to be impacted by

the pandemic's adversities compared to other generational cohorts. According to previous studies, older adults were a vulnerable group during the COVID-19 pandemic because they were more likely to develop serious conditions (Di Gessa & Price, 2022). The early pandemic resulted in significant job losses among older workers (Schuster et al., 2022). A greater percentage of older workers close to retirement age planned to delay their retirement because of the COVID-19 pandemic and were affected by the decrease in pension values (Pew Charitable Trusts, 2021). Therefore, this essay has two research questions:

Q1: How is the COVID-19 pandemic related adversities affecting the retirement adequacy of different generations?

Q2: Are Baby Boomers better prepared for retirement relative to their Generation X and Millennial peers during the COVID-19 pandemic?

This study uses the 2022 Survey of Consumer Finances (SCF) dataset, which is maintained by the Federal Reserve. The COVID-19 questions were first added to the survey to capture respondents' pandemic experiences since the onset of COVID-19. In this sense, the results from this study should inform policy and be useful for explaining how the pandemic adversities affect retirement adequacy and preparedness during financial uncertainties. Other than that, this study examines the retirement adequacy of different generations and quantifies the generation effects. The model regresses the generational cohort indicators and COVID-19 adversities on retirement adequacy while controlling for demographics and socioeconomic factors. This study identifies the adverse COVID-19 factors and socioeconomic factors affecting retirement adequacy.

Employing the life-cycle framework and the theory of planned behavior, this study develops a new measurement of retirement adequacy and tests the validity and reliability of this

measurement. One of the originalities of this research is that this mathematically developed measure of retirement adequacy takes into account the amount of income and wealth of the individuals after controlling for a number of additional factors, such as the individual's socio-demographic characteristics, their risk tolerance, and their expected retirement age and remaining work-life expectancy. Also, when estimating the baseline retirement adequacy score, this research considers the purchasing power of money, which indicates that at different timelines, different individuals should have different baselines for retirement to maintain their previous consumption levels. For example, a 30-year-old individual with $50,000 in retirement savings is on the right track to retirement, but $50,000 is far from adequate for a 60-year-old consumer. It is more reasonable to construct unique baselines based on personal situations, but not use the same standard for all consumers, which is often applied when comparing retirement adequacies across generational cohorts in the previous literature. Additionally, this study incorporates sensitivity analyses by examining different sets of portfolio returns in different scenarios.

In summary, this essay proposes a mathematical framework for the computation of retirement adequacy, provides a review of previous literature about COVID-19-related adversities, such as job loss, trouble paying bills, and financial hardship, and implements a systematic review of retirement adequacy and cohort differences. Data, variable construction, and empirical models are discussed in the Method section. Then, the results are presented and are followed by discussions in the last part of this article.

2.2 LITERATURE REVIEW

2.2.1 THEORETICAL FRAMEWORK

Life-cycle theory (Ando & Modigliani, 1963) and the theory of planned behavior (Ajzen, 1985) were used to construct a framework for explaining the retirement adequacy of different generations in this study. The life-cycle theory suggests that individuals are planning their consumption and savings and would even out their consumption over their lifetime (Ajzen, 1985). The key assumption of this theory is that individuals tend to keep the same consumption level to maintain a stable lifestyle. This assumption provides a theoretical background in constructing retirement adequacy in this paper, which assumes that individuals will keep the same consumption level before and after retirement, so that they would keep the same replacement ratio over their lifetime. Therefore, even though individuals' income will change over their life span, the percentage of their income used to keep their living standard will be the same. This theory explains the behavior that individuals tend to save a portion of their income while they are working and then spend the savings after retirement to maintain their consumption level throughout life. The life-cycle theory provides theoretical support for calculating the expected annual retirement income needed to maintain the living standard.

The theory of planned behavior states that an individual's intention is shaped by three main components: attitudes (how a person thinks about a particular behavior), subjective norms (how most people think about a particular behavior), and perceived behavioral control (the person's perception about how difficult it is to perform the behavior) (Ajzen, 1991). Based on this theory, generational differences in retirement savings should exist because different generations have various attitudes, subjective norms, and perceived behavioral control. The behavioral intention to save for retirement is hypothesized to be influenced by attitudes toward retirement savings, subjective norms, and perceived behavioral control, and the behavioral intention could explain the actual retirement savings behavior. The theory of planned behavior is

used to explain the cohort differences in retirement behaviors among Baby Boomers, Generation X, and Millennials, so that this theory could support the correlations indicated by the regression results. Figure 2.1 indicates how the life-cycle framework and theory of planned behavior were used to conceptualize the framework in this study.

Figure 2.1 Theoretical Framework created by Life-cycle Framework and The Theory of Planned Behavior
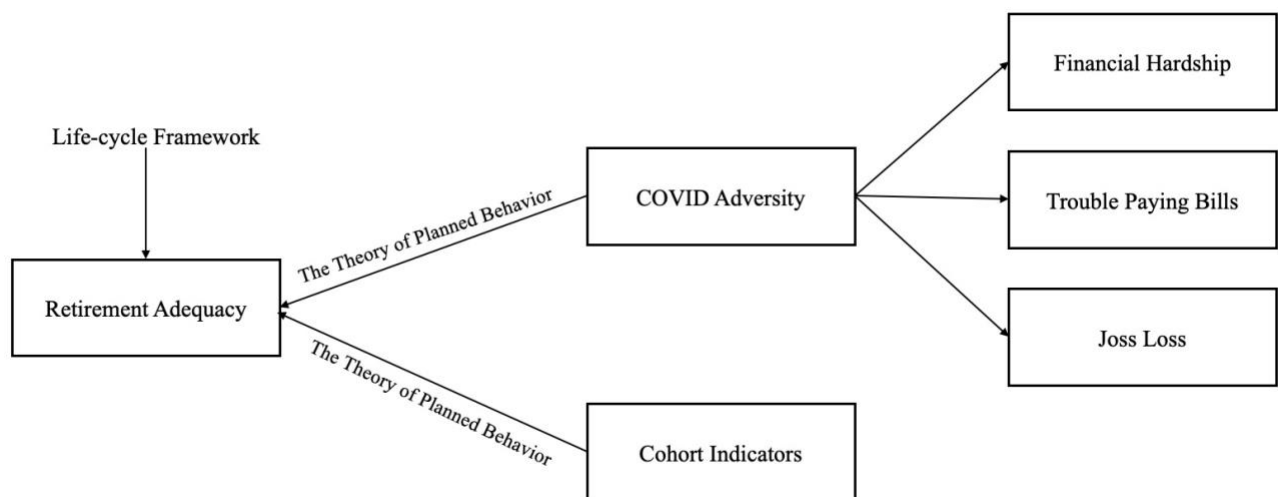
In summary, the life-cycle framework was used to construct the measurement of retirement adequacy, because the assumption of unchanged consumption level is the key assumption to calculate retirement asset needs. The theory of planed behavior was applied to validate the regression paths from COVID adversities and cohort indicators to retirement adequacy (Table 2.1).

Table 2.1 Summary of Theories

Theory	How the theory underpins the framework
Life-cycle Framework	Construct the measurement of retirement adequacy
The Theory of Planned Behavior	Validate the paths with COVID adversities and cohort indicators

2.2.2 COVID-19 ADVERSITY

Adversity is defined as "a state or instance of serious or continued difficulty or misfortune" by Merriam-Webster (n.d.). In this sense, COVID-19 adversities could refer to any difficulties or adverse events that consumers experienced during the pandemic. There is no consistent definition of COVID-19 adversities. Previous literature has investigated COVID-19 adversities in mental health (Alaggia et al., 2024; Holwerda et al., 2023; Wright et al., 2020), physical health (Kolacz et al., 2020; Seedat, 2021), finances (May et al., 2023), and even employees' stress in business (Fa-Kaji et al., 2023). The study by Wright et al. (2021) introduced five types of COVID-19 adversities: (a) illness with COVID-19, (b) financial difficulty, (c) loss of paid work, (d) difficulties acquiring medication, (e) difficulties accessing food, and (f) threats to personal safety. This article mainly discusses COVID-19 adversities in three areas: (a) job loss, (b) trouble paying bills, and (c) financial hardship.

2.2.2.1 JOB LOSS

According to the results of the American Trends Panel (ATP) survey by the Pew Research Center, 25% of U.S. adults were laid off or unemployed due to the COVID-19 pandemic (Parker et al., 2020). Job loss has led to the evidence of retirement excess during the COVID-19 pandemic. Most older workers who retired because of job loss during a pandemic did not retire by their choice, which means that they were forced to retire before they planned (Farmand & Ghilarducci T, 2021; Schuster et al., 2022). Previous literature found that if Baby Boomers stayed unemployed for a period during the pandemic, they were likely to retire because of a loss of economic resources (Schuster et al., 2022). In this sense, they were not adequately prepared for retirement because they were forced to retire.

Job loss could also result in earlier-than-planned withdrawals of savings during periods of financial crisis. Job loss is highly associated with income drop, which is the major reason that consumers withdraw early from their retirement savings accounts (Lu et al., 2017). The study by Argento et al. (2015) indicated that during the Great Recession, people who lost their jobs intended to make early withdrawals from their retirement savings accounts. During the COVID-19 pandemic, U.S. adults who experienced job loss or pay cuts were more likely to seek external economic resources, either borrowing money from family or friends or using money from retirement savings accounts (Parker et al., 2020). The COVID-19-related job loss could increase early withdrawals from retirement savings (Zheng et al., 2024). Therefore, the early withdrawals will decrease consumers' retirement savings, which will make them less prepared for retirement.

Based on the above discussions on the effect of job loss on early retirement and withdrawals, consumers are likely to be less adequately prepared for retirement if they experience a job loss. Therefore, this essay proposed a negative relationship between job loss and retirement adequacy.

H1: *Consumers who experienced a job loss during a pandemic are less prepared for retirement.*

2.2.2.2 TROUBLE PAYING BILLS

Bill payment is one of the major concerns in consumers' daily lives. Consumers who have trouble paying bills might experience adverse effects in financial matters, delayed necessary care, health status, and quality of life (Choi, 2018; New Mexico Bank & Trust, 2022). According to a LendingTree survey from 2024, 45% of Americans paid their bills later in the previous year, and the main reason for making later payments or missing payments is lacking money (Schulz, 2024). During the COVID-19 pandemic, late and missing payments to bills were more common because of unemployment, increased living costs, and lost income resources.

According to the results of the ATP, 25% of U.S. adults had difficulties with paying their bills since the start of COVID-19, and most of them had difficulty paying rent, mortgages, loans, and medical bills (Parker et al., 2020). The results of the 2020 American Life Panel (ALP) Survey on Impacts of COVID-19 indicate that 28% of U.S. households had trouble paying their bills (Carman & Natarai, 2020).

Previous studies have shown a strong association between bill payment ability and retirement adequacy. For those who had trouble paying their bills, a third of them borrowed money from their retirement savings accounts to alleviate their financial burden (Parker et al., 2020). In this sense, consumers might look for extra income resources, including dipping into retirement savings when they cannot afford their bills. Therefore, the early withdrawals from the retirement accounts will worsen the situation of consumers' retirement adequacy due to a lack of sufficient funds in the retirement accounts. Moreover, when consumers are unable to meet bill payments or pay them punctually, they will incur further debts, resulting in increased financial burdens. Past studies have indicated that retirement planning was negatively correlated with having debts (Chen & Zurlo, 2022). When consumers carry a credit card debt or installment debt, the amount of their retirement savings tends to be lower (Cavanagh & Sharpe, 2002). A possible reason could be that consumers are using the funds from retirement savings accounts to repay their bills. There is still limited research on how trouble paying bills is associated with retirement adequacy. This essay will help fill this literature gap by identifying the direct relationship between trouble paying bills and retirement adequacy.

According to the discussions on the effect of trouble paying bills during the COVID-19 pandemic, this study hypothesizes that trouble paying bills is negatively associated with retirement adequacy.

H2: *Consumers who had trouble paying bills during the pandemic are less prepared for retirement.*

2.2.2.3. FINANCIAL HARDSHIP

There is no consistent definition of financial hardship, and this term is usually used interchangeably with financial difficulty, financial challenge, and economic hardship. The study by Spivak et al. (2019) defines financial hardship as difficulty in obtaining food, shelter, or medicine. A more systematic investigation of financial hardship measures this term in three categories: material conditions, psychological responses, and coping behaviors (Altice et al., 2017). Material conditions include reduced income, medical debt, and job loss, which are common issues experienced by U.S. adults. Examples of psychological responses include being concerned about wages and expenses and feeling distressed due to the cost of medical care. Coping behaviors refer to taking less or skipping medication and missing physician visits (Altice et al., 2017). Financial hardship could also be defined with objective and subjective measures (Bradshaw & Ellison, 2010; Fan et al., 2022). Examples of objective financial hardship include low levels of income and job loss. Subjective financial hardship consists of feelings of depression and mental health (Bradshaw & Ellison, 2010). Some specific indicators of economic hardship could include having trouble paying the mortgage, rent, or utility bills (Gjertson, 2016).

Financial hardship was found to have a close relationship with retirement adequacy. During the COVID-19 outbreak, U.S. adults were experiencing continuous financial hardship (Parker et al., 2020). Similar to job loss and trouble paying bills, consumers experiencing financial hardships might take early withdrawals from retirement savings accounts or contribute less to their retirement savings accounts, given the fact that 25% of U.S. adults put less money into savings due to financial difficulties during the COVID-19 pandemic (Parker et al., 2020).

Economic shocks such as mortgage and bill payments can make consumers access their retirement resources early to relieve their financial burden (Argento et al., 2015). A recent study by Fan et al. (2022) explores the relationship between financial hardship and retirement planning behaviors. This study examined financial hardship in three measures: (a) the ability to make ends meet, (b) perceived over-indebtedness, and (c) financial fragility (Fan et al., 2022). The findings of the study indicate that experiencing financial hardship is positively related to retirement behaviors; however, financial hardship could also decrease consumers' contributions to their retirement saving accounts, so the results indicate a dilemma about the role of financial hardship (Fan et al., 2022). Another similar study by Zheng et al. (2024) found that financial hardship is positively correlated to early withdrawals, which decreases consumers' abilities to save adequate retirement savings.

Based on the findings of past literature about the effect of financial hardship on retirement adequacy, financial hardship is expected to be negatively associated with retirement adequacy.

H3: *Consumers with more financial hardships during a pandemic are less prepared for retirement.*

2.2.3 RETIREMENT PLANNING NEEDS

Findings from previous studies have implied that the demand for retirement planning will increase in the marketplace. One significant reason for the growing need for planning is that defined benefit pension plans are being gradually replaced by defined contribution plans. Poterba (2014) finds that people's access to and enrollment in pension plans have steadily decreased over time. Pension plans, or defined-benefit plans, are retirement vehicles that provide a guaranteed, actuarially determined distribution to retirees. The distribution is computed using a formula

based on the employees' number of years of service and the average of their highest 3–5 years of salaries, and the calculations may vary depending on the plan provider (Poterba et al., 2007). However, with pension plans being rapidly replaced by defined-contribution-type retirement plans, the responsibility to save and generate savings for retirement has shifted to the employees (Butrica et al., 2009). In defined-contribution plans, such as the 401(k) plans that are employer-sponsored retirement plans for American workers (Pence, 2001), the employees must save and manage their investment portfolios within their 401(k) plan (Ippolito, 1995). Therefore, to adequately prepare for their retirement, working adults should know how much they need for retirement and how much they need to save periodically in order to meet their post-retirement consumption needs. Since the defined contribution plan is now more prevalent, working adults are responsible for acquiring investment knowledge, accepting the underlying investment risks, and generating adequate savings for their retirements.

2.2.4 RETIREMENT ADEQUACY

The extant literature indicates that a substantial number of households are not adequately prepared for their retirement. According to the report of the Employee Benefit Research Institute (EBRI) in 2018, which is a nonpartisan, nonprofit research institute contributing to research on employee benefit programs and public policy, 36% of workers aged 25 and over did not have any savings for retirement. Also, according to the research of Munnell et al. (2018), almost half of all American working households expect to have inadequate retirement savings. This fraction rose from 31% in 1983 to 40% in 1998 and 50% in 2016. Similarly, in the retirement preparedness survey conducted by Prudential (2018), two in five respondents indicated that they did not know how much they would need monthly after retirement. The rapidly increasing

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proportion of underprepared retirees could portend a sharp drop in retirees' purchasing power combined with a significant decrease in their financial well-being.

2.2.5 COHORT DIFFERENCES

Cohort differences resulting from family and social backgrounds could impact financial well-being and retirement adequacy. One study showed that college students' self-esteem was significantly improved between 1968 and 1994 (Twenge & Campbell, 2001). Generation X and Millennials were born during this time range. It is possible that consumers with higher self-esteem will be better prepared for retirement. The evidence from past literature indicates that personality traits are affected by generational effects. Of the Big Five personality factors, extraversion, agreeableness, and conscientiousness are increasing with age, but neuroticism tends to decrease (Smits et al., 2011). High expectations, materialism, and self-satisfaction also increase over generations (Twenge & Campbell, 2010). These characteristics, due to cohort effects, could potentially influence consumers' financial well-being and retirement adequacy.

Compared with Baby Boomers, Generation Xers were less prepared for retirement based on most of the past literature. The study by the Institution of Retirement Living (2025) found that only 35% of Gen Xers thought they would have enough savings for retirement compared to 75% of Baby Boomers. Although Gen Xers are younger and are expected to have more favorable views about investments, the Prudential (2018) study found that Generation X had less investment in retirement capital than Baby Boomers. A study by Fidelity (2013), including Millennials, found that Generation X was less prepared for retirement than Baby Boomers but was better prepared than Millennials. Jackson and Hohman (2019) also found that the Baby Boomers were better prepared for retirement than Generation Xers and Millennials.

According to the above discussions about retirement adequacy and cohort differences, this study proposes that:

H4a: *Retirement adequacy of the households will vary by generational cohort after controlling for other socioeconomic, demographic, and income-related characteristics.*

H4b: *Retirement adequacy of the households will vary by generational cohort across various asset allocation scenarios after controlling for other socioeconomic, demographic, and income-related characteristics.*

2.3 METHOD

2.3.1 DATA AND SAMPLE

This study uses the SCF 2022 dataset. The SCF dataset is maintained by the Federal Reserve and includes 22,975 observations with 4,595 households (five implicates). The COVID-19 pandemic-related questions were first added to the dataset to capture respondents' pandemic experiences. The sample contains Millennials (ages 28-43), Generation X (ages 44-59), and Baby Boomers (ages 60–67) under the full retirement age. The respondents of the survey were restricted to the primary income earners in the household. After removing respondents outside of the targeted groups, the final dataset contains 3,272 valid responses.

Retirement adequacy is measured by comparing the percentage of current retirement assets to the baseline to identify the percentage of respondents who have either achieved or are farther away from the estimated baseline. The retirement baseline is simulated using the computed present value of future retirement income based on several assumptions.

2.3.2. VARIABLE CONSTRUCTION

2.3.2.1 WAGE REPLACEMENT RATIO (WPR)

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The wage replacement ratio explains the percentage of income needed to maintain the same living standard upon retirement (Purcell, 2012). The accepted rationale for the replacement ratio is between 70% and 85% (Vanguard Group, 2019). According to the research of Finke et al. (2011), high-income earners will not have a high wage replacement ratio. High-income workers tend to have higher retirement savings, and they might not need that much savings to replace their retirement income. In contrast, lower-income workers usually need a larger proportion of income for necessities, which means they would require a higher income replacement ratio than high-income earners (Purcell, 2012). As most respondents in the SCF dataset are wealthier and with higher incomes than average, the WPR is assumed to be 70% in this research.

2.3.2.2. RETIREMENT AGE

According to the information from the Social Security Administration (2021), the full retirement age is 67 for workers born after 1960. This article uses 67 as the retirement age because most respondents in the sample were born later than 1960.

2.3.2.3 INFLATION RATE

Since the current sample contains respondents who were 22 to 67 years old, the average inflation rate is assumed as an annualized rate in the past 40 years, from 1982 to 2022. Based on the historical data about the inflation rate provided by the U.S. Inflation Calculator (2025), the annualized inflation rate from 1982 to 2022 is 3.20%. The effect of purchasing power will be considered using this historical inflation ratio.

