

A study of financial risk propensity and the hedonic drivers of cryptocurrency investment

by

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B.A., Rockhurst University, 2009
M.A., University of Missouri-Kansas City, 2011
M.B.A., Golden Gate University, 2015

AN ABSTRACT OF A DISSERTATION

submitted in partial fulfillment of the requirements for the degree

DOCTOR OF PHILOSOPHY

Department of Personal Financial Planning
College of Health and Human Sciences

KANSAS STATE UNIVERSITY
Manhattan, Kansas

2025

Abstract

A complete understanding of why individuals invest in cryptocurrencies has not yet been achieved, especially considering the asset's volatility. Given that financial planning professionals are charged by the CFP Board to fully understand a client's personal circumstances when offering financial guidance, a thorough understanding of the individual and predicting factors affecting cryptocurrency investment is warranted. Specifically, this dissertation aimed to uncover if financial risk propensity and hedonism influence the behavioral intention to, and actual adoption of, cryptocurrency for investing purposes. To learn more about these phenomena, this study used a secondary dataset, the National Financial Capability Study (NFCS), and gathered primary data using the Hedonic-Motivation System Adoption Model (HMSAM) and Domain-Specific Risk-Taking (DOSPERT) frameworks. Results from Structural Equation Modeling (SEM) and logistic regression show that the hypothesized relationship was supported for curiosity and joy (which had a positive relationship with behavioral intention [BI] and cryptocurrency investment) but rejected for the financial-gambling measure and perceived usefulness (PU).

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Acknowledgements

I want to thank my wife, Megan, who has sacrificed so much to allow me the privilege of this journey. She has been at home, managing our lives and caring for our young kids for all the time I have spent sitting in class, researching, or typing in front of a computer. I get to write this acknowledgment section because she is in the trenches packing lunches, making breakfast, dropping the kids off at school, taking them to sick visits at the doctor, forcing them to brush their teeth and take baths, and enduring laborious nighttime routines. I will officially admit forever, here in this published document, that her work was more demanding than mine. Understand that she allowed me to do the Ph.D. after patiently waiting for me to complete an M.B.A., CPA, CFP®, open, run, and sell a business, and other projects *ad infinitum*. Her patience, in my estimation, is endless; she is the most patient person I have ever known. Megan, you are my inspiration and true love. My children, Nick, Annie, and Levi: you are my treasure and purpose. As Psalms 127:3-5 says, “Behold, children are a heritage from the Lord, the fruit of the womb is a reward. Like arrows in the hand of a warrior, so are the children of one’s youth. Happy is the man who has his quiver full of them.” I am unsure if my quiver is full, but my heart certainly is.

My extended family, including my mom, Jan, dad, Richard, stepdad, Chris, siblings Jackie, Jessica, Amy, and Erik, have spent countless hours teaching me lessons that have made me who I am. *Hard work, clean living. Accountability and owning mistakes. Leave things better than you found them.* Although I might not have known, at the time, the importance of collecting a goose-neck trailer full of walnuts and selling them to go on vacation, sweeping cigarette butts off the shop floor, or simply showing up every time, I certainly do now.

To those who have gone to war with me in this thing we call a Ph.D., specifically, Ashlyn Rollins-Koons, Shelitha Smodic, and Lena Gan – and before that – Joanne Wu, Cheryl Rauh, and Stephen Azaloff. Thank you! I remember our early, frank conversations about how hard a Ph.D. can be on mental health. How helpful that transparency was when times got hard! You sent love and gifts to support my wife and me during the most challenging season of our lives. I could complete and keep my family and marriage intact, mainly because you all stuck with me and answered my texts and calls. Also, thank you to those outside my cohort, including Matthew Russell, Christina Lynn, Chet Bennetts, Eric Ludwig, Ives Machiz, Daniel Yerger, Tanya Staples, Juan Gallardo, Jeffrey Furlong, Darin Carroll, Ruth McCaleb, Connie Unruh, Kimberly Varady, Jake Walters, and Josh Harris. Donovan Sanchez, thanks for being my summer roommate and co-author. To Jennifer Warren, Andy Doto, and the team at Quest Analytics: thanks for sharing your data science and analytics knowledge over the summer. For the team at Intellicents: thanks for helping me gain real-world experience in financial advising outside of the ivory tower. Thank you to the teaching, research, and industry professionals as well as the colleagues who offered support including David Blanchett, Colin Slabach, Wade Pfau, Michael Finke, Aditi Routh, Cheryl McConnell (whose words regarding teaching as a vocation stick with me to this day), Myles Gartland, Mike Wilkins, William Bazley, Felix Meschke, Kurt Krogull, Claire Rosenfeld, Levi Russell, Kelly Welch, Patrick Downes, Jana Fitchett, Cynthia Steutermann, Ken Ward, Megan Goff, Jolene Phillips, Lori Herpich, Justin Fitzpatrick, Tao Guo, Zhikun Liu, Mathew McCoy, Jordan Al-Zu'Bi, Rob Williams, Jennifer Hawthorne, Brandon Nelson, Nancy Steinacker, Joe Watkins, and Ross Riskin. A final thanks to my CFP® study partners William Masse and Tim Fratacelli.

I entered this program wondering if I could ever become a researcher. I am exiting this program as a published academic. This is a testament to the dedication, attention, and brilliance of the many faculty and staff who have supported me in this program. This is chiefly a nod to my committee, which includes chairs Drs. Congrong Ouyang and Martin Seay as well as Drs. Blake Gray and Tareque Nasser. I understand why peer review is so critical in academia: my work is much improved – and worthy to see the light of day – due to your feedback and suggestions. Others in the program – including Dr. Megan McCoy (who added me to a research project before I even started taking courses!), Dr. Stuart Heckman, Dr. HanNa Lim, Dr. Maurice MacDonald, Dr. Blain Pearson, Dr. Michael Kothakota, Dr. Derek Lawson (who continually surprises me with his SEM mastery), Dr. Elizabeth Kiss, Tierra Diamond, and Morgan Graham – you have my admiration and respect.

I am a better person – personally and professionally – because of my mentors. Their investment of time and energy in my life has made a profound and lasting impact. Thank you to Matthew Van Hoesen, who believed in me when my career had stalled, saw something within me that others did not, and challenged me to reach for more. To Nathan Harness: thank you for your guidance and, more importantly, for your life of integrity dedicated to serving others. A shout-out to the supervisors throughout my career, including Sean Grube, Megan Gonzalez, Greg Hladik, Michelle Crim, Nathan Marticke, Mya Lawrence, Carol Povolish, Shane Smeed, Kena Wolf, and Justin Steitz. Other guides include Drs. Daniel Stramara (who, I am convinced, quite literally saved my life), Thomas Curran, Ted Juhl, Chris Anderson, Jennifer Rinella, Bill Stancil, Matthew Quick, and Daniel