2.3.2.4 FOUR-PERCENT RULE

The four-percent rule was first introduced by Bengen (1994), and it stands for the safe withdrawal rate from retirement portfolios when assuming that the minimum requirement of portfolio longevity is 30 years. Rule 25 evolved from the four-percent rule in predicting the total

retirement savings in the first year of retirement (Munnell et al., 2011; Thajudeen, 2013). Given the four-percent rule, which calculates the annual withdrawal after retirement based on total savings, if the annual needs of post-retirement income were known, the amount needed in retirement would be identified.

2.3.2.5. PORTFOLIO RETURN

As consumers can invest their savings in various kinds of products with different rates of return, it is parsimonious to estimate the future value of retirement resources by applying a single rate of return for all consumers (Montalto, 2001). This research uses three scenarios in defining portfolio returns of retirement savings: 60/40 allocation (60% Equities; 40% Fixed Income), 70/30 allocation (70% Equities; 30% Fixed Income), and 80/20 allocation (80% Equities; 20% Fixed Income). The 60/40 portfolio would help increase expected returns while mitigating risks by diversifying investments (McQuinn et al., 2021), and this strategy has generated higher returns than stocks or bonds in the past 30 years. The study adds the other two allocation strategies to adjust for various risk-tolerance levels of different cohorts. For example, younger generations might prefer taking more risks and constructing riskier portfolios. The historical average return (PFR) was computed using the following formula:

$$PFR_i = w_i Avg.(SPR) + (1 - w_i)Avg.(TR) \tag{1}$$

$$i = 1, 2, 3, w_1 = 0.6, w_2 = 0.7, w_3 = 0.8$$

where,

Avg. (SPR) = Average return of the S&P 500 index from 1928–2016

Avg. (TR) = Average return of 10-year Treasuries from 1926–2016

Using the data provided by Damodaran (2024) from 1928 to 2016, the average return of the 60–40 portfolio is computed to be 7.78%, the average return of the 70–30 portfolio is 8.26%, and the average return of the 80–20 portfolio is computed to be 8.74%.

2.3.2.6 SOCIAL SECURITY

Since social security typically replaces approximately 40% of pre-retirement income (Biggs & Springstead, 2008; CBPP 2022), this research assumes that at the full retirement age of 67, 40% of the total future retirement savings will be social security.

2.3.3 DEPENDENT VARIABLE

This research's dependent variable is retirement adequacy, which is defined as the ratio of current retirement savings over the baseline of each respondent's unique baseline of savings. Consistent with the previous approach to calculating the retirement adequacy indicator, the calculation is divided into three main steps (Qi et al., 2022). Firstly, based on the above assumptions, the expected annual retirement income needed (EARN) to maintain previous living standards will be computed as:

$$EARN_j = (Income_j * WPR) * [(1 + Inflation)^{(67 - current\ age)_j}] \quad (2)$$

After that, the baseline will be identified by discounting the future cash flows to the current age while considering the return of retirement portfolios and the impact of purchasing power.

$$Inflation\ Adjusted\ Return\ Rate_i = \left(\frac{1 + PFR_i}{1 + inflation} - 1\right) \quad (3)$$

$$Baseline_{ij} = \frac{EARN_j * 25}{[1 + IARR_i]\wedge RWLE_j} \quad (4)$$

$$Current\ Retirement\ Assets_{ij} = \frac{\{FinAssets_j * [1 + Adjusted\ R_i]\wedge RWLE_j]\}/Social\ Replace}{(1 + Inflation)\wedge RWLE_j} \quad (5)$$

where

Remaining Work Life Expectancy (RWLE) = 67 − Current age

i is the indicator of portfolio strategy, i = 1, 2 ,3

j is the respondent, j = 1, 2, …, n

In this sense, each household will have a unique baseline of retirement savings. Then the retirement adequacy will be measured as:

$$Retirement\ Adequacy_{ij} = \frac{Current\ Retirement\ Assets_{ij}}{Baseline_{ij}} * 100\% \quad (6)$$

Based on this measurement, a larger value of the retirement preparedness means that the respondent is better prepared.

2.3.4. INDEPENDENT VARIABLES OF INTEREST

The independent variables of interest in this study were COVID-19 Adversities including Job Loss, Trouble Paying Bills, and Financial Hardship, and generational cohort-related variables including Millennials, Baby Boomers, and Generation X.

2.3.4.1 JOB LOSS

Job loss was measured based on the question, "Which of the following describes your employment status during the pandemic?" The variable was coded as 1 when a respondent reported "Permanently lost a job or closed a business" or "Became temporarily unemployed or temporarily closed a business," and was coded as 0 when a respondent selected other answers.

2.3.4.2 TROUBLE PAYING BILLS

The variable Trouble Paying Bills was constructed according to the answers to the question, "During the pandemic, some households had difficulty paying their bills. Did you renegotiate payments for, or otherwise receive forbearance or relief on, any of the following loans or accounts?" There were six answers to this question, including mortgage, rent, auto

loans, student loans, other loans, and utilities. Trouble Paying Bills was coded as a continuous variable ranging from 0 to 6 by adding up the respondent's selections.

2.3.4.3 FINANCIAL HARDSHIP

Financial hardship was created based on the question, "Did you experience any of the following challenges during the pandemic?" There were six kinds of financial hardships reported:

1. Missed a regular payment on rent or mortgage

2. Missed a regular payment on a credit card, auto loan, or other debt

3. Missed a regular payment on utilities

4. Delayed a payment on, or were unable to pay, a medical bill

5. Struggled to afford food

6. Had trouble buying food even though you had money

Financial hardship was coded as a continuous variable ranging from 0 to 6, which indicated the number of hardships the respondent experienced during the COVID-19 pandemic.

2.3.4.4 GENERATIONAL COHORT-RELATED VARIABLES

The cohort indicators, including Baby Boomers, Generation X, and Millennials, were dummy variables that were coded as 1 = YES; 0 = NO.

2.3.4.5 OTHER CONTROL VARIABLES

The other independent control variables were comprised of demographics and socioeconomic factors. The control variables include gender, marital status, race, household size, educational attainment, income, financial literacy, and remaining life expectancy. Table 2.2 shows the coding and description of the variables used in this study.

Table 2.2 Variable Description

Variable Name	Description	Type
Age	28 to 67	Continuous
Generational Cohorts (Ref: Baby Boomers)		
Baby Boomers	1 = Yes; 0 = No	Binary
Generation X	1 = Yes; 0 = No	Binary
Millennials	1 = Yes; 0 = No	Binary
Lost Job	1 = Yes; 0 = No	Binary
Trouble Paying Bills	0 to 6	Continuous
Financial Hardship	0 to 6	Continuous
Female	1 = Yes; 0 = No	Binary
Marital Status		
Married	1 = Yes; 0 = No	Binary
Race/Ethnicity (Ref: Other race)		
White	1 = Yes; 0 = No	Binary
Black	1 = Yes; 0 = No	Binary
Hispanic	1 = Yes; 0 = No	Binary
Other race	1 = Yes; 0 = No	Binary
Household Size	1 to 12	Continuous
Edu Attain. (Ref: High School or less)		
High School or less	1 = Yes; 0 = No	Binary
Some College	1 = Yes; 0 = No	Binary
College	1 = Yes; 0 = No	Binary
Income	789 to 273,000,000	Continuous
Financial Literacy (Big 3) [1]	0 = None correct to 3 = All Correct	Continuous
Remaining Life Expectancy	1 to 115	Continuous

[1] The "Big Three" Financial Literacy Questions (Lusardi and Mitchell 2014).
(1) Suppose you had $100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow?
      More than $102
      Exactly $102
      Less than $102
      Do not know
      Refused
(2) Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, how much would you be able to buy with the money in this account?
      More than today
      Exactly the same as today
      Less than today
      Do not know
      Refused
(3) Please tell me whether this statement is true or false. "Buying a single company's stock usually provides a safer return than a stock mutual fund."

True
False
Do not know
Refused

2.3.5 EMPIRICAL MODELS

This study first visualizes the means or frequencies of key factors across cohorts. For example, the statistics of job loss, trouble paying bills, and financial hardships across cohorts, and how retirement preparedness, baseline, and retirement assets are different for each generation, and whether the respondents meet their retirement needs. If the value of retirement preparedness is larger than 1, the respondent has reached the retirement baseline. Then, the study conducts an ANOVA analysis to get the distribution of retirement adequacy among cohorts so that the cohort differences can be identified.

Since retirement adequacy is created as a continuous variable, the research uses Ordinary Least Squares (OLS) regression to determine relationships. The formula of the OLS regression is:

$$f = \beta_0 + \beta_1 \, Job\_Loss + \beta_2 \, Pay\_Bills + \beta_3 \, Fin\_Hard + \beta_4 \, C + \beta_5 \, X + \varepsilon \quad (7)$$

where f is retirement adequacy, C is the cohort indicator, which is a vector of three binary variables, β_i X is the vector denoting control variables, and ε is the error term.

The analyses for this study using the SCF 2022 dataset were conducted adjusting for the five implicates to impute for missing data using multiple imputation techniques and replicate weights (Board of Governors of the Federal Reserve System, 2020). Multicollinearity has been tested after the regression, and the results indicate that the VIFs of the variables included in the model were all under 3.0, which was not a concern for multicollinearity (Wooldridge, 2015).

2.4 RESULTS

2.4.1 DESCRIPTIVE STATISTICS

The descriptive statistics are presented in Table 2.3. The results indicate that the average age of the participants was approximately 48 years. The ages ranged from 28 to 67 years. Baby Boomers accounted for 21.88% of the participants, Gen Xers made up 38.59%, and Millennials comprised 39.53%. Among the participants, 22.13% of them experienced a job loss or business closure during the COVID-19 pandemic. The average number of bills that respondents had trouble paying for during the COVID-19 pandemic was 0.44. The average kind of financial hardship that respondents had during the COVID-19 pandemic was 0.77. Among the respondents, 25% were female, 62% were married, and the average household size was 2.72. The participant group included 66.57% White, 13.96% Black, 12.41% were Hispanic, and the remaining were of other races. For the statistics of educational attainments, 31.36% of the participants had a high school diploma or less, 27.25% had some college education, and 41.39% had a college degree. The average household income was $159,042. On average, the respondents got 2.25 of the Big 3 financial literacy questions correct. The average remaining life expectancy of the respondents was approximately 35 years.

Table 2.3 Descriptive Statistics

Variable	Mean/%	Std. Dev.	Min	Max
Age	47.95	11.65	28	67
Generational Cohorts (Ref: Baby Boomers)				
Baby Boomers	21.88%		0	1
Generation X	38.59%		0	1
Millennials	39.53%		0	1
Lost Job	22.13%		0	1
Trouble Paying Bills	0.43	0.82	0	6
Financial Hardship	0.77	1.30	0	6
Female	25%		0	1
Marital Status				
Married	62.46%		0	1
Race/Ethnicity (Ref: Other race)				

	Mean/%	Std. Dev.	Min	Max
White	66.57%		0	1
Black	13.96%		0	1
Hispanic	12.41%		0	1
Other race	7.06%		0	1
Household Size	2.72	1.51	1	12
Edu Attain. (Ref: High School or less)				
High School or less	31.36%		0	1
Some College	27.25%		0	1
College	41.39%		0	1
Income	159,042	645,431	789	273,000,000
Financial Literacy (Big 3) [1]	2.25	0.8	0	3
Remaining Life Expectancy	35.26	15.77	1	115

The results from Table 2.4 suggest that the later cohorts have higher mean baselines, as expected, and have higher average retirement adequacy, which indicates that the later cohorts may be better prepared for retirement. Also, 10% of the Baby Boomers had already met the retirement baseline, 7% of Gen Xers had met the retirement baseline, and 5% of Millennials had met the baseline. Therefore, the percentage of having already met the retirement baseline increased with age. However, older generations had lower mean educational attainment but had higher average financial literacy. According to the comparison result, the COVID-19 pandemic seems to have more impact on younger cohorts. Younger cohorts had a higher average percentage of losing a job. Younger cohorts also had a higher average number of bills they had trouble paying for and experienced more financial hardships than older cohorts.

Table 2.4 Descriptive Comparison by Cohort

	Baby Boomers		Gen Xers		Millennials	
Variable	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Retirement Adequacy	0.42	2.83	0.39	3.57	0.3	0.73
Baseline	2,736,372	11,200,000	2,228,739	7,228,804	1,318,990	7,059,640
Educational Attainment	2.91	1.00	2.98	1.00	3.11	0.96

Financial Literacy	2.29	0.76	2.27	0.82	2.21	0.79
Meet Baseline	0.10	0.30	0.07	0.26	0.05	0.21
Lost Job	0.06	0.24	0.07	0.26	0.78	0.27
Trouble Paying Bills	0.25	0.67	0.40	0.82	0.55	0.88
Financial Hardship	0.53	1.01	0.80	1.32	0.88	1.39

2.4.2 ANOVA MODEL

The one-way ANOVA identifies significant cohort differences in retirement adequacy. Table 2.5 illustrates the result of ANOVA analysis. The results from Tukey's test revealed that there are significant differences in retirement adequacy between Millennials and Baby Boomers and between Millennials and Gen Xers. However, there is no significant difference in retirement adequacy between Gen Xers and Baby Boomers.

Table 2.5 ANOVA of Retirement Adequacy by Generational Cohorts

	Retirement Adequacy	
Cohort	**Mean**	**St. Dev**
Baby Boomers	0.70	2.76
Generation X	0.61	5.93
Millennials	0.33	0.96
Total	0.54	4.11

Between Group Variance
F-Stat: 10.65; $p < 0.000$
Within Group variance (Bartlett)
Chi (2) = 14,000; $p < 0.000$

Tukey Pairwise Comparisons of Means with Equal Variances

	Contrast	**St. Err**	**Tukey**	**P-Value**
Gen X vs. BB	−0.08	0.08	-1.04	0.549
Mill vs. BB	−0.36	0.08	-4.25	<0.000
Mill vs. Gen X	−0.28	0.08	-3.68	<0.001

2.4.3 OLS MODEL

The results of the OLS model to estimate retirement planning adequacy are displayed in Tables 2.6-2.8. Table 2.6 presents the result of using the 80-20 allocation strategy. Compared to the reference group of Baby Boomers, the respondents in the Millennial cohort (*b= -0.052; p <0.001*) were less likely to be prepared for retirement, and there is no significant difference between Gen Xers and Baby Boomers in retirement planning adequacy. Financial hardship (*b= -0.020; p <0.001*) was negatively correlated to retirement adequacy, and "Trouble Paying Bills" (*b= -0.014; p <0.05*) was also negatively associated with retirement adequacy. Respondents who were females (*b= -0.057; p <0.001*) were less prepared for retirement than males. Compared to White people, respondents who were Black (*b= -0.073; p <0.001*) and Hispanic (*b= -0.079; p <0.001*) were less prepared for retirement. Household size (*b= -0.007; p <0.05*) was negatively related to retirement adequacy. Compared to respondents who earned a high school degree or less, respondents who had a college degree (*b= 0.145; p <0.04*) or some college degree (*b= 0.040; p <0.001*) were better prepared for retirement. The respondents' financial literacy (*b= 0.055; p <0.001*) and remaining life expectancy (*b= 0.001; p <0.001*) were positively correlated to their retirement adequacy.

Table 2.6 Retirement Adequacy Estimation for Simulated 80–20 Allocation

Variables	Coef.	Std. err.	P>z	Sig.
Millennials	-0.052	0.014	0.000	***
Generation X	-0.020	0.014	0.153	
Lost_Job	-0.006	0.012	0.592	
Fin_Hardship	-0.021	0.003	0.000	***
Pay_Bills	-0.014	0.007	0.037	*
Female	-0.057	0.016	0.000	***
Married	-0.027	0.016	0.095	
Black	-0.073	0.011	0.000	***
Hispanic	-0.079	0.011	0.000	***
Other	0.009	0.020	0.643	
Household Size	-0.007	0.003	0.045	*

College	0.145	0.015	0.000	***
Some College	0.040	0.010	0.000	***
logIncome	0.019	0.013	0.144	
Fin_lit	0.055	0.007	0.000	***
Remaining	0.001	0.000	0.000	***
_cons	-0.108	0.133	0.416	

Note. Significance: *p < .05, **p < .01, ***p < .001

Results in Table 2.7 indicate the retirement adequacy estimation with the 70-30 allocation strategy. The outcome shows that compared to respondents who were Baby Boomers, respondents who were in Millennial (*b= -0.084; p <0.001*) and Gen X (*b= -0.084; p <0.01*) cohorts were less likely to be prepared for retirement. Same as the 80-20 allocation strategy, financial hardship (*b= -0.018; p <0.001*) and "Trouble Paying Bills" (*b= -0.013; p <0.05*) were negatively associated with retirement adequacy. Respondents who were female (*b= -0.051; p <0.05*) were less likely to be prepared for retirement than males. Similar to the 80-20 scenario, respondents who were Black (*b= -0.067; p <0.001*) and Hispanic (*b= -0.070; p <0.001*) had an average lower retirement adequacy than White people. Household size (*b= -0.006; p <0.05*) was still negatively associated with retirement adequacy. Respondents who earned a college degree (*b= 0.131; p <0.001*) or some college degree (*b= 0.037; p <0.001*) had better retirement adequacy than those who earned a high school degree or less. Financial literacy (*b= 0.049; p <0.001*) and remaining life expectancy (*b= 0.001; p <0.001*) were positively related to retirement adequacy.

Table 2.7 Retirement Adequacy Estimation for Simulated 70–30 Allocation

Variables	Coef.	Std. err.	P>z	Sig.
Millennials	-0.084	0.013	0.000	***
Generation X	-0.035	0.013	0.008	**
Lost_Job	-0.003	0.011	0.775	
Fin_Hardship	-0.018	0.003	0.000	***

Pay_Bills	-0.013	0.006	0.035	*
Female	-0.051	0.014	0.000	***
Married	-0.025	0.015	0.094	
Black	-0.067	0.010	0.000	***
Hispanic	-0.070	0.009	0.000	***
Other	0.006	0.019	0.740	
Household Size	-0.006	0.003	0.047	*
College	0.131	0.015	0.000	***
Some College	0.037	0.009	0.000	***
logIncome	0.017	0.012	0.156	
Fin_lit	0.049	0.006	0.000	***
Remaining	0.001	0.000	0.001	***
_cons	-0.082	0.126	0.517	

Note. Significance: *p < .05, **p < .01, ***p < .001

Results in Table 2.8 display the estimation of retirement adequacy with the 60-40 allocation strategy. The results are very similar to the results with the 70-30 allocation strategy. Respondents who were Millennials (*b= -0.109; p <0.001*) or Gen Xers (*b= -0.049; p <0.001*) were less likely to be prepared for retirement than the respondents who were Baby Boomers. Financial hardship (*b= -0.015; p <0.001*) and "Trouble Paying Bills" (*b= -0.012; p <0.05*) were negatively associated with retirement adequacy. Female respondents (*b= -0.046; p <0.01*) were less likely to be prepared for retirement than male respondents. Compared to respondents who were White people, Black (*b= -0.017; p <0.001*) and Hispanic (*b= -0.063; p <0.001*) were less likely to be prepared for retirement. Also, household size (*b= -0.005; p <0.05*) was negatively correlated to retirement adequacy. Respondents with a degree of some college (*b= -0.034; p <0.001*) or college (*b= 0.118; p <0.001*) were more likely to be prepared for retirement. Respondents' financial literacy (*b= 0.045; p <0.001*) and remaining life expectancy (*b= 0.001; p <0.01*) were positively correlated to retirement adequacy.

Table 2.8 Retirement Adequacy Estimation for Simulated 60-40 Allocation

Variables	Coef.	Std. err.	P>z	Sig.
Millennials	-0.109	0.013	0.000	***
Generation X	-0.049	0.013	0.000	***
Lost_Job	0.000	0.010	0.962	
Fin_Hardship	-0.015	0.003	0.000	***
Pay_Bills	-0.012	0.006	0.034	*
Female	-0.046	0.013	0.001	**
Married	-0.023	0.014	0.099	
Black	-0.061	0.010	0.000	***
Hispanic	-0.063	0.008	0.000	***
Other	0.004	0.018	0.838	
Household Size	-0.005	0.003	0.046	*
College	0.118	0.014	0.000	***
Some College	0.034	0.008	0.000	***
logIncome	0.016	0.011	0.164	
Fin_lit	0.045	0.006	0.000	***
Remaining	0.001	0.000	0.004	**
_cons	-0.059	0.119	0.619	

Note. Significance: $*p < .05$, $**p < .01$, $***p < .001$

2.5 SUMMARY AND CONCLUSION

2.5.1 DISCUSSION

This study contributes to the literature by examining generational differences in retirement preparedness within the context of the COVID-19 pandemic, offering comparative insights that build upon and extend prior research on this topic. The descriptive indicates that the Baby Boomer generation has the highest percentage of individuals who satisfy the retirement adequacy baseline. The one-way ANOVA and Tukey's test results revealed that the significance of generation differences was prominent, warranting further exploration. This pattern aligns with existing literature, suggesting that differences in retirement preparedness are significantly influenced by cohort effects (e.g., Jackson & Hohman, 2019). After controlling for socio-demographic characteristics, financial literacy, and perceptions of remaining life expectancy, the

analysis also accounted for pandemic-related adversities, including job loss, the number of bill types with reported payment difficulties, and various financial hardships. The results consistently showed that younger generations had lower retirement adequacy compared to Baby Boomers. This pattern remained robust across different asset allocation strategies, reinforcing the consistency and reliability of the findings. Asset allocation strategies employed include 60/40 allocation (60% Equities; 40% Fixed Income), 70/30 allocation (70% Equities; 30% Fixed Income), and 80/20 allocation (80% Equities; 20% Fixed Income). Only results from the 80/20 asset allocation strategies suggest that GenX has no significantly lower financial adequacy than Baby Boomers. The consistent results on Baby Boomers' having better financial adequacy are likely because Baby Boomers benefited the most from defined benefit plans, which guaranteed a predetermined payout at retirement. Younger generations, such as Millennials, are becoming dependent on defined-contribution plans, which shift the responsibility of saving from the employer to the individual. Additionally, previous literature indicated that personality traits and values tend to vary with age. Older adults, for example, are generally more conscientious, which may partly explain the greater retirement adequacy observed among Baby Boomers (Smits et al., 2011). Younger generations often exhibit higher levels of consumption, materialism, and self-oriented values, shaped by evolving lifestyles and cultural norms, which may also contribute to generational differences in retirement preparedness (Twenge & Campbell, 2010).

From the perspective of the life-cycle hypothesis and the theory of planned behavior, generational cohorts are shaped by the distinct economic conditions they encounter throughout their lives, which can influence saving attitudes, wealth accumulation level during working years, and dissaving in later stages. Financial literacy and a longer perceived remaining life expectancy were both positively associated with higher retirement adequacy. Individuals who

have better retirement adequacy may possess financial knowledge that could facilitate their navigation of economic fluctuations more effectively. Individuals with a positive outlook on their life expectancy are likely to dissave less and prioritize preserving their wealth, which may help explain the positive association between expected remaining years of life and retirement adequacy.

Across all asset allocation strategies, more financial hardship indicators and a greater number of bill types that respondents found difficult to pay were negatively associated with retirement adequacy. Individuals who faced these challenges may prioritize immediate needs over long-term retirement savings or investments. The pressure of managing unpaid bills and meeting immediate financial obligations can lead to heightened financial stress, which may, in turn, undermine an individual's ability to achieve financial adequacy. Gender disparities were evident, with male respondents exhibiting higher levels of retirement adequacy. Racial differences were also pronounced, as Black and Hispanic respondents demonstrated lower levels of retirement adequacy. Additionally, smaller household size and higher educational attainment were both positively associated with better retirement preparedness. These results carry important implications for financial planners, who may use them as potential indicators to identify clients more vulnerable to retirement inadequacy. The results can assist financial planners in facilitating more targeted conversations and customized strategies to help clients better prepare for retirement.

2.5.2 IMPLICATION

These results have important implications for both policy and practice. From a financial planning perspective, there is a strong need for generationally tailored retirement planning strategies that may help address the greater financial vulnerability younger generations face.

Policymakers should also acknowledge the significance of early and targeted financial education and intervention, especially for younger generations who may lack access to the retirement plan options, that can inform and motivate younger generations to engage in proactive savings for retirement . Additionally, because Black and Hispanic individuals have lower retirement adequacy than their White counterparts even after controlling financial hardships indicators, sociodemographic differences, and investment allocations, policymakers may consider creating specific community based retirement security interventions, such as targeted financial literacy programs in minority communities.

As for financial planners, the individualized retirement adequacy baseline formulas developed in this study could be implemented in daily practice and research investigations to provide more tailored benchmarks for each household, rather than relying on a one-size-fits-all standard of retirement adequacy. The disparities in opportunity structures between younger generations and Baby Boomers also underscore the need for generation-specific strategies for financial professionals. The persistent pattern that emerged from this study was that Baby Boomers performed better in retirement adequacy than other generational cohorts. These findings sugest that conventional financial advice and portfolio recommendations (e.g., 60/40, 70/30) maybe insufficient for addressing the retirement challenges of younger generations. Financial professional should customize retirement planning based on generational life stages and constraints taking account for economic realities unique for GenX and Millennials. For instance, Gen X may benefit most from catch-up approaches such as more aggressive savings plans, side income streams possibilities, and reverse-mortgage education. Millennials may gain greater advantages from early-life interventions like debt management strategies. Additionally, since younger generations are more likely to be fintech adopters, implementing automated

savings FinTech tools may help simplify and accelerate asset building (Zhang & Fan, 2023). Because financial hardship and difficulty paying bills correlates with low retirement adequacy, financial professionals should screen for these hardship indicators during client onboarding process. Consider advising clients with multiple financial hardship indicators to gradually and steadily reallocate assets into retirement vehicles as their financial situation improves.

2.5.3 LIMITATION AND FUTURE DIRECTION

This study has several limitations that need to consider. According to the life-cycle framework, this study assumes that individuals keep constant consumption levels before and after retirement, however, there is evidence in literature that retirees might cut down consumptions due to various constraints to search for savings (Lührmann 2010). Future study could continue this line of research with a longitudinal dataset which have the information about consumers' consumption level before and after retirement. With the actual consumption level, the measurement of retirement adequacy will be more effective in telling the accurate position preparing for retirement.

The descriptive statistics in Table 2.3 indicate that 25% of the sample were women, so the results should be generalized with caution. Due to the special characteristics of the SCF dataset, wealth-related information was available at household level, but other general statistics were at individual level. Even though the information was collected from primary income earners, this is still a potential limitation of the SCF dataset.

Another limitation is that this study only considers Baby Boomers under the age of 67, because the study assumes the retirement age at 67, which is the full retirement age. And this is one of the key assumptions to construct the measurement of retirement adequacy. However, the samples of older Baby Boomers are missing from this study. A future survey with the

information about anticipated personal retirement age will be beneficial to understand the cohort differences in retirement adequacy. Using the specialized dataset, a future study could make more general conclusions about consumers' retirement behaviors and provide more comprehensive implications to policymakers and financial planners.

Also, it is the second time that the new measurement of retirement adequacy was tested for its consistency and reliability with the SCF dataset. This measurement could be tested with other nationally representative datasets to confirm its reliability in future studies. In this sense, the new measurement of retirement adequacy could be more acceptable by researchers and widely used by consumers, policymakers, and financial planners.

2.5.4 CONCLUSION

Assessing generational differences in retirement adequacy is crucial, particularly in light of the adverse effects triggered by the COVID-19 pandemic. Guided by the life-cycle hypothesis and the theory of planned behavior, this study offers valuable insights into how retirement preparedness varies across generations.

This essay makes a notable contribution to the current literature by implementing an innovative mathematical methodology to measure retirement adequacy. Unlike previous research, which applies a uniform standard of retirement preparedness across all households, the method developed and described in this essay establishes individualized baselines for retirement preparedness standards that are tailored to each household. The results of this method are essentially consistent with expectations and are well-suited to the dataset's characteristics. In this essay, a more precise and meaningful evaluation of retirement adequacy is achieved by comparing the current retirement assets of individuals to personalized benchmarks, which are

determined by factors such as current age, income, expected retirement age, remaining work-life

expectancy (RWLE), remaining life expectancy (RLE), and asset allocation strategies.

Baby Boomers are the group nearest to retirement age and are particularly susceptible to

the hardships of the pandemic compared to other generational cohorts. The results of this essay

address two critical research questions and demonstrate that there is a substantial disparity in the

retirement adequacy of different generational cohorts, with Baby Boomers being more

adequately prepared than the other younger generations.

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CHAPTER 3

ESSAY II: FINANCIAL SELF-EFFICACY AND FINANCIAL BEHAVIORS:

INVESTIGATING THE ROLE OF FINANCIAL ADVICE SEEKING DURING THE COVID-

19 PANDEMIC

3.1 INTRODUCTION

The worldwide COVID-19 pandemic has changed consumers' beliefs and behaviors about managing their finances because of the negative financial consequences at the family and personal levels (Anand et al., 2020; Yuesti et al., 2020). Since the pandemic resulted in family poverty and financial capital reduction (Buheji & Buheji, 2020; Shek, 2021), consumers would like to improve their financial behaviors so that they can make appropriate financial decisions when experiencing financial stress during the financial crisis. Personal- or family-level financial behaviors include practices in savings, retirement planning, credit card planning, and mortgages (Xiao et al., 2014). It is challenging to make reasonable financial decisions during the financial crisis resulting from the pandemic. When consumers perceive a lack of competence in managing their finances, they might come to recognize the importance of seeking financial advice as an external strategy for enhancing positive financial behaviors. This emphasis on financial advice seeking is intended to guide and reassure consumers in their financial decision-making process (Schmidt & Spreng, 1996). While previous studies demonstrate the effect of financial self-efficacy (FSE), which is the confidence in making correct financial decisions, on financial behavior, the situation could be complicated by the availability of financial advice seeking and financial stress. The three research questions of the essay are:

Q1: How is FSE correlated to financial behaviors during the COVID-19 pandemic?

Q2: Will financial advice seeking mediate the relationship between FSE and financial behaviors?

Q3: If people experienced financial stress during the pandemic, will the relationships among FSE, financial advice seeking, and financial behaviors be moderated?

Using a self-collected data set during COVID-19, this essay aims to demonstrate how FSE is associated with financial behaviors while considering the effect of financial advice seeking and financial stress. Specifically, this essay tries to explain the mediation effect of financial advice seeking on the relationship between FSE and financial behaviors. After that, this study investigates the role of financial stress as a moderator on the mediation effect of financial advice seeking from FSE to financial behaviors. The results of this essay indicate that when consumers are not experiencing financial stress, financial advice seeking will not mediate the relationship between FSE and financial behaviors. When financial stress exists, financial advice seeking will have a mediation effect on the association between FSE and financial behaviors. Other than that, consumers with higher educational attainments are more likely to seek external financial advice and more likely to engage in positive financial behaviors. Therefore, consumers might consider increasing their financial knowledge through financial education to improve their financial behaviors and make reasonable financial decisions. The results also suggest that consumers who are married or cohabiting and those with higher incomes are more likely to have better financial behaviors. Therefore, marriage and economic resources play a crucial role in providing a sense of security and support to consumers in managing their finances during a pandemic.

The findings of this essay provide valuable insights for financial advisors and policymakers. Financial advisors could better understand the role of financial advice seeking during financial crises, as the results suggest that financial advice seeking mediates the relationship between FSE and financial behaviors in the presence of financial stress. Financial advisors could target individuals who are experiencing financial stress, as they might need more assistance managing their finances. Also, educating clients about financial matters and enhancing their confidence could effectively improve their financial behaviors. Policymakers could implement timely measures to increase the affordability and accessibility of financial services, particularly during times of crisis and stress. Such initiatives might raise the likelihood of individuals improving their financial behaviors by seeking assistance from expert financial consultants. Any policies aimed at decreasing financial stress and promoting public education will be efficient in helping consumers survive and recover quickly from financial crises.

3.2 LITERATURE REVIEW

3.2.1 THEORETICAL FRAMEWORK

Previous research has demonstrated the role of FSE in explaining financial behavior. The findings of recent articles indicate a positive relationship between FSE and financial behavior (Arofah, 2019; Chong et al., 2021; Farrell et al., 2016; Tang, 2021). However, most of the past literature failed to consider the role of financial advice seeking and financial stress on these relationships. This research introduced a revised theoretical framework by integrating the financial help-seeking framework and the stress and coping theory.

The financial help-seeking framework was introduced by Grable and Joo (1999) to explain personal finance help-seeking behavior. Based on the five-stage model, the revised framework in this article focuses on the fourth stage and outcome. The fourth stage of the model

is making decisions to seek and use financial help, which corresponds to the factor of financial advice seeking in this article. One of the outcomes could be a positive change in financial behaviors, which serves as the dependent variable in this research. Several determinants of help-seeking behavior have been demonstrated by previous research, including FSE, financial education, financial risk tolerance, and demographics (Joo & Grable, 2001; Letkiewicz et al., 2015; Zhang et al., 2024). Therefore, FSE is considered to influence financial behaviors through financial advice seeking, and that's the reason financial advice seeking is used as a mediator in the framework. Figure 3.1 shows how the financial help-seeking framework was incorporated into the mediation framework used by this study. The financial help-seeking framework is mainly used to construct the mediation relationship between the variables.

Figure 3.1 Mediation Model Incorporated by Financial Help-Seeking Framework
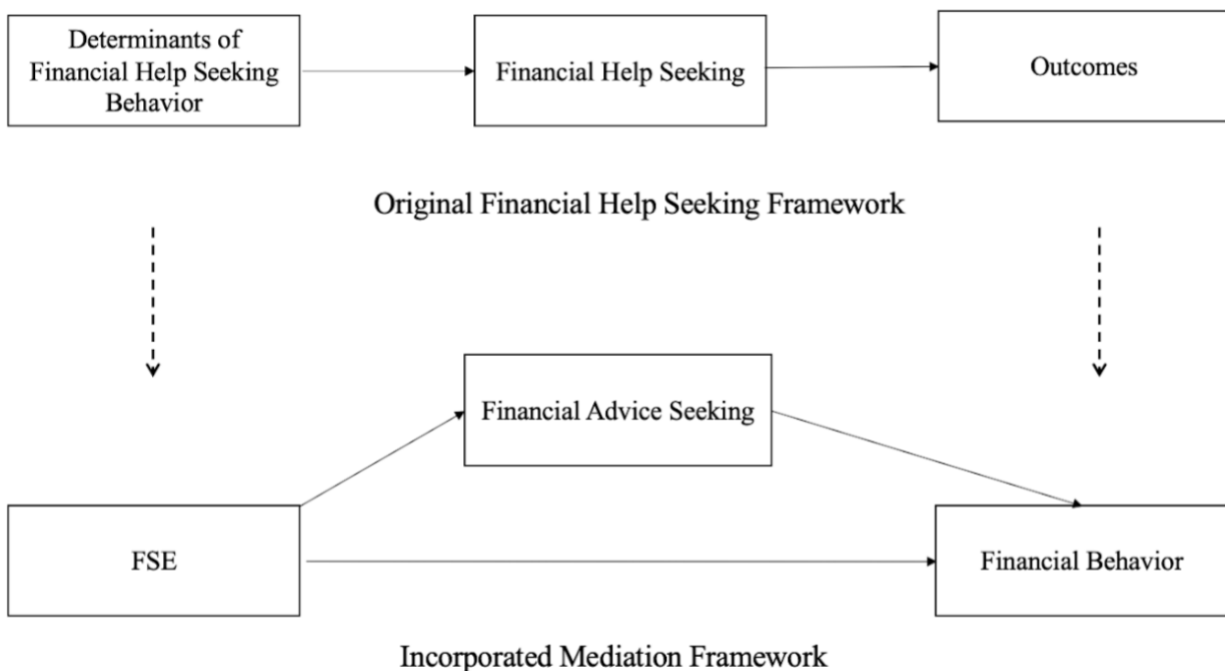
The stress and coping theory was first introduced by Lazarus and Folkman (1984), and this theory focuses on the management of the negative effects of stress. This theory suggests that

people's well-being will be affected or changed in a situation when a stressor occurs (Pearlin et al., 2005). In this sense, the stressor corresponds to the financial stress caused by COVID-19 in this research. Based on the stress and coping framework, coping will happen after the occurrence of stressors. Coping is defined as the process of tolerating or fulfilling the internal and external demands due to stressful events through behavioral efforts (Folkman & Lazarus, 1980).

In the field of financial outcomes, Grable and Joo (1999) have summarized the scopes of coping strategies, including improving management skills through budgeting and savings, expanding income resources, reducing back expenses, and seeking help, either professional or otherwise. These coping approaches match the change in the financial behaviors in the survey used by this research, which justifies the use of the changes to desirable financial behavior as the coping strategy in this study. The research by Grable and Joo (1999) also mentioned the influence of financial stressors on financial behaviors and help-seeking behavior in the background of the financial help-seeking framework. Therefore, financial stress will be used as a moderator in the advised theoretical framework because the presence or absence of financial stress could lead to different coping outcomes and moderate the mediation effect of financial advice seeking. Figure 3.2 illustrates the integration of the stress and coping theory, utilizing financial stress as the moderator to construct the framework.

Figure 3.2 Moderation Model Incorporated by Stress and Coping Theory

Original Stress and Coping Framework

Incorporated Moderation Framework
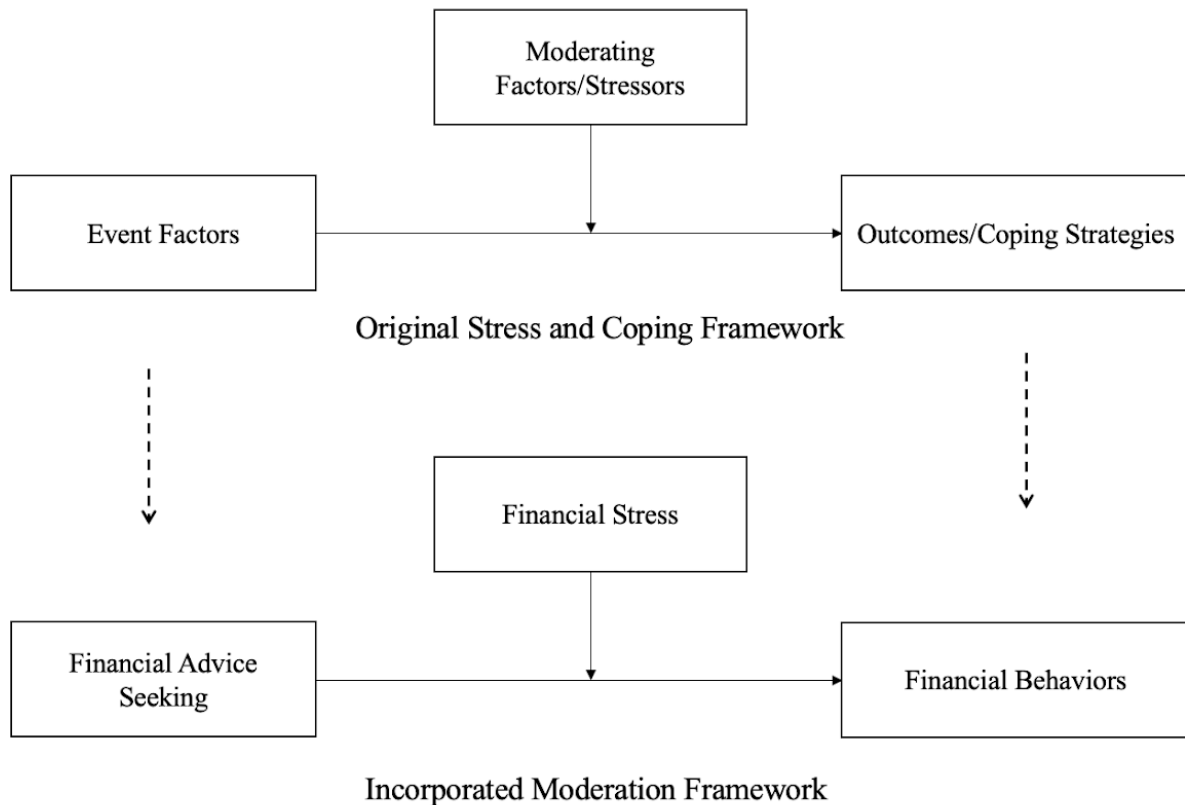
Since demographic profiles could also predict financial behaviors and were used as determinants of help seeking behavior (Grable & Joo, 1999; Joo & Grable, 2001; Letkiewicz et al., 2015), the theoretical model has controlled for consumers' demographics, including age, gender, marital status, income, educational attainment, and employment status.

In summary, the financial help-seeking framework was used to justify the role of financial advice seeking, which was the mediator in the simple mediation model from financial self-efficacy to financial behavior. The stress and coping theory was applied to validate the extended model by adding financial stress as the moderator on the basis of the simple mediation model (Table 3.1).

Table 3.1 Summary of Theories

Theory	How the theory underpins the framework
Financial Help-Seeking Framework	Construct the path of mediation

| Stress and Coping Theory | Construct the path of moderation |

3.2.2 FINANCIAL SELF-EFFICACY

FSE refers to an individual's belief in making sound financial decisions and effectively executing financial management behaviors, resulting in favorable outcomes (Rothwell & Wu, 2019). The psychological concept of FSE is rooted in the broader theory of self-efficacy (Bandura, 1997), which posits that people's beliefs in their abilities influence their decisions and behaviors. The significance of FSE in influencing financial behaviors has been extensively documented in prior research, such as saving practices (Asebedo & Seay, 2018; Lown et al., 2015), financial product ownership (Farrell et al., 2016), credit management (Payne & Asebedo, 2017), investment behaviors (Chatterjee et al., 2011), and financial distress avoidance (Kuhnen & Melzer, 2018).

In accordance with the social cognitive theory, Lown et al. (2015) conducted an exploratory investigation to directly examine the relationship between self-efficacy and saving behaviors among low- to middle-income households. Their findings provide insight into the critical role of FSE, revealing that the belief in one's capacity to manage financial matters directly and positively influences the tendency to spend less than income among individuals facing varying economic challenges. FSE is an important factor in everyday saving habits and long-term financial planning, like retirement savings. For example, FSE is positively associated with saving behaviors among U.S. pre-retirees aged 50 to 70 (Asebedo & Seay, 2018). Furthermore, FSE empowers individuals to assess opportunities and challenges more accurately (Kuhnen & Melzer, 2018), significantly reducing the likelihood of risky credit behaviors (Liu & Zhang, 2021). Individuals with higher levels of FSE adopt distinct strategies when it comes to owning their financial products. Farrell et al. (2016) found a positive correlation between higher

levels of FSE and women's possession of investments, mortgages, and savings products. Conversely, a negative correlation was observed between higher levels of FSE and the utilization of debt-related products, such as credit cards and loans.

Studies in the broader field of self-efficacy have observed that individuals with higher levels of self-efficacy are more inclined to engage in preventative actions to avoid financial distress, including establishing emergency savings, acquiring insurance, and making retirement plans (Kuhnen & Melzer, 2018). Similarly, using a general self-efficacy measurement, previous literature noted that individuals with elevated levels of self-efficacy are more inclined to accumulate higher net wealth over time and more willing to invest in assets characterized by potentially volatile returns (Chatterjee et al., 2011). The results obtained from the study on general self-efficacy indicate the potential influence of FSE on desirable financial behaviors and underscore the need to address FSE within financial planning and management practices. According to the above discussions of FSE, this study proposed a positive relationship between FSE and financial behavior.

H1: *Consumers' FSE and financial behaviors are positively correlated.*

3.2.3 FINANCIAL ADVICE SEEKING

Despite expanding research on help-seeking behavior, no agreed-upon criteria exist to define and measure help-seeking behavior. The APA Dictionary of Psychology of the American Psychological Association defines help-seeking behavior as "searching for or requesting help from others via formal or informal mechanisms, such as through mental health services" (American Psychological Association, n.d.). According to the research conducted by Rickwood and Thomas (2012), help-seeking behaviors refer to communication with others to obtain assistance with understanding, advice, information, treatment, and general support. Previous

research also concluded that help-seeking behaviors are related to specific problems and are fundamentally interpersonal.

Although there is a growing interest in help-seeking behavior and an expanding number of publications in medical, psychological, and sociological research, limited studies have examined help-seeking behavior within the domain of finance (Grable & Joo, 1999). Suchman (1966) initially developed a five-stage framework for help-seeking behavior. Building on this framework, Grable and Joo (1999) developed a financial help-seeking model specifically for financial help-seeking to explore and predict consumers' behaviors when seeking assistance with personal finance, and they conceptualized financial help-seeking behavior as a coping strategy related to financial problems. In the updated study by Grable and Joo (2003), financial help-seeking behavior was defined as a problem-solving behavior to solve financial issues and concerns.

To avoid ambiguity, this study uses the term "financial advice seeking" according to the question in the primary survey about seeking advice from professionals. The research by Grable and Joo (2001) has investigated the financial advice seeking behavior from professionals, and the findings indicated that consumers with high risk tolerance and high satisfaction with their financial situation are more likely to seek financial advice. Since satisfaction with the financial situation is a major factor in measuring FSE (Lown, 2001), seeking financial advice is anticipated to be positively correlated with it. The findings from the study by Lim et al. (2014) also indicated that financial advice seeking and FSE are positively correlated. Several other determinants of financial advice seeking behavior have been validated by previous studies. Individuals who possess more financial literacy, a better tolerance for risks, higher income,

higher educational attainment, and higher net worth, are more likely to use financial planners (Collins 2012; Hanna, 2011; Zhang et al., 2024).

Moreover, previous literature has investigated the relationship between financial advice seeking and financial behaviors. Seeking financial advice is considered utilizing an external resource for improving financial behaviors (Grable & Joo, 1999, 2001; Schmidt & Spreng, 1996). The findings of a recent study by Fan (2017) indicated that financial advice seeking behavior and desirable financial behavior are positively correlated, but financial advice seeking behavior is negatively associated with risky financial behaviors. The act of seeking financial advice has also been shown to enhance consumers' financial well-being and financial satisfaction (Grable & Joo, 2001; Hira & Mugenda, 1999; Kim et al., 2003). Since financial advice seeking was found to be correlated to both FSE and financial behavior, this study hypothesized that financial advice seeking was impacting the relationships between financial self-efficacy and financial behavior, no matter what financial stress existed.

H2a: *Financial advice seeking mediates the relationship between FSE and financial behavior in the absence of financial stress.*

H2b: *Financial advice seeking mediates the relationship between FSE and financial behavior in the presence of financial stress.*

3.2.4 FINANCIAL STRESS

Stressors refer to health-related problems and financially catastrophic events (Grable and Joo, 1999). Chronic diseases are examples of health-related problems that can lead to financial and physical difficulties and stress (Fan, 2017). Financially catastrophic events could cause unanticipated income drops (e.g., car accident, sudden loss of wage, and lawsuits) (Grable & Joo, 1999). The financial stressors can encompass various events, such as the loss of a family

member, a change in employment, and relocation (Fan, 2017). The research by Joo (1998) categorized the cause of financial stress into four domains: life cycle events, job-related events, unexpected changes, and unfavorable financial situations.

Financial stress was found to be correlated to help-seeking behavior. Grable and Joo (1999) indicated that financial stressors accounted for the most variance in help-seeking behavior, suggesting that individuals experiencing more financial stressors were more likely to seek financial help from professionals. In contrast, a study by Crichton (2019) reached an opposite conclusion while focusing on undergraduates as the targeted population. Undergraduate students were unwilling to seek financial assistance when they experienced stress related to their personal finances.

Financial stress could lead to negative consequences and undesirable financial behaviors. Existing literature links financial stress to poor marital quality (Archuleta et al., 2011), depression, alcohol, and drug problems (Davis and Mantler, 2004). Financial stress was also found to be associated with cognitive and behavioral changes (Davis & Mantler, 2004; Grable & Joo, 1999). Tokunaga (1993) concluded that stressful events were related to money attitudes and behaviors. Similarly, Fan (2017) found that financial stressors adversely influence financial well-being, with noticeable impacts on savings amounts and retirement planning. Pearlin et al. (2005) suggested that consumers' behaviors will change when stressors exist. Therefore, financial stress is anticipated to impact the role of financial help-seeking in the relationship between FSE and financial behavior in this study.

H3: *Financial Stress moderates the mediation effect of financial advice seeking on the relationship between FSE and financial behavior.*

The final framework (moderated mediation) is shown in Figure 3.3

Figure 3.3 Moderated Mediation Framework
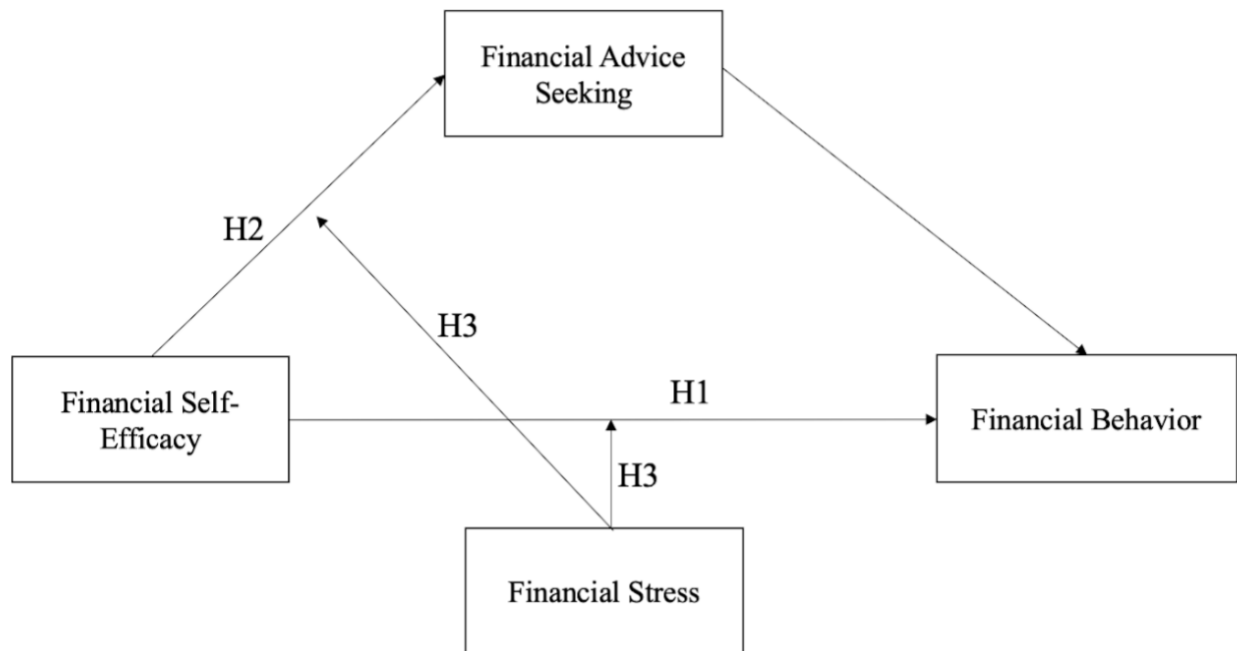
3.3 METHOD

3.3.1 SURVERY DESIGN AND DATASET

The survey for this study was created by a nationwide team of personal finance researchers. A Qualtrics survey was distributed in the United States between November 17, 2021, and December 15, 2021. The survey contained 62 questions related to the respondents' economic, demographic, health, and psychological attributes before and during the COVID-19 pandemic. Low- to moderate-income respondents, and black, indigenous, and people of color were intentionally oversampled. The instrument was approved for human subject research by the IRB committee at the principal investigator's home institution. The study was funded by a grant from Wells Fargo Bank.

In the final dataset, 3,099 respondents completed all survey questions. The dataset included detailed information about socio-demographic characteristics, FSE, the change in financial behaviors, financial advice seeking, and financial stress.

3.3.2 VARIABLES

3.3.2.1 DEPENDENT VARIABLE

The dependent variable in this research is financial behavior. According to Xiao (2008), financial behavior refers to practices, including cash, credit, and saving behaviors. In the updated research by Xiao et al. (2014), the construction of desirable financial behavior includes 14 factors related to savings, retirement planning, credit card planning, and mortgage. In this study, the financial behavior variable was measured based on the respondents' answers about whether they have taken actions related to financial behaviors in the past 12 months during the COVID-19 pandemic. The answers to this question have five favorable financial behaviors: "followed a budget," "saved regularly," "paid more than the minimum payment on a credit card or a loan," "paid more than the required amount on a mortgage payment," and "made voluntary contributions to a retirement account." Financial behavior was quantified by summing the number of selected positive financial actions, resulting in a value ranging from 0 to 5. A higher value indicates the respondent had better financial behaviors. As shown in Table 3.2, the mean score of financial behavior is 1.47.

3.3.2.2 INDEPENDENT VARIABLES

The key independent variable used in the model is FSE, which is a scale adapted from research by Lown (2011). The FSE scale is a 6-item measurement of the ability to manage finances and financial problems (Lown, 2011). Respondents will indicate how they agree or disagree with the six statements, ranging from "Not true at all (4)" to "Exactly true (1)." A

higher score means that the respondent had a higher FSE. As indicated by Table 3.2, the range of the value is from 6 to 24, and the mean score is 13.75. The Cronbach's alpha of the FSE scale is 0.8, which indicates great internal consistency in this study (Table 3.3).

Demographic variables were controlled in the revised theoretical framework as suggested by the past literature, and the variables include age, gender, marital status, income, educational attainment, and employment status. The statistics of control variables are shown in Table 3.4. The respondents were at least 18 years old, and most were middle-aged (31.82% in 25-34; 24.10% in 35-44). The sample included 50.31% males, 47.53% females, and 2.16% of the sample were identified as a gender other than male or female. Among the respondents, 43.89% were married or cohabiting, and 40.08% were non-Hispanic. Most of the respondents were in the medium-income group. The descriptive statistics show that 16.59% of the respondents reported having an income less than $15,000, 30.70% had an income between $15,000 and $35,000, 42.21% had an income between $35,000 and $100,000, and 11.13% earned more than $100,000. As for educational attainment, 31.49% of the respondents had an education of high school or less, 39.95% had a some-college or an associate degree, 20.23% had a bachelor's degree, and 8.33% earned a graduate degree or higher. Among the respondents, 62.79% were employed, and 37.21% were unemployed or other.

3.3.2.3 MEDIATOR

Financial advice seeking was proposed as a mediator, as suggested by the theoretical framework. This variable was measured based on the answer to the question, "Which of the following statements best describes your approach to seeking financial advice?" If the respondents answered, "I am actively seeking financial advice" or "I have already received financial advice," the variable was coded as 1. If the respondents answered, "I would never

consider seeking financial advice," "I would consider seeking financial advice in some circumstances," or "I don't know," the variable was coded as 0. As shown in Table 3.2, 32.07% of the respondents had received or actively sought financial advice.

3.3.2.4 MODERATOR

As suggested by the revised framework, financial stress is used as a moderator in the model. Financial stress is measured based on the question, "Indicate the extent to which you agree or disagree with the following statement: I feel stressed about my personal finances in general." Therefore, financial stress is coded as 1 if the respondents agree with this statement and 0 if they disagree with it. As indicated by Table 3.2, 35.40% of the respondents felt stressed about their personal finances in general. The correlations between key variables are presented in Table 3.5.

Table 3.2 Descriptive Statistics

N = 3,099	Mean/Percentage	Min	Max	Type
Financial Behavior	1.47	0	5	Continuous
Financial Self-efficacy	13.75	6	24	Continuous
Financial Advice Seeking	32.07%	0	1	Binary
Financial Stress	35.40%	0	1	Binary

Table 3.3 Cronbach's alpha of FSE

Test scale = mean(unstandardized items)	
Average interitem covariance	0.3854756
Number of items in the scale	6
Scale reliability coefficient	0.8051

Table 3.4 Demographical Statistics

N = 3,099	Frequency	Percentage
Age		
18-24	532	17.17%
25-34	986	31.82%

62

35-44	747	24.10%
45-54	367	11.84%
55-64	217	7.00%
64 or older	250	8.07%
Gender		
Male	1,559	50.31%
Female	1,473	47.53%
Other	67	2.16%
Marital Status		
Married/Cohabiting	1,360	43.89%
Other	1,739	56.11%
Race/Ethnicity		
White_Non-Hispanic	1,242	40.08%
Other	1,875	59.92%
Income		
Less than 15k	514	16.59%
15k-35k	932	30.07%
35k-100k	1,308	42.21%
More than 100k	345	11.13%
Education		
Highschool or less	976	31.49%
Some College/Associate	1,238	39.95%
Bachelor	627	20.23%
Graduate/Higher	258	8.33%
Employment		
Employed	1,946	62.79%
Unemployed or Other	1,153	37.21%

Table 3.5 Correlations between Key Variables

	Financial Behavior	FSE	Financial Stress	Financial Advice Seeking
Financial Behavior	1			
FSE	0.2272	1		
Financial Stress	0.1547	0.414	1	
Financial Advice Seeking	0.1487	0.0792	0.0291	1

3.3.3 EMPIRICAL MODEL

As suggested by the theoretical framework, this study used the moderated mediation model to analyze the relationship between financial behavior and FSE. Path analysis was conducted to run the moderated mediation analysis. The two primary regressions included in the moderated mediation framework were:

$$F\_Seek = a_0 + a_1 FSE + a_2 F\_Stress + a_3 FSE * F\_Stress + a_4 C + \varepsilon \qquad (1)$$

$$FB = c_0 + c_1 FSE + c_2 F\_Stress + c_3 FSE * F\_Stress + b_1 F\_Seek + c_4 C + \varepsilon \qquad (2)$$

Where F_Seek = financial advice seeking; FSE = financial self-efficacy; F_Stress = financial stress; FB = financial behavior; C = Control variables.

This study used scales and items from the primary dataset to measure the perceptions of financial behavior, FSE, financial advice seeking, and financial stress. The technique of Structural Equation Modeling (SEM) using the R-Lavaan package (Rosseel, 2012) was applied for analyzing the moderated mediation framework and hypotheses of this study.

3.4 RESULTS

3.4.1 COHORT COMPARISON

This article mainly focuses on Baby Boomers and compares this generation to Gen Xers and Millennials. The results from Table 3.6 suggest that Baby Boomer respondents (u = 1.55) had the highest average score of financial behavior compared to Gen Xers and Millennials. Gen Xers (u = 1.36) had the lowest average score of financial behavior. Also, the later cohorts have higher mean financial self-efficacy, which indicates that the later cohorts may be more confident in managing their finances. During the COVID-19 pandemic, 54% of the respondents who were Baby Boomers experienced financial stress, while 33% of Gen Xers and 34% of Millennials had financial stress. This result indicates that Baby Boomers might have the largest financial stress during the pandemic compared to other cohorts. Additionally, the result of cohort comparison

indicates that 28% of Baby Boomers, 28% of Gen Xers, and 33% of Millennials had received or actively sought financial advice during the COVID-19 pandemic. This result indicates that younger generations were more likely to search for external financial advice. Respondents of older generations had an average higher educational attainment. The older generations also had a higher average unemployment rate during the COVID-19 pandemic.

Table 3.6 Descriptive Comparison by Cohort

	Baby Boomers		Gen Xers		Millennials	
Variable	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Financial Behavior	1.55	1.10	1.36	1.16	1.44	1.18
Financial Self-Efficacy	15.46	4.90	13.54	4.25	13.29	4.09
Financial Stress	0.54	0.50	0.33	0.47	0.34	0.47
Financial Advice Seeking	0.27	0.45	0.28	0.44	0.33	0.47
Education	3.79	1.43	3.54	1.34	3.53	1.40
Employment	0.31	0.46	0.64	0.48	0.74	0.44

3.4.2 MODERATED MEDIATION

The results of moderated mediation are shown in Table 3.7. The results displayed the moderation effect of financial stress on the mediation effect of financial advice seeking from FSE to financial behavior. The table indicated that the indirect effect of financial advice seeking from FSE to financial behavior was not significant $(b = 0.004; p = 0.084)$ in the absence of financial stress. The results reject H2a. The direct effect of FSE on financial behavior was significant $(b = 0.121; p < 0.001)$ when respondents had no financial stress. The total effect was significant $(b = 0.125; p < 0.001)$ when respondents did not have financial stress. The indirect effect of financial advice seeking from FSE to financial behavior was significant $(b = 0.010; p < 0.05)$ in the presence of financial stress. The results provide support for H2b. The direct effect of FSE on financial behavior was significant $(b = 0.291; p < 0.001)$ when there was financial stress.

The total effect was significant *(b = 0.300; p < 0.001)* when the participants experienced

financial stress. The proportion of the total effect mediated by financial advice seeking was not

significant *(b = 0.032; p = 0.093)* in the absence of financial stress, which was consistent with

the result of an insignificant indirect effect of financial advice seeking from FSE to financial

behavior. The proportion of the total effect mediated by financial advice seeking was significant

(b = 0.032; p < 0.05) in the presence of financial stress, which means that financial advice

seeking explained about 3.2% of the total effect of FSE on financial behavior. Since the

mediation effect of financial advice seeking from FSE to financial behavior was insignificant in

the absence of financial stress, but became significant in the presence of financial stress,

financial stress was moderating the mediation effect of financial advice seeking. The results

provide support for H3.

Table 3.7 Effect of the Moderator (Financial Stress) on the Mediation Effect of Financial Advice
Seeking

N = 3,099	Estimate	SE	Z-value	P-value	Sig
indirect.No_FS	0.004	0.001	1.729	0.084	
direct.No_FS	0.121	0.007	4.885	0.000	***
total.No_FS	0.125	0.007	5.03	0.000	***
indirect.Yes_FS	0.010	0.001	2.487	0.013	*
direct.Yes_FS	0.291	0.007	7.609	0.000	***
total.Yes_FS	0.300	0.007	7.842	0.000	***
prop.mediated.No_FS	0.032	0.019	1.678	0.093	
prop.mediated.Yes_FS	0.032	0.013	2.423	0.015	*

Note. Significance: *p < .05, **p < .01, ***p < .001
indirect: the indirect effect
direct: the direct effect
total: total effect
prop.mediated: proportion mediated by financial advice seeking
No_FS: when there is no financial stress
Yes_FS: when there is financial stress

3.4.3 REGRESSION RESULTS

The regression results are shown in Table 3.8. In the first regression model, when financial advice seeking served as the dependent variable, none of the FSE ($b = 0.049$; $p = 0.064$), financial stress ($b = -0.076$; $p = 0.271$), and the interaction between FSE and financial stress ($b = 0.070$; $p = 0.369$) were significant. The results indicate that FSE was not correlated to financial advice seeking, whether respondents experienced financial stress or not. The results in Table 3.8 also indicate that, compared to the reference group whose income was less than $15,000, those who earned more than $100,000 were more likely to seek financial advice ($b = 0.078$; $p < 0.01$). Compared to the respondents who had an educational attainment of high school or lower, those who had a bachelor's degree ($b = 0.052$; $p < 0.05$), or a graduate degree or higher ($b = 0.062$; $p < 0.01$) were more likely to seek external financial advice. Respondents who were employed ($b = 0.059$; $p < 0.01$) were more likely to look for financial advice than those who were not employed.

In the second regression model, when financial behavior was used as the dependent variable, FSE ($b = 0.121$; $p < 0.001$) was positively correlated with financial behavior. The results provide support for H1. The interaction between FSE and financial stress ($b = 0.169$; $p < 0.05$), and financial advice seeking ($b = 0.081$; $p < 0.001$) were positively associated with financial behavior. Other than that, compared to the respondents who were older than 64, respondents who were 18 to 24 ($b = 0.072$; $p < 0.05$) were more likely to engage in positive financial behaviors. Respondents who were married or cohabiting ($b = 0.045$; $p < 0.05$) were more likely to engage in positive financial behaviors compared to those who were not. Compared to those who made less than $15,000, respondents who earned between $15,000 to $35,000 ($b = 0.050$; $p < 0.05$), and between $35,000 to $100,000 ($b = 0.175$; $p < 0.001$), and more than $100,000 ($b = 0.194$; $p < 0.001$), were more likely to have better financial behaviors. Compared

to the respondents who had an educational attainment of high school or lower, those who had a

some-college or associate degree ($b = 0.082$; $p < 0.001$), bachelor's degree ($b = 0.140$; $p <$

0.001), or graduate degree or higher ($b = 0.115$; $p < 0.005$) were more likely to engage in

positive financial behaviors. Respondents who were employed ($b = 0.090$; $p < 0.01$) were more

likely to engage in positive financial behaviors than those who were unemployed.

Table 3.8 Regression Results

N = 3,099	Estimate	SE	Z-value	P-value	Sig
Financial Advice Seeking					
~					
FSE	0.049	0.003	1.850	0.064	
Financial Stress	-0.076	0.067	-1.101	0.271	
FSE*Financial Stress	0.070	0.004	0.899	0.369	
Age					
Age18_24	0.058	0.040	1.805	0.071	
Age25_34	0.041	0.037	1.102	0.270	
Age35_44	0.024	0.037	0.708	0.479	
Age45_54	-0.019	0.041	-0.683	0.494	
Age55_64	-0.016	0.044	-0.652	0.514	
Gender					
Female	-0.034	0.017	-1.839	0.066	
Other	0.008	0.058	0.434	0.664	
Married/Cohabiting	0.026	0.018	1.387	0.166	
White_Non-Hispanic	-0.037	0.018	-1.945	0.052	
Income					
15k-35k	-0.033	0.026	-1.304	0.192	
35k-100k	0.028	0.026	1.026	0.305	
More than 100k	0.078	0.036	3.189	0.001	**
Education					
Some College/Associate	0.024	0.020	1.144	0.253	
Bachelor	0.052	0.025	2.391	0.017	*
Graduate/Higher	0.062	0.034	3.075	0.002	**
Employed	0.059	0.019	2.971	0.003	**
Financial Behavior ~					
FSE	0.121	0.007	4.885	0.000	***
Financial Stress	-0.093	0.146	-1.466	0.143	

FSE*Financial Stress	0.169	0.010	2.351	0.019	*
Financial Advice Seeking	0.081	0.039	4.854	0.000	***
Age					
Age18_24	0.072	0.087	2.417	0.016	*
Age25_34	0.048	0.081	1.405	0.160	
Age35_44	-0.003	0.082	-0.091	0.928	
Age45_54	-0.014	0.088	-0.530	0.596	
Age55_64	0.020	0.096	0.895	0.371	
Gender					
Female	-0.002	0.038	-0.102	0.919	
Other	0.023	0.125	1.412	0.158	
Married/Cohabiting	0.045	0.039	2.558	0.011	*
White_Non-Hispanic	0.021	0.039	1.222	0.222	
Income					
15k-35k	0.050	0.056	2.135	0.033	*
35k-100k	0.175	0.056	6.887	0.000	***
More than 100k	0.194	0.079	8.564	0.000	***
Education					
Some College/Associate	0.082	0.044	4.201	0.000	***
Bachelor	0.140	0.055	6.967	0.000	***
Graduate/Higher	0.115	0.075	6.129	0.000	***
Employed	0.090	0.042	4.862	0.000	***

Note. Significance: *p < .05, **p < .01, ***p < .001

3.4.4 PATH DIAGRAM

The path diagram using the R-Lavaan technique for path analysis is shown in Figure 3.4. The estimations of coefficients are displayed on the lines of the figure. The solid line indicates a significant effect, while the dashed line means the relationship is insignificant. The results of the path diagram are consistent with the results of the regression analysis.

Figure 3.4 Structural Equation Model Path Diagram

1.000***

FSEF

0.960***

F_Seek

0.049

1.000***

F_Stress*FSEF

0.070

0.121***

0.169*

0.081***

Demographical
Control Variables

-0.076

FB

-0.093*

F_Stress

0.823***

1.000***
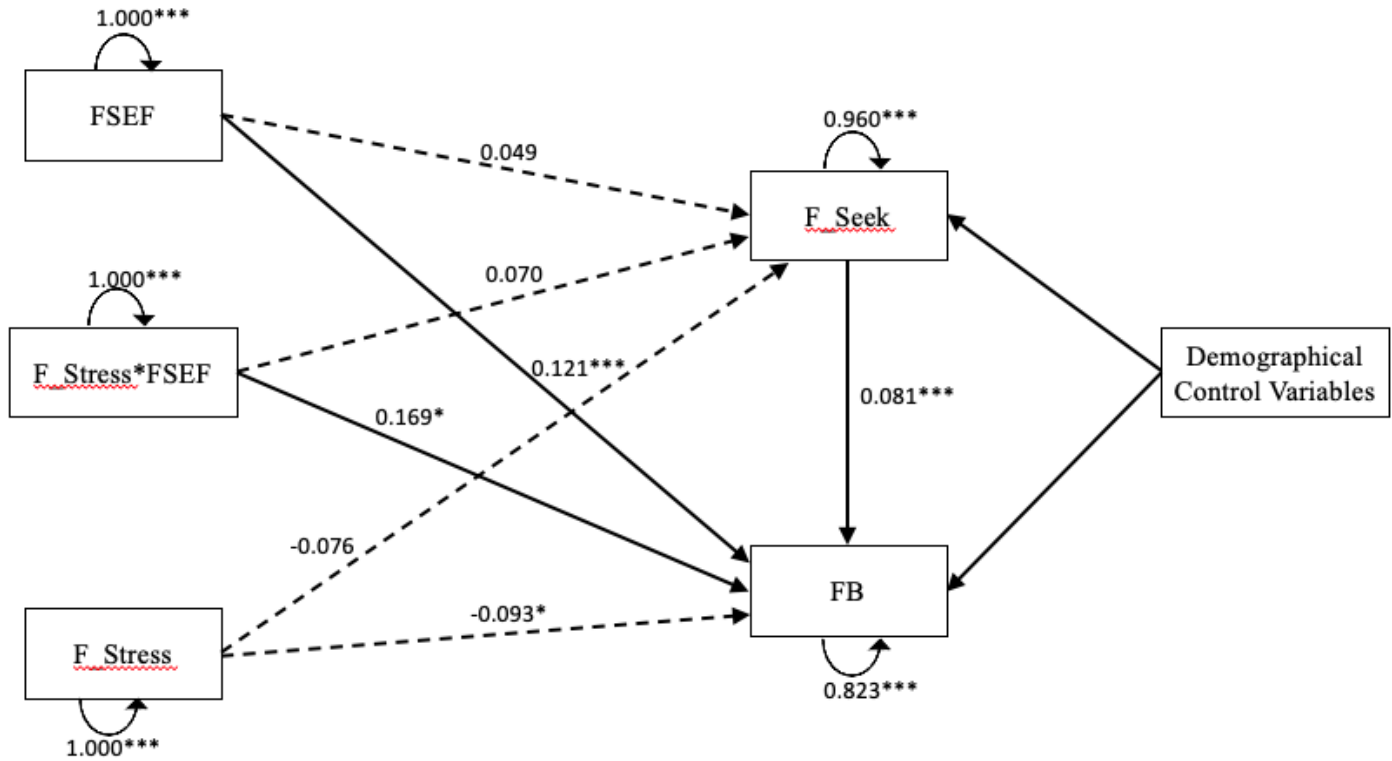
Note. Significance: *p < .05, **p < .01, ***p < .001
FSE: Financial Self-efficacy
F_Stress: Financial Stress
F_Seek: Financial Advice Seeking
FB: Financial Behavior

3.5 SUMMARY AND CONCLUSION

3.5.1 DISCUSSION

In the context of the COVID-19 pandemic, this study introduced the financial help-seeking theory and stress and coping theory to develop the theoretical framework to explain the connections between FSE and financial behaviors while considering the role of financial advice seeking and financial stress. FSE is the ability to manage finances and financial problems (Lown, 2011). As expected, this study found that those with higher levels of FSE engaged in more positive financial behaviors, such as following a budget, saving regularly, contributing to retirement accounts, or paying more than the minimum on loans, credit card debt, and mortgages.

This finding confirms the importance of FSE in improving financial behaviors (Chong et al., 2021; Tang, 2021). While considering the context of the COVID-19 pandemic, which led to financial stress on consumers, this study also shows that actively seeking financial advice or having sought financial advice in the past affects the relationship between FSE and financial behaviors, but only if financial stress is present. Therefore, consumers are more likely to seek external financial advice to engage in positive financial behaviors when experiencing financial stress. However, FSE is the key factor to engaging in positive financial behaviors because the indirect effect of FSE on financial behavior through financial advice seeking explained only a limited mediated effect (Table 3.6). Therefore, consumers should not overestimate the effect of financial advice seeking on improving their financial behaviors.

The results also indicate that financial advice seeking and financial behavior are positively related, which means that consumers who have sought financial advice in the past or are actively seeking financial advice are more likely to engage in positive financial behaviors. This result confirms the role of financial advice seeking as an external source of improving financial behaviors (Grable and Joo, 1999; Schmidt and Spreng, 1996). However, when consumers do not have financial stress, financial advice seeking will not mediate the correlation between FSE and financial behavior. This outcome implies the importance of financial advice seeking as an approach to improving financial behaviors during a financial crisis. Also, those aged 18 to 24, those who were married or cohabiting, those who earned over $15,000 annually, those who had some college or an associate's degree or higher or were employed engaged in more positive financial behaviors compared to those in the other categories for each demographic characteristic. Interestingly, those who sought financial advice had more positive financial behaviors, indicating that financial advice seeking may be beneficial. Since this dataset

was collected during the pandemic, people may have been less inclined to seek new face-to-face services. Perhaps they were unaware that many financial planners offer phone or video consultations and online resources.

FSE is not related to financial advice seeking, regardless of the presence of financial stress. In other words, even if consumers are experiencing financial stress, their financial advice seeking behavior is still unrelated to their FSE. It is likely that consumers with high FSE understand the importance or necessity of obtaining professional advice on their finances. On the other hand, it is also possible that consumers who are confident in managing their finances do not feel like they need financial advice from a professional, even though times of financial stress may be exactly the time they need these services. Also, those who earned more than $100,000 were more likely to seek financial advice compared to people who earned less. It is likely that people with higher incomes have more access to financial services; for example, the cost of seeking professional financial advice might prevent lower-income consumers from seeking out such services. People experiencing financial difficulties may have limited economic resources to save or invest, reducing their motivation to seek financial advice to manage their money. Additionally, people in different wealth levels may seek various forms of financial advice. For instance, people with limited wealth might need the service of debt management because they are struggling with finances; people with great wealth are more likely to consider wealth management, such as investment planning and retirement planning. Moreover, people who had a bachelor's degree or higher or were employed were more likely to seek financial advice compared to those in the other categories for each of those demographic characteristics. These findings may indicate that people with higher educational attainment or who are currently employed are more likely to understand the benefits of seeking professional advice.

This research focuses on Baby Boomers and compares this cohort to Generation X and Millennials. The results indicate that Baby Boomers' financial behaviors were the best among the three cohorts, and these behaviors include "followed a budget," "saved regularly," "paid more than the minimum payment on a credit card or a loan," "paid more than the required amount on a mortgage payment," and "made voluntary contributions to a retirement account." This result indicates that Baby Boomers might have had a better understanding of financial concepts and had higher abilities in realizing their financial goals. Also, Baby Boomers had the highest score of financial self-efficacy, which means that Baby Boomers were more confident in their capabilities in managing their finances and making correct financial decisions. The financial self-efficacy levels of Gen Xers and Millennials were approximately equal. During the COVID-19 pandemic, more than half of Baby Boomers experienced financial stress, and the percentage was the highest among the three cohorts. Baby Boomers are likely to experience greater financial pressure than younger generations, as they typically face a broader range of financial responsibilities, often serving as the head of household during this stage of life. Even with the excessive financial stress, Baby Boomers were less likely to seek external financial advice from financial professionals compared to Gen Xers and Millennials. The reason might be due to their high financial self-efficacy, which means that they were confident in managing their finances well, so that they felt it unnecessary to seek external advice. Another possible reason could be Baby Boomers' traditional beliefs about financial advice seeking, and they were reluctant to accept various resources in accessing financial advice. Younger generations were more open to new and different resources, including consulting by phone, online, and even through mobile apps (Zhang, 2023; Zhang et al., 2025). These techniques could help make sources of financial advice more accessible and approachable for younger generations when making financial

decisions. Additionally, Baby Boomers' educational attainments were the highest compared to Gen Xers and Millennials, and this could be another reason for better financial behaviors and financial self-efficacy. The result of this study also confirms that older workers had a higher unemployment rate during the COVID-19 pandemic (Bui et al., 2020). The statistics indicate that 69% of Baby Boomers have stayed unemployed since the onset of the COVID-19 pandemic, and the unemployment rate was 36% for Gen Xers and 26% for Baby Boomers. Therefore, the Baby Boomers' unemployment rate was much higher than the other two cohorts. One possible reason could be that Baby Boomers experienced the highest financial stress during the COVID-19 pandemic.

This study has confirmed the application of financial help-seeking framework and stress and coping theory in investigating consumers' financial behaviors during a complex environment of financial shocks with financial stress. The financial help-seeking framework indicates that when consumers recognize any problem such as financial difficulty, they tend to seek for external financial help to improve their situations. The main standpoint of this theory is consistent with the result of this study, which indicates that pandemic related stress and people's FSE influence their decisions to seek external financial advice. In a broader application, the problem could be any adverse effects of unexpected financial shocks, and those kinds of adverse effects will make consumers realize the importance of seeking professional advice to help survive and recover from the challenges. Through the action of financial advice seeking, consumers' financial difficulties could be alleviated, and the overall financial well-being will be improved. The concept of stress and coping theory also explains the results of this study ideally. The stress and coping theory indicates that people' well-being will be changed or affected in the presence of a stressor. Therefore, the relationships among FSE, financial advice seeking, and

financial behaviors will change due to the financial stress caused by the COVID-19 pandemic. And people tend to make positive changes in their financial behaviors under the financial pressure, so that their financial well-being could be improved. The application of this theory could be expanded to any stressors happened in life such as stressors occurred in the level of individual, family, business, and even a stress of the society or country. People need to understand the positive effects of stressors since it can encourage change or development. With the stressors, people tend to develop appropriate coping strategies to alleviate or decrease the stress. In this sense, significant progress and improvement are usually made with the presence of stressors.

3.5.2 IMPLICATION

The findings of this research have practical implications for consumers, financial service providers, and policymakers. Since the dataset was collected during the COVID-19 pandemic, the results could provide guidance on preparing for unexpected financial shocks and enhancing financial resilience. To engage in positive financial behaviors, consumers could consider seeking professional advice when they feel incapable of managing their finances. Since the positive effect of financial advice seeking is magnified when consumers are experiencing financing stress, consumers are recommended to hire financial professionals to help with their financial affairs during a financial crisis.

However, even though consumers understand the importance or benefits of hiring a financial professional to help with their finances, the accessibility of financial services might impede the practice. It is possible that those not seeking financial advice think it will be too costly, or they may not feel educated enough to know where to seek out this advice or what questions to ask. For example, they may be confused by CFP, CFA, CPA, and RIA designations.

They may not understand whether financial planning services are available to them, given their current level of income and savings. Therefore, educating consumers on basic financial knowledge such as budgeting, saving, and investing and the approaches to seeking financial knowledge like online resources, community workshops, and professional consultations could help improve the penetration of financial services.

After consumers understand the benefits and approaches to seeking financial advice, enhancing the availability and accessibility of financial services should be the next goal of financial service providers and policymakers. Financial advisors need to advertise the benefits of their services to potential clients. The findings of this article indicate that Baby Boomers were less likely to seek external financial advice compared to other cohorts, even though they had the highest pressure during the pandemic. Therefore, making financial services accessible for older age groups could be another potential of the development, since they really need the assistance but failed to use it efficiently. Upfront information about fees for their services and websites with clear information about financial commitment obligations and types of services offered could help alleviate consumers' reluctance to seek professional financial advice. Expanding the service formats could help increase the availability of financial advice. In addition to in-person consultant services, financial services could be delivered by phone, video chat, online, or hybrid. Financial service providers could also provide their services by fintech apps, which are accessible to more consumers. In this sense, financial service providers should consider the security issues of using fintech apps because the perceived security, such as privacy protection, is positively correlated to using fintech apps (Qi et al., 2024). On the other hand, reducing the fees associated with financial consultants could help enhance the accessibility of these services. Financial service providers and policymakers could work together to lower the cost of hiring

financial professionals and make such services accessible to even low-income groups. Therefore, consumers will have more chances to seek professional financial advice when they encounter financial stress during the pandemic, so they will be more likely to engage in positive financial behaviors and make wise financial decisions.

The findings of this study indicate that financial stress could prompt consumers to seek professional advice. In this sense, financial advisors should understand how to deal with clients' financial stress in the advice seeking process. In addition to expertise in financial planning, financial advisors need specialized training in consumers' behavioral finance and stress control. Without the special training, the process of advice seeking may be inefficient because financial advisors may not recognize the influence of psychological aspects and provide untailored support to clients who are feeling stressed due to financial matters. Financial advisors should learn the signs of stress, understand the relationships between stress and financial behaviors, and provide support on managing clients' stress. Those kinds of trainings will make the advisory process more effective, so that consumers' financial advice seeking behavior and overall financial well-being will be improved.

Since FSE is found to be positively associated with financial behaviors, government agencies need to provide reliable sources for consumers to enhance financial confidence, such as implementing timely financial assistance programs during financing crises and building up consumers' trust in government. When reliable financial resources are available and accessible to consumers, they will be more likely to engage in desirable financial behaviors and make wise financial decisions.

3.5.3 LIMITATION AND FUTURE DIRECTION

This study is subject to several limitations that warrant careful consideration. Firstly, this analysis relies on a cross-sectional dataset collected during the pandemic. Therefore, the associations identified in this study should be interpreted with caution. Given the dynamic nature of FSE and financial behaviors, future studies could further investigate the relationship examined in this study by employing a longitudinal dataset that could offer a more comprehensive understanding of how these relationships evolve over time, mainly through varying economic cycles beyond the COVID-19 pandemic. Secondly, the measurement of financial behavior in this study was constructed by five factors, which were less comprehensive compared with the original 14-factor measurement of financial behavior (Xiao et al., 2014). More robust results may be achieved if future studies integrate all the original factors to test the moderated mediation relationship. Thirdly, although this study represents a pioneering effort in examining the mediating function of help-seeking, it does not distinguish the sources of advisory information. The amount and quality of information provided through financial professionals, media, and social networks have considerable variability (Qi et al., 2024; Zhang et al., 2025). Future research may deepen the comprehension by conducting a more thorough examination of these various sources within the established framework. Additionally, future studies could also explore the specific techniques or contents of financial advice that are most effective in stressful situations, which could facilitate the development of more targeted treatments.

3.5.4. CONCLUSION

This study employed a moderated mediation model to examine the dynamics of FSE, financial advice seeking, and financial behaviors in the presence and absence of financial stress. The study findings detail the intricate interplay between these factors during the COVID-19 pandemic. When financial stress was not considered a moderator, the mediation effect of

financial advice seeking on the relationship between FSE and financial behavior was found to be insignificant. This finding suggests that, in the absence of financial stress, individuals' financial behaviors are directly influenced by their own perceptions of financial capability rather than by seeking external financial advice. However, introducing financial stress as a moderator significantly altered these relationships. With financial stress accounted for, the mediating role of financial advice seeking became pronounced. This result indicates that when experiencing financial stress, help-seeking from financial professionals becomes the bridge for those with higher FSE to establish better financial behaviors effectively. Additionally, the direct relationship between FSE and financial behaviors not only remained significant but also strengthened when experiencing financial stress. This enhancement points to the robust nature of financial self-efficacy. As a determinant of financial behavior, FSE is further amplified even during stressful periods. These findings emphasize the importance of considering financial stress when evaluating the pathways through which FSE and advice seeking influence financial behaviors. Also, implementing stress control programs or policies for Baby Boomers would be effective during the pandemic, since Baby Boomers had much higher financial stress than Gen Xers and Millennials. For financial professionals and policymakers, the results of this study indicate that supporting individuals' FSE, coupled with providing accessible financial advice during times of stress, could be an effective strategy for improving financial behaviors.

In summary, this study validates the significant roles of financial stress and financial advice seeking on the connection between FSE and financial behaviors. This study also provides insights into the need for specific financial interventions that target and improve FSE, as well as promote accessible financial advice to consumers during times of economic uncertainty.

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CHAPTER 4

ESSAY III: AN EXAMINATION OF COVID-19 ADVERSITY ON BUSINESS HARDSHIP

4.1 INTRODUCTION

In March 2020, the United States was struck by a worldwide Coronavirus pandemic. The pandemic posed an unprecedented threat to business operations in almost every industry and sector. As reported by the U.S. Bureau of Labor Statistics in the early periods of the pandemic, around 57% of the 16.9 million affected individuals remained unemployed due to their employers closing or going out of business, and 12% of the working population reported that they were unable to work because of the pandemic (U.S. Bureau of Labor Statistics, 2022). About half of lower-income Americans reported job losses or wage cuts because of the outbreak (Parker et al., 2020), and the U.S. monthly unemployment rate exceeded the historical peak during the Great Recession in October 2019 (Gangopadhyaya & Garrett, 2020). By the research of Sampson et al. (2021), almost one-third of the sample in the study have experienced financial hardships, including job loss, wage decrease, and trouble paying bills.

The impact of COVID-19 on U.S. business was also unprecedented. The pandemic has had a huge impact on physical and local businesses because they were entrenched in the communities, so they were not intended for lockdown (Foroohar, 2020). According to the Current Population Survey, the number of active U.S. business owners dropped about 22% in just three months, from February 2020 to April 2020. (Fairlie, 2020). On average, business sales dropped by 17% just in the second quarter (Fairlie, 2021). Many businesses were financially

fragile because of limited cash on hand. For firms with more than $10,000 in monthly operating expenses, the median level of cash on hand was only about 15 days or less (Bartik et al., 2020).

To survive this economic downturn, the top priority for business owners in the timeline is to find a path for recovery. This research aims to investigate the relationship between the unprecedented COVID-19 pandemic adversities and business-related hardships. This study utilizes the 2020 Health and Retirement Study (HRS) Core dataset, which first added the COVID-19 section to the 2020 wave. The HRS 2020 dataset gives a unique opportunity to evaluate the adverse impact of the COVID-19 pandemic on the various challenges confronted by business owners.

The targeted population of this essay is Baby Boomer business owners, with the aim of investigating their experiences during the COVID-19 crisis and assessing its potential impacts on their business operations. The time range defining Baby Boomers is those born between 1946 to 1964. The selection of Baby Boomers as the focus group is based on their heightened vulnerability to pandemic-related adversities compared to other generational cohorts. Previous studies indicate that since Baby Boomers are more likely to be stuck in serious situations, they are a more vulnerable generation during a pandemic compared to Generation X and Millennials (Di Gessa & Price, 2022). According to the statistics from the Centers for Disease Control and Prevention, 92% of deaths from COVID-19 came from those 65 or older in the United States (Berg, 2023). Therefore, Baby Boomers are more vulnerable to COVID-19 adversities, including mental health, medical concerns, income drop, and financial hardships. Other than that, older workers experienced higher unemployment rates since the onset of the COVID-19 pandemic (Bui et al., 2020).

Not only are Baby Boomers personally vulnerable to the adversities of the COVID-19 pandemic, but their businesses are also significantly at risk. Given that Baby Boomers owned 39.6% of small businesses (Yaqub, 2024), the significant impact of the COVID-19 pandemic on their businesses is particularly concerning (Kocemba, 2022). Research by the OPARASA Group indicates that 40% of Baby Boomer business owners plan to close their businesses because of the limited time and energy they had during the COVID-19 pandemic (Deason & Fatouros, 2021). According to a report by Boomers in Business in 2020, the largest challenge faced by boomer business owners is the deficiency in capital and cash flow, which might be caused by the COVID-19 pandemic. Another additional challenge for boomer business owners during the pandemic was the loss of workers due to employee resignations. Boomer business owners also found it challenging to recruit new employees during the COVID-19 pandemic (Guidant, 2020). Therefore, the findings of this essay will provide guidance to Baby Boomer business owners by identifying whether COVID-19-related adversities can predict business hardships and by emphasizing the importance of mitigating the negative effects of COVID-19 adversities to prevent further challenges. Therefore, the research question of this essay is:

Q: How were COVID-19 adversities related to the business hardships of Baby Boomer Business owners?

This essay develops the theoretical framework by adopting the organization theory by Shepherd and Williams (2020) and the challenge-hindrance stressor (CHS) framework by Cavanaugh et al. (2000). The technique of Exploratory Factor Analysis (EFA) is used for variable selection and identifying variable relationships. Confirmatory Factor Analysis (CFA) is applied to validate the model fit and test the validity and reliability of the variable constructions. The Structural Equation Model (SEM) technique was employed to validate whether business

owners who have suffered from COVID-19 adversities are more likely to encounter business hardships.

Due to COVID-19's social-distance policy and health- and economy-driven demand adjustments, a significant number of businesses have closed and incurred additional expenses to compensate for health concerns and policy mandates; however, the pandemic's effects on Baby Boomer business owners are not well recognized. This essay adds to the knowledge of COVID-19 adversities on business hardships face by U.S. baby boomers who are business owners. The results from this essay will have practical implications for business owners to build up their financial resilience during the pandemic. The study will also have implications for policymakers and government agencies regarding enforcing timely policies to help business owners to survive and rapidly recover from the challenged adversities brought by future financial shocks.

4.2 LITERATURE REVIEW

4.2.1 THEORETICAL FRAMEWORK

This essay adopts the organization theory (Shepherd & Williams, 2020) and the challenge-hindrance stressor (CHS) framework (Cavanaugh et al., 2000) to develop the theoretical framework for exploring the relationship between COVID-19 adversities and business-related hardships. Organization theory mainly focuses on entrepreneurs' roles in dealing with adversity. When the adversity is an event such as the COVID-19 pandemic, job loss, or business failure, entrepreneurial action will perform the role of an equilibrating mechanism, which means that entrepreneurs make changes to overturn the adverse events so that they can return to their normal status. When the adversity is a persistent state, entrepreneurial action tends to perform the role of a disequilibrating mechanism. In this essay, the COVID-19 pandemic represents a clear example of an adverse event. In this sense, when business owners

encounter such an adverse event, they are expected to act as an equilibrating mechanism, as suggested by organization theory. That is, business owners tend to make changes to get back to pre-pandemic situations. Those changes could include implementing extra policies, undercutting wages, or even executing a workforce reduction to reduce management costs and alleviate financial stress. Therefore, "Extra Policy" and "Workers Quit" used in this study could be fitted as the changes that business owners can make to equilibrate the situation.

The CHS framework by Cavanaugh et al. (2000) categorized stressors into two domains: challenge stressors and hindrance stressors. Challenge stressors could help promote performance, such as more workload or taking on more responsibilities. However, hindrance stressors should be negatively correlated to performance because they often bring negative effects to the business (Pindek et al., 2024). COVID-19 adversity could be regarded as a hindrance stressor because it can result in strain and "interfere with or hinder an individual's ability to achieve valued goals" (Cavanaugh et al., 2000). When a hindrance stressor happens, entrepreneurs will have an intention to avoid the negative stressor (Horan et al., 2020; Kleine et al., 2024). The quit intention is an example of avoiding the negative stressor (Kleine et al., 2024). In this sense, the "Close Business" used in the study could be fitted as an intention to avoid the negative effects of the COVID-19 Pandemic. Combined with the organization theory, "Extra Policy," "Workers Quit," and "Close Business" could be used as actions to change or avoid the impacts of COVID-19 adversities, and they are grouped as business hardships in this study. Figure 4.1 shows how the organization theory and the CHS framework were incorporated into the framework.

Figure 4.1 Theoretical Framework Incorporated by Organization Theory and CHS Framework
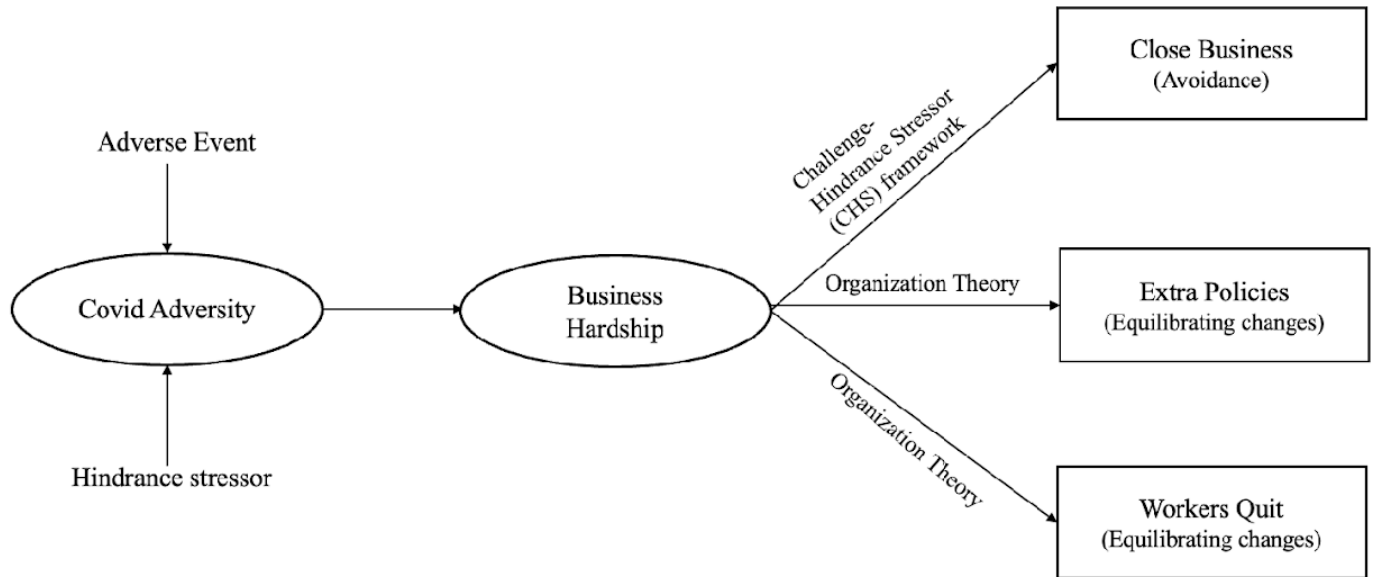
In summary, the organization theory was used to justify the role of implementing extra policies and executing a workforce reduction related to COVID-19 adversities in the framework. The CHS framework was applied to validate the choice of closing a business in order to avoid the negative hindrance stressor, which is the COVID adversity in the theoretical framework (Table 4.1).

Table 4.1 Summary of Theories

Theory	How the theory underpins the framework
Organization Theory	Validate the paths with Extra Policies and Workers Quit
CHS Framework	Validate the path with Close Business

4.2.2 COVID-19 ADVERSITY

There is no consistent definition of COVID-19 adversity. Since adversity refers to "a difficult or unlucky situation or event" (Cambridge Dictionary, n.d.), COVID adversity might be possibly described as the difficulties that happened during the COVID-19 pandemic. COVID adversities include problems in mental and physical health (Alaggia et al., 2024; Seedat, 2021),

financial strains (May et al., 2023), and any other difficulties resulting from the pandemic. Financial stress could be regarded as an example of COVID-19 adversities, and according to the report of the NEFE survey, 9 in 10 U.S. workers experienced financial stress due to the COVID-19 pandemic (NEFE, 2020). This study mainly concentrates on the COVID adversities in financial hardship, income decrease, and the need for help with bill payments.

4.2.2.1 FINANCIAL HARDSHIP

Financial hardship has been thoroughly investigated by previous literature in personal finance. Financial hardship was usually used as a stressor based on the Stress and Coping Theory (Grable & Joo, 1999; Lazarus & Folkman, 1984; O'Neill et al., 2005). The research by Gjertson (2016) refers to financial hardship as having trouble paying mortgage, rent, and bills. Even though previous studies have used diverse measurements of financial hardship and developed financial hardship in various categories, the primary domains of financial hardship are objective measures and subjective measures (Fan et al., 2022; Hope et al., 1999; Chou et al., 2004). Objective financial hardships include unemployment, trouble paying debt and mortgage and seeking financial help, and examples of subjective financial hardship are worrying about expenditures and feelings of depression (Park et al., 2017).

Financial hardship is closely related to negative performance in business operations. During the pandemic, financial hardship was more salient to impact business owners and employees. Employees who are under financial stress could behave distracted at work, which will lead to low productivity and engagement (Scagnelli, 2023). Several common financial hardships experienced by business workers include job loss, reduction in work hours and salary, and financial stress due to bill payments (Scagnelli, 2023). Financial stress can affect entrepreneurs' physical and mental well-being as well and can have a negative effect on the

workplace (Enrich, 2024; Xu & Jin, 2022) and the intentions to quit the business (Gorgievski et al., 2010). According to the Challenge-Hindrance Stressor (CHS) framework (Cavanaugh et al., 2000), financial stressors could be defined as entrepreneurial hindrance stressors, which can lead to the motivation to avoid the stressors, such as changing business policies, laying off workers, and even closing the business. The research by Kleine et al. (2024) also mentioned that entrepreneurs' business-related financial stress is positively correlated to their intention to quit the business.

4.2.2.2 INCOME DECREASE

The early stages of the pandemic had significant adverse effects on income levels, particularly impacting business owners who experienced a decline in earnings (Fairlie, 2021). During the initial months of the pandemic, numerous firms experienced temporary closures. The reduction in business activity is directly linked to decreased income for business owners, as their earnings are closely connected to business performance, resulting in a 16% to 19% drop in earnings for all business owners in 2020 (Fairlie, 2021, 2023). Fairlie (2023) indicates that business owners experienced a disproportionate decline in income, with individuals of color being most adversely affected by COVID-19. Specifically, Black business owners saw a 28% drop in their earnings from 2019 to 2020, while the average business earning drop in the nation was 17% (Fairlie, 2023). The reduced income from business operations could result in increased anxiety and tension levels among Baby Boomer business owners, who were already facing health challenges as a high-risk group for COVID-19 (Turchioe et al., 2020). As the Baby Boomers, compared to younger generations, often lack the necessary digital literacy, the digital solution for the business model may leave many Baby Boomers at a disadvantage (Klein & Todesco, 2021). Consequently, the pandemic-induced change in consumer behavior, which includes a significant

increase in online purchasing and digital transactions, could pose extra challenges for Baby Boomer business owners who have previously struggled to adapt to new business models, potentially leading to a further decline in income.

4.2.2.3 NEED HELP TO PAY BILLS

Throughout the COVID-19 pandemic, extraordinary financial difficulties may encourage Baby Boomer business owners to reach out to family, friends, or other relatives for help with their bill payments. Family and friends can offer timely financial support during periods of reduced income in the pandemic, therefore enabling business owners to focus on their obligations and responsibilities and maintain operations free from interruption rather than suffer without help. The outside assistance from informal sources could be linked to the significance of ensuring business continuity. Moreover, the pandemic raised the issue of cash flows for business owners, potentially highlighting an urgent need for external financial support (Cowling et al., 2020). Research indicated that the pandemic substantially negatively influenced small and medium-sized businesses, which often lack the financial reserves to withstand such adversities (Cowling et al., 2020; Rodrigues et al., 2021).

4.2.3 BUSINESS HARDSHIP

The pandemic forced many businesses to reconsider their operational strategies, leading to a significant number of temporary closures. According to a study conducted in late March and early April of 2020 on businesses with fewer than 500 employees, whose surveyed sample has an assuring matching on small to medium-sized businesses in the US Economic Census, 4 out of 10 surveyed businesses reported halting operations due to COVID-19 (Bartik et al., 2020). Business closure is a response to adversity caused by the pandemic for business owners, potentially due to supply chain disruption. However, Bartik et al. (2020) found that businesses prioritized concerns

regarding employee health and diminished demand over supply chain challenges when rating the decision regarding business closure disruption.

As the Centers for Disease Control and Prevention (CDC) announced, certain medical conditions are closely associated with getting very sick with COVID-19. Employees who are immunocompromised, obese, diabetic, or suffering from chronic disease (e.g., kidney disease, liver disease, lung disease), asthma, dementia, sickle cell disease, or who are 50 years of age or older, are at an elevated risk of developing severe COVID-19 symptoms (CDC, 2024). The concerns about health conditions resulted in a significant number of employees choosing to resign from their positions, creating a significant change in the dynamics of the workforce. Overall employment declined significantly in terms of headcount when the pandemic hit (Bartik et al., 2020). In the hospitality industry, for instance, the perspective of job insecurity induced by the pandemic introduced the lack of engagement and increased turnover intent of employees (Jung et al., 2021). The worldwide outbreak also imposed a toll on employees' mental health, particularly in terms of psychological distress and depression (Hamouche, 2020). Hamouche (2020) suggested that the primary stressors during a pandemic could be classified into five categories: 1) the perception of safety, threat, and risk of contagion; 2) information overload and the unknown; 3) quarantine and confinement; 4) stigma and social exclusion; and 5) financial loss and job insecurity. The impacts related to the COVID-19 pandemic, along with heightened stress and anxiety from significant stressors, may collectively contribute to a surge in job resignations (Batiste, 2024).

In response to the challenges, many business owners also seek to adapt by implementing new protocols that are intended to secure employee safety and maintain operational continuity (Nakat & Bou-Mitri, 2021). The change in operational procedures is the result of a variety of

factors, such as the necessity to preserve consumer trust, regulatory requirements, and public health recommendations (Lestari et al., 2022; Nakat & Bou-Mitri, 2021). Businesses in the food industry, for example, were compelled to prioritize employee health while adhering to food safety standards in order to continue operating and satisfy necessities (Nakat & Bou-Mitri, 2021). The implementation of social distancing measures has significantly impacted businesses that are particularly susceptible to the risks associated with COVID-19 (Kyung & Whitney, 2020). The dining and retail industry demonstrated heightened vulnerability because of the implementation of social distancing policies, as interactions that may elevate the risk of illness transmission are prevalent (Kyung & Whitney, 2020).

According to the above reviews on COVID-19 pandemic adversities and business hardships encountered by older business owners, this study proposes a positive relationship between COVID-19 adversity and business hardship:

H1: *Baby Boomer business owners who have suffered from COVID-19 adversities are more likely to encounter business hardships.*

4.3 METHOD

4.3.1 DATA AND SAMPLE

This study uses the 2020 Health and Retirement Study (HRS) Core dataset, which is the 15th wave of this survey, and the COVID-19 section was first added to the 2020 wave of the HRS dataset. The COVID-19 pandemic supplement data was collected through March 2020 to June 2021. The survey provides comprehensive information on the socioeconomic and demographic characteristics, health, finances, and psychological aspects of Americans over the age of 50. The 2020 HRS dataset includes seven sub-samples (HRS, AHEAD, CODA, WAR BABY, EARLY BABY BOOMER, MIDDLE BABY BOOMER and LATE BABY BOOMER).

- HRS: Respondents born 1931-1941;

- AHEAD: Respondents born 1923 or earlier;

- CODA (Children of Depression): Respondents born 1924-1930;

- WB (War Baby): Respondents born 1942-1947;

- EBB: Respondents born 1948-1953;

- MBB: Respondents born 1954-1959;

- LBB: Respondents born 1960-1965

The samples are selected based on the question from the survey: "Was your business affected because of the coronavirus pandemic?" After the screening, the dataset contains 629 U.S. Baby Boomer business owners whose businesses have been affected by the COVID-19 pandemic.

4.3.2 DEPENDENT VARIABLE

The dependent variable of interest in this study is business hardship. This is a latent variable that has been constructed from three observed variables: Close Business, Extra Policy, and Workers Quit, according to the responses to the questions related to business hardships. The three observed variables are used infer the latent dependent variable after conducting the technique of EFA.

Close Business

The variable Close Business was measured based on the answers to the question: "Did you have to close down business?" The variable was coded as 1 when a respondent reported, "Yes," and coded as 0 when a respondent answered, "No."

Extra Policy

The variable Extra Policy was constructed according to the question, "Did you have to institute new procedures, like sanitizing and/or distancing? or stop coming in to work?" The variable was coded as 1 if a respondent answered, "Yes;" otherwise, it was coded as 0.

Workers Quit

The variable Workers Quiz was created based on the question, "Did workers quit or stop coming in to work?" The variable was coded as 1 when a respondent selected, "Yes," and coded as 0 if "No" was selected.

4.3.3 INDEPENDENT VARIABLE

The independent variable used in this research is COVID-19 adversity, which is a latent variable that has been constructed with three observed variables: Financial Hardship, Income Decrease, and Bills Help, after running the EFA. The three observed variables are created based on the responses to the questions about COVID-19 related adversities.

Financial Hardship

The variable of Financial Hardship was coded from 0 to 6 which indicates the scale level of the financial hardships that the respondent has. 0 means the respondent has no hardship and 6 means the respondent has six kinds of hardships. The question used to create this variable is: "Did you experience any of the following?" Respondents can select all answers that apply:

1. Missed a regular payment on rent or mortgage

2. Missed a regular payment on a credit card, auto loan, or other debt

3. Missed a regular payment on utilities

4. Delayed a payment on, or were unable to pay, a medical bill

5. Struggled to afford food

6. Had trouble buying food even though you had money

Income Decrease

The variable of Income Decrease was measured according to the question: "Since the start of the coronavirus pandemic, has your income gone up or down or stayed about the same because of the pandemic?" The technique of adverse coding was applied. The variable was coded as 1 if a respondent answered, "Income went down." The variable was coded as 0 if a respondent reported, "about the same.," or "Income went up." Therefore, Income Decrease is a binary variable ranged from 0 to 1.

Bills Help

The observed variable of Bills Help was constructed by the responses to the question, "Because of the coronavirus pandemic, did anyone living outside your household, such as a parent, adult child, other relatives, or friends, help you [and your spouse/partner] with money or by paying bills?" The variable was coded as 1 if a respondent answered "Yes" and was coded as 0 if a respondent reported "No."

4.3.4 ANALYSIS

4.3.4.1 EXPLORATORY FACTOR ANALYSIS (EFA)

This study applied Exploratory Factor Analysis (EFA) to explore and justify the nature of the constructs by specifying the smallest number of interpretable latent factors. Six observed variables were selected from the dataset for the EFA. EFA was also used to indicate the strength of the relationship between each factor and each observed measure. Kaiser's Rule and the Parallel Method were used to determine the number of factors in the model. Orthogonal and oblique rotations were applied to identify the optimal variable groups of the factor model. According to the past literature and the variable description, the hypotheses of the two latent constructs using EFAs are:

H2: *COVID adversity is constructed by 'Financial Hardship', 'Income Decrease', and 'Bills Help'.*

H3: *Business hardship is constructed by 'Close Business', 'Extra Policies', and 'Workers Quit'.*

4.3.4.2 EXPLORATORY FACTOR ANALYSIS(CFA)

Based on the results from EFA, Structural equation modeling (SEM) along with Confirmatory Factor Analysis (CFA) using the R-Lavaan package (Rosseel, 2012) has been used for analyzing how well the hypothesized factor model fits the dataset. To be more specific, CFA can test whether business hardship is correlated with COVID-19 Adversity, test the significance of factor loadings, and test the model fits.

4.4 RESULTS

4.4.1 DESCRIPTIVE STATISTICS

The descriptive statistics of the key variables used in this study are presented in Table 4.2. The results indicate that during the COVID-19 pandemic, the respondents had an average of 0.85 financial hardship. Among the participant group, 60.9% of the respondents experienced an income decrease, and 6.38% of the respondents need help from others to pay for their bills. For the business owners, 44.77% of them closed their business due to the pandemic, and 69.74% of the respondents implemented extra policies such as sanitizing or distancing during the pandemic. Workers quit happened to 29.51% of the respondents' business during the pandemic.

Table 4.2 Descriptive Statistics

Variable	Mean/%	Std. Dev.	Min	Max
Financial Hardship	0.85	1.31	0	6
Income Decrease	60.90%		0	1
Bills Help	6.38%		0	1
Close Business	44.77%		0	1
Extra Policies	69.74%		0	1
Workers Quit	29.51%		0	1

4.4.2. EXPLORATORY FACTOR ANALYSIS (EFA)

4.4.2.1 KAISER'S RULE

The result of using Kaiser's Rule (Figure 4.2) to identify the number of latent factors in the model. The figure shows that two eigenvalues are larger than 1, so two latent factors should be kept in the model.
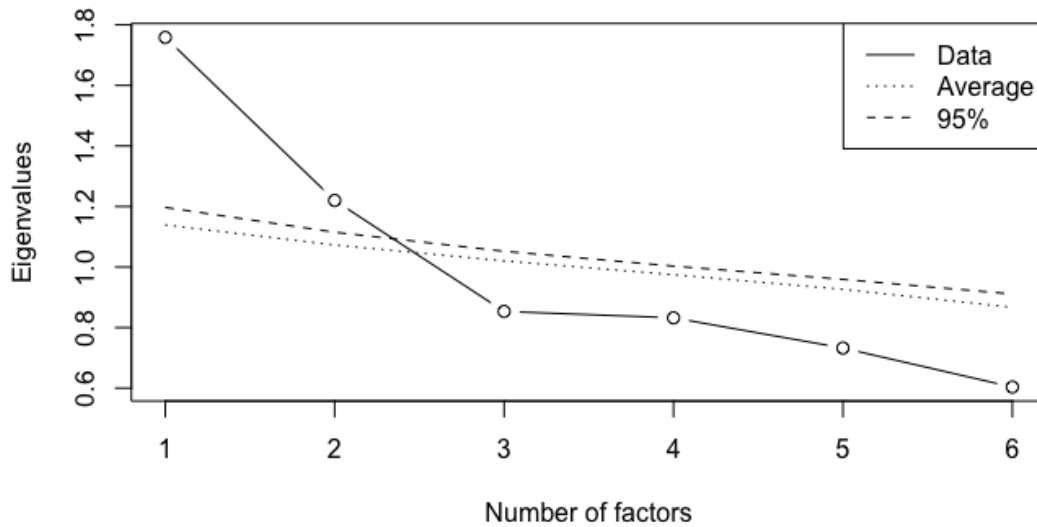
Figure 4.2: Kaiser's Rule
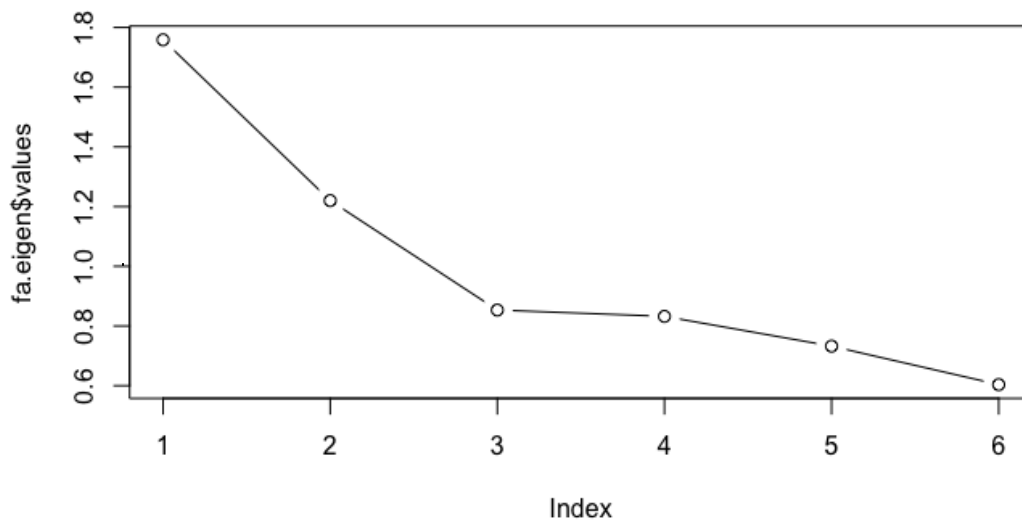
4.4.2.2 PARALLEL METHOD

The result of applying the Parallel Method is displayed in Figure 4.3. Similar to the result of Kaiser's Rule, two eigenvalues are above the 95th percentile line, so two latent factors should be maintained in the model.

Figure 4.3 Parallel Method

4.4.2.3 FACTOR ANALYSIS

Taken the results of Kaiser's Rule and Parallel Method together, the 2-factor model is the best fit for the data. The factor loadings of the 2-factor model have clear arrangements of six observed variables. After considering orthogonal and oblique rotations, orthogonal rotation makes the output more understandable and easier to interpret. The result of the 2-factor model with orthogonal rotation is shown in Table 4.3.

Table 4.3 Factor Loadings with Oblique Rotation

Loadings	Factor 1	Factor 2
Close Business	0.208	0.374
Extra Policies		0.346
Workers Quit		0.623
Financial Hardship	0.738	0.200
Income Decrease	0.419	
Bills Help	0.391	

Note: Test of the hypothesis that 2 factors are sufficient. The chi square statistic is 1.32 on 4 degrees of freedom. The p-value is 0.858

The result from Table 4.3 clearly indicates that 'Close Business', 'Extra Policies', and 'Workers Quit' are correlated to Factor 1. 'Financial Hardship', 'Income Decrease', and 'Bills Help' are related to Factor 2. The results have confirmed Hypotheses 2 and 3. Based on the estimated factor loadings, the factor structure could be:

- Business Hardship (Factor 1): Close Business, Extra Policies, Workers Quit
- COVID-19 Adversity (Factor 2): Financial Hardship, Income Decrease, Bills Help

4.4.3 CONFIRMATORY FACTOR ANALYSIS (CFA)

4.4.3.1 SEM MODEL

Based on the results from EFA, CFA is used to test how well the hypothesized 2-factor model fits the dataset. The SEM framework for this study is shown in Figure 4.4. According to the path diagram shown below, COVID Adversity is a latent independent variable constructed by three observed variables: Financial Hardship, Income Decrease, and Bills Help. Business Hardship is a latent dependent variable that is constructed by the observed variables: Close Business, Extra Policies, and Workers Quit.

Figure 4.4 SEM Framework
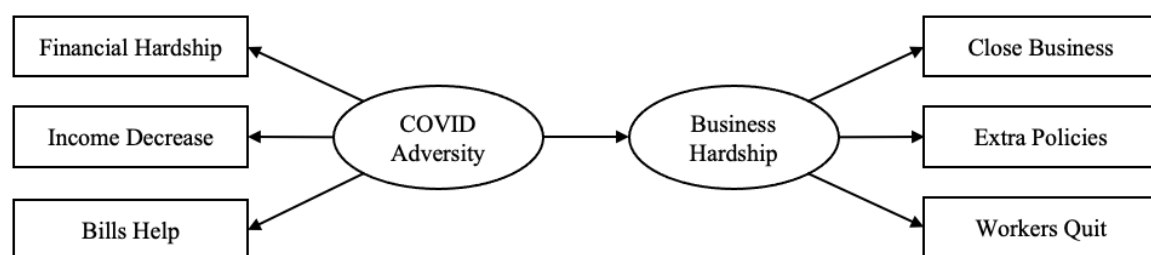
4.4.3.2 MODEL FITS

The result of model fit is shown in Table 4.4 using the R-Lavaan package in R. The result of Table 4.4 illustrates that the model fits the data ideally. The p-value of the chi-square test is

0.157 > 0.05, which indicates that the model fits the data well. All other fit measures also indicate that the model fit is good. (GFI and AGFI are both greater than 0.9; RMSEA = 0.029 < 0.1; CFI = 0.982 > 0.9; NFI = 0.947 > 0.9).

Table 4.4 Model Fits

Fit Measures	
P-VALUE	0.157
GFI	0.993
AGFI	0.981
RMSEA	0.029
CFI	0.982
NFI	0.947

4.4.3.3 CFA MODEL RESULTS

The results of factor loadings and regressions are shown in Table 4.5. In the results, all the factor loadings of business hardship and COVID-19 adversity are significant ($p < 0.001$). The result of the regression indicates that COVID-19 adversity is a significant factor in predicting business hardship ($b = 0.091$; $p < 0.001$), and they are positively correlated. The results have confirmed Hypothesis 1.

Table 4.5 CFA 2-factor Model

	Estimate	Std. err.	P>z	Sig.
Latent Variables:				
Business Hardship =~	1.000			
Close Business	0.564	0.138	0.000	***
Extra Policies	0.954	0.209	0.000	***
Workers Quit				
COVID Adversity =~				

	Estimate	Std. err.	P>z	Sig.
Financial Hardship	1.000			
Income Decrease	0.153	0.036	0.000	***
Bills Help	0.076	0.018	0.000	***
Regressions:				
Business Hardship =~				
COVID Adversity	0.901	0.025	0.000	***
Variances:				
Close Business	0.183	0.018	0.000	***
Extra Policies	0.191	0.013	0.000	***
Workers Quit	0.150	0.016	0.000	***
Financial Hardship	0.475	0.273	0.082	
Income Decrease	0.210	0.014	0.000	***
Bills Help	0.050	0.003	0.000	***
Business Hardship	0.051	0.015	0.001	**
COVID Adversity	1.303	0.290	0.000	***

This study also runs a heterogeneity analysis for respondents who are between 50 to 60. The results of factor loadings and regressions are shown in Table 4.6. At this time, factor loadings are still significant ($p < 0.05$), but business hardship and COVID adversity are no longer correlated to each other ($b = 0.037; p = 0.130$). The result suggests that the relationship between financial hardship and COVID adversity is only significant for older business owners.

Table 4.6 CFA for Respondents Age 50-60

	Estimate	Std. err.	P>z	Sig.
Latent Variables:				
Business Hardship =~				
Close Business	1.000			
Extra Policies	0.608	0.255	0.017	*
Workers Quit	1.069	0.484	0.027	*
COVID Adversity =~				
Financial Hardship	1.000			
Income Decrease	0.146	0.052	0.005	**

Bills Help	0.076	0.027	0.005	**

Regressions:
Business Hardship =~

COVID Adversity	0.037	0.024	0.130	

Variances:

Close Business	0.196	0.031	0.000	***
Extra Policies	0.169	0.019	0.000	***
Workers Quit	0.150	0.032	0.000	***
Financial Hardship	0.537	0.612	0.380	
Income Decrease	0.197	0.023	0.000	***
Bills Help	0.054	0.006	0.000	***
Business Hardship	0.052	0.028	0.066	
COVID Adversity	1.844	0.649	0.005	**

4.4.3.4 PATH DIAGRAM

The path diagram using the R-Lavaan technique for path analysis is shown in Figure 4.5. The estimations of coefficients are displayed on the lines of the figure. The results of the path diagram are consistent with the results of the regression analysis.

Figure 4.5 SEM Path Diagram

0.050*** BIH

0.076***

WrQ 0.150***

0.210*** InD   0.153***   C_A   0.091***   B_H   0.954***

0.564*** ExP 0.191***

1.303***   0.051**

0.475 FnH

CIB 0.183***
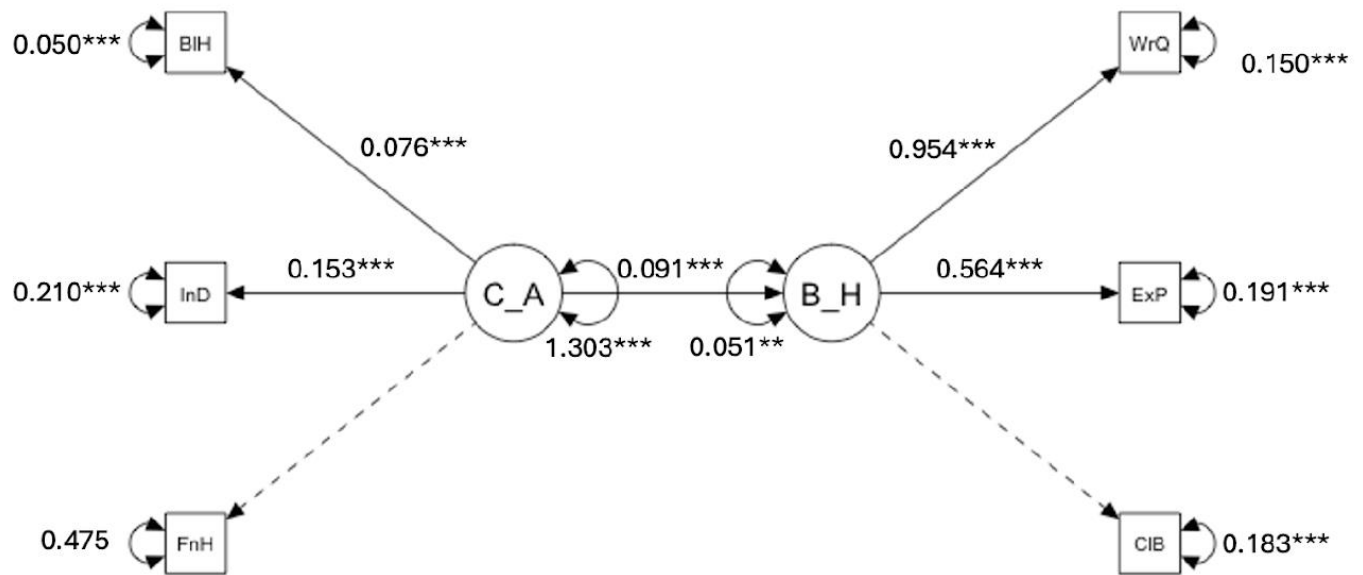
Note. Significance: *p < .05, **p < .01, ***p < .001
C_A: COVID Adversity
B_H Business Hardship
BIH: Bills Help
InD: Income Decrease
WrQ: Workers Quit
ExP: Extra Policies
CIB: Close Business

4.5 SUMMARY AND CONCLUSION

4.5.1 DISCUSSION

This study introduced the organization theory and CHS framework to develop a theoretical framework to explain the relationships between COVID adversity and business hardship in the context of the COVID-19 pandemic. As expected, this study found that Baby Boomer business owners who suffered from COVID adversities were more likely to have business hardships. According to the results of factor analysis after using Kaiser's rule and the parallel method, COVID adversities include financial hardship, income decrease, and the need for financial assistance from others to pay for bills. Business hardship was constructed by

business closures, workers quitting their positions, and the implementation of policies in response to the pandemic.

The results indicate that most of the Baby Boomer business owners experienced an income drop during the COVID-19 pandemic, and several of them even needed help from their family and friends to pay for their bills. Also, 44.77% of Baby Boomer business owners closed their businesses due to the COVID-19 pandemic, which is consistent with the results of the research by Deason and Fatouros (2021). Even if the business was not closed, most of the business owners conduct extra policies such as sanitizing, social distancing, and remote working to survive during the pandemic. The findings also confirmed the research by Guidant (2020) that one of the biggest challenges faced by Baby Boomer business owners was the loss of workers due to employee resignations. Moreover, the results of this study are consistent with broader research documenting the widespread economic disruptions and adaptive strategies adopted by small business owners globally during the pandemic (Bartik et al., 2020; Fairlie, 2020).

The EFA using both Kaiser's Rule and the Parallel Method consistently indicated a two-factor solution, supporting the conceptual distinction between business hardship and COVID-19 Adversity. These findings were further validated by the consistent CFA results. This structure is also consistent with prior studies that have identified multidimensional impacts of the pandemic, separating direct business effects from broader financial adversity (Bartik et al., 2020; Cowling et al., 2020). Overall, the findings of this study support the theoretical framework, and provides evidence that business hardship and COVID-19 adversity are empirically significant, but distinct dimensions of pandemic's impact (Cowling et al., 2020). The SEM results demonstrate a significant positive association between COVID-19 adversity and business hardship confirming the hypothesis that greater adversity during the pandemic was associated with higher levels of

business hardship. This finding is in line with previous research showing that financial shocks and financial constraints exacerbate operational challenges of small businesses during crises (Fairlie, 2020).

The heterogeneity analysis for respondents aged 50 to 60 revealed that, while factor loadings remained significant, the correlation between business hardship and COVID-19 adversity was no longer statistically significant. This suggests that the relationship between COVID-19 adversity and business hardship may be moderated by age or related factors. More research is needed in the future to further explore the mechanisms underlying the age-related differences observed in this study and to examine the long-term consequences of pandemic induced hardship on business recovery and resilience (Bartik et al., 2020; Cowling et al., 2020; Fairlie, 2020).

4.5.2 IMPLICATION

The results of this study have practical implications for U.S. business owners. Business owners should have formulated special policies to survive and recover from the COVID-19 pandemic and prepare in advance for any future outbreak. Policies protecting employees' income could be effective since the income decrease could directly result in employees quitting, which might cause the business to close. Business owners might try to cut down operating expenses; for example, asking some employees to work virtually could be one approach. Some stimulus payments for employees could be helpful in alleviating their financial hardships, so that the company will be less likely to encounter business hardships.

Practical implications for policymakers or government agencies could also be inferred from this research. Any policies or acts that can help mitigate the decline in consumers' income will be effective in protecting business owners. The economic impact payment issued by the IRS

is a practical example that not only helps individual workers but also assists business owners to survive the pandemic. Government agencies could also work on consumers' financial hardships to help decrease COVID-19 adversities. For example, one category of financial hardship is "missed payments on rent or mortgage." Providing assistance with paying rents and mortgages or regulating forbearance periods could be effective. The government, not just family, may help consumers who can't pay bills. The Emergency Rental Assistance Program (ERAP) from the U.S. Department of the Treasury could be one example of this implication.

Direct policies in helping business owners could also be efficient in helping U.S. business owners to survive the pandemic. Acts or policies that will support business owners to prevent them from closing the business will be helpful in decreasing business hardships. Since companies need to follow some special regulations by the government during the pandemic, like social distancing and sanitizing, the government can help these firms cut down the expenditures related to extra policies during the pandemic to avoid adding extra financial pressure on these firms. At the end, any policies that can help combat unemployment will be vital to helping business owners. Government agencies might aim to increase employment rates and prevent wage decreases in order to help U.S. businesses survive and recover from the unforeseen financial crises.

The findings of this study could also be applied to other adversities that are crisis like situations. Income decrease, needing help to pay bills, and financial hardship could similarly happen to other adverse events. For example, during an economic downturn, business owners could still experience income decrease because of the poor performance of their businesses. The relationship between the adverse effects of economic downturn and business hardship will still hold in that situation. Therefore, the findings inform business owners to prepare for other

unforeseen crisis like events to enhance their financial resilience. On the other hand, business closure, workforce reduction, and extra policies are common interventions applying by business owners during any crisis like situations. And these three approaches are supported by general theories when businesses encountered hindrance stressors or adverse events. Supported by the CHS framework, business closure is an example of avoiding the hindrance stressor used by entrepreneurs, because the hindrance stressor tends to cause negative effects so that the entrepreneur tends to avoid it. According to the organization theory, workforce reduction and implementing extra policies are examples of equilibrating mechanism used by entrepreneurs when adverse events happened to their businesses. Therefore, the results of the study could be generalized to other crisis like situations. And the findings of the study should inform business owners to improve or avoid their business hardships by decreasing the impacts of the adverse effects of financial crises, so that the financial resilience of their businesses will be enhanced.

4.5.3 LIMITATION AND FUTURE DIRECTION

This study has several limitations that need careful consideration and future research. Firstly, due to the characteristics of the HRS 2020 dataset, most of the respondents fall into the 50 and older age range, it is hard to compare COVID adversities and business hardships sustained by Baby Boomers to younger generations. This study only uses respondents between 50 to 60 for heterogeneity analysis, and the result indicates that COVID adversity and business hardship is correlated with each other only for Baby Boomer business owners. However, it is unlikely to compare Baby Boomers with Gen Xers or Millennials because of the limitation of the dataset. In this sense, future research could be designed with a more representative dataset including participants in all age groups, so that the results will indicate whether there are generational differences in pandemic related adversities and business hardships. Another

limitation of this study is that the study only uses the data collected during the COVID-19 pandemic. In order to run a more general analysis or make more inclusive conclusions, future study could be conducted under backgrounds with various financial shocks. In this sense, the consistency of the results could be validated with different major events, and more general findings about building up financial resilience for business owners could be conceptualized.

4.5.4 CONCLUSION

This study has contributed to the literature theoretically. Although single factors of business hardships and COVID adversities have been discussed in depth by past literature, there is limited research on addressing their relationships with combined latent factors. This research has created the latent factors of business hardship and COVID adversity with the technique of EFA, supported by the organization theory and CHS framework. After that, the model has been validated by the technique of CFA using the national representative dataset. The relationships between COVID adversities and business hardships have been comprehensively investigated by a SEM model. Moreover, the findings of this essay have contributed to business hardship and pandemic adversity-related research by developing the comprehensive theoretical framework to explain their relationships. The confirmation of the validity of the model provides strong evidence for applying the framework for studying business owners' financial resilience and pandemic-related hardships.

Baby Boomer business owners make up a substantial proportion of small business owners in the United States. The widespread and significant impact of the COVID-19 pandemic underscores the importance of investigating the factors that may contribute to business hardships within this demographic. This essay contributes to the literature in this field by outlining the vast array of characteristics connected with pandemics that impact business challenges. The

techniques of EFA and CFA are introduced and validated in this study so that they can benefit future research on COVID-related hardships. The model of this study clearly justifies the dimensionality of COVID-19 adversity and business hardship with significant factor loadings. This study specifically identifies business closures, the implementation of additional protective policies, and employee resignations as significant predictors of business hardship. During the pandemic, financial hardship, reduced income, and the need for assistance from outside the household to cover essential expenses emerged as significant indicators of the adversities Baby Boomer business owners faced. This essay provides empirical evidence that exposure to COVID-19 adversities increases the likelihood of business hardships among business owners. Baby boomer business owners function as an equilibrating mechanism, as proposed in organizational theory, implying that the owner restores equilibrium in the presence of disruption. However, a business owner's ability to act as an equilibrating mechanism may be constrained when faced with overwhelming adversities, such as those brought on by the global COVID-19 pandemic, particularly for Baby Boomers, who often confronted challenges related to limited capital and cash flow (Guidant, 2020).

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CHAPTER 5

CONCLUSION

This dissertation has offered innovative approaches and techniques to promote the understanding of consumers' behavioral finance and provided actionable insights to improve consumers' financial behavior and financial well-being. The three essays have comprehensively investigated the impacts of crisis related event on behavioral finance for individuals, families, and businesses. Consumers' retirement planning adequacy, financial behaviors, and business hardship have been extensively discussed in the background of the COVID-19 pandemic in the three essays. Throughout the dissertation, the study explores how pandemic-related adversities such as financial hardship, job loss, income decrease, and financial stress affect retirement adequacy, financial behaviors, financial advice seeking, and business challenges during financial shocks. The takeaways from a series of three studies will contribute to a better understanding of improving consumers' retirement adequacy, enhancing consumers' financial behavior and financial well-being, and building up financial resilience for individuals, families, and businesses during a pandemic or other disruptive event. The findings of the dissertation will have implications for consumers, financial services providers, policymakers, government agencies, and business owners in preparing for unforeseen financial shocks and recovering rapidly from the challenges brought on by the adverse events.

This dissertation primarily focuses on Baby Boomers due to the unique timing within their life cycle. As the cohort nearest to retirement age, Baby Boomers are more likely to be affected by the adversities of the COVID-19 pandemic compared to Gen Xers and Millennials.

Therefore, particular attention is given to their retirement adequacy, financial behaviors, and business performance during the pandemic. The findings of this dissertation indicate that Baby Boomers experienced the highest levels of financial stress and the highest unemployment rate during the COVID-19 pandemic. In response, financial service providers, policymakers, and government agencies should adopt targeted strategies to help Baby Boomers better prepare for retirement, alleviate financial pressure, enhance financial behaviors, and safeguard against business-related hardships.

As the demand for retirement planning services increases, especially during a pandemic, the results of the first essay provide guidance for financial planners and policymakers to help consumers improve their behaviors in preparing for retirement. Using the life-cycle theory and the theory of planned behavior, the first essay applied the new measurement of retirement adequacy and tested its validity with the national representative dataset SCF 2022. Baby Boomers were better prepared for retirement and were less vulnerable to the adverse effects of the COVID-19 pandemic compared to Gen Xers and Millennials. Retirement adequacy was negatively associated with COVID-19 adversities, including financial hardships and having trouble paying bills. The significant findings of the essay add to the literature on retirement adequacy and generational differences in retirement planning and the impact of COVID adversities on retirement adequacy. Policymakers and financial service providers should understand the generational differences in retirement preparedness, the impacts of COVID-19 adversities on retirement planning, and the financial difficulties of younger generations during the COVID-19 pandemic so that they can make effective policies and understand consumers' and families' needs.

Consumers and households also experienced financial stress during the COVID-19 pandemic, and the financial pressure will impact their financial behaviors as well. The second essay mainly discussed how financial stress changes the relationships among FSE, financial advice seeking, and financial behavior. Under the guidance of the financial advice seeking framework and stress and coping theory, the second essay constructs a moderated mediation framework to analyze the relationships. Baby Boomers had the highest financial stress during the COVID-19 pandemic compared to Gen Xers and Millennials, but they were less likely to seek external financial advice from professionals. This may be attributable to their higher average FSE, which might suggest that they have confidence in their financial management skills instead of seeking external help. Additionally, financial stress moderates the role of financial advice seeking from FSE to financial behavior. The findings of this essay will provide implications for consumers, financial service providers, and policymakers in preparing for unforeseen financial events such as a pandemic and building up financial resilience.

The COVID-19 pandemic also has significant negative impacts on business operations. The third essay mainly focuses on explaining the relationships between the COVID-19 pandemic adversities and the business-related hardships of Baby Boomer business owners. The essay applied the organization theory and the CHS framework to underpin the theoretical framework. The technique of EFA was used for factor analysis, and CFA was applied to confirm the feasibility of the model. The results of this essay show that 60.9% of Baby Boomer business owners experienced an income decrease, and 44.77% of them closed their businesses due to the COVID-19 pandemic. The findings of the study indicate that Baby Boomer business owners who suffered from the COVID-19 pandemic were more likely to have business hardships, such as business closure. This study contributes to the literature on the comprehensive analysis of

COVID-19 adversity and business hardship as latent factors. The takeaways of the essay should inform policymakers and government agencies in protecting Baby Boomer business owners from the adverse effects of the pandemic and helping enhance financial resilience regarding unexpected financial shocks.

In summary, the findings of the first essay indicate that Baby Boomers are better prepared for retirement than Gen Xers and Millennials, and Baby Boomers are less vulnerable to unexpected pandemic adversities. Consumers who experienced financial hardships or had trouble paying bills are less likely to be prepared for retirement. Then the second essay had a more comprehensive analysis of financial behaviors during the COVID-19 pandemic while focusing on Baby Boomers. The outcomes of the second essay suggest that Baby Boomers will experience higher financial stress during a pandemic, and unemployment will be much higher than for Gen Xers and Millennials. Even though Baby Boomers have substantial financial stress, they are less likely to seek advice from financial professionals. Financial advice seeking and financial stress will change the relationship between FSE and financial behavior. The third essay extends the discussion from individual and family to business. The findings of the third essay indicate that most Baby Boomer business owners have experienced an income drop and closed their businesses during the COVID-19 pandemic. And Baby Boomer business owners who suffered from pandemic-related adversities are more likely to have business hardships, such as workers quitting and business closures. Therefore, the three essays provide a comprehensive analysis of the negative effects of the COVID-19 pandemic on consumers' financial behaviors and investigate Baby Boomers' generational differences compared to Gen Xers and Millennials on their financial wellness and financial behaviors.

This dissertation has made several theoretical contributions. It has confirmed the feasibility of using the life-cycle framework and the theory of planned behavior to investigate people's retirement behavior and generational differences in retirement planning. The innovative measurement of retirement adequacy has been tested for its consistency with the updated dataset. The measurement is anticipated to be adopted by more scholars in any future research related to people's retirement planning analysis. Also, the financial help-seeking framework and the stressor and copying theory are validated to create a moderated mediation model to analyze the relationships among FSE, financial behavior, financial advice seeking, and financial stress. The moderated mediation model has a comprehensive overview about the correlations between FSE and financial behavior during any major event such as a pandemic, when consumers are experiencing financial stress and has increasing demand for financial advice seeking. The framework is anticipated to be used by future studies targeting on improving consumers' financial behavior and financial well-being during any financial shocks. Lastly, the dissertation has confirmed the feasibility of organization theory and the CHS framework to investigate business owners' hardships during financial crises. The technique of EFA has supported the construct of COVID adversity and business hardship, while there is no uniform definition about those concepts. The approach of CFA has tested the validity of the latent constructs and confirmed the fitness of the model. In future research, these techniques could be applied by scholars aiming to construct or measure financial adversity and business hardship.

The dissertation has offered practical implications for policy makers and financial service providers. Policymakers and government agencies should implement timely policies and programs to support individuals, families, and businesses in mitigating pandemic-related adversities and business hardships. Enhancing access to financial resources is essential to enable

rapid survival and recovery from the challenges brought on by the pandemic. Also, extra attention should be given to Baby Boomers since they are close to retirement and may undertake more responsibilities during a financial shock. Any policies that could help mitigate Baby Boomers' financial stress and protect them from unemployment will be beneficial to this generation.

Financial planners should consider generational characteristics and differences to help improve consumers' retirement adequacy, enhance consumers' financial behavior and financial well-being, and reinforce financial resilience for individuals, families, and businesses during a pandemic. Financial planners are anticipated to provide tailored advice based on clients' personal situations. To be specific, financial planners are anticipated to recognize the benefits of the innovative measurement of retirement adequacy. Compared to traditional standards to measure retirement adequacy, the measurement introduced by this dissertation is more personalized and tailored. Each person will get a unique baseline of retirement adequacy, instead of using the same standard for everyone. With the new measurement, financial planners can calculate clients' retirement adequacy more accurate, so that financial planners will have a better understanding of clients' situation and provide suitable suggestions. Also, financial planners are expected to received specialized training not only in financial planning, but also in behavioral finance, emotional control, and client communication. The findings of the dissertation indicate that financial stress can impact consumers' financial advice seeking behavior. Therefore, it is crucial for financial planners to understand the techniques of stress control for clients, so that the process of financial advice seeking will be more efficient.

Additionally, financial planners should consider increasing the accessibility of their services to make the choice of financial advice seeking more general for consumers, especial

during financial difficulties. Reducing the barrier of seeking financial advice could be one effective approach such as lowering the requirement for minimum asset under management, and decreasing the cost of hiring a financial planner and using the services. Also, financial planners could make their services available in person, by phone, online, and even through mobile apps. All of the practical implications for financial planners will assist them provide more effective and tailored services to clients, so that consumers' overall financial behavior and financial well-being will be improved.

The dissertation comprehensively discussed the impacts of crisis related event on consumers' financial behaviors, financial security, and financial resilience in the levels of individual, family, and business. Generational differences have been investigated throughout the study to provide tailored implications to different generations. In addition to financial concerns, the findings also underscore the importance of psychological and behavioral considerations to enhance financial resilience during crisis related events. The takeaways of the dissertation have provided practical implications to financial planners and policymakers to implement evidence-based policies and recommendations for consumers to survive and recover from unexpected future crisis. In addition to specific implications, the findings of the dissertation could be applied to more general situations and events, because all the theoretical frameworks created by this dissertation are supported by general theories that can be applied to similar topics. The theoretical models and measurement tools introduced by the dissertation could be applied to general topics to access financial well-being under financial crisis. In this sense, the takeaways of the dissertation can be applied to any crisis related situation, while targeting on improving consumers' financial behavior and financial well-being.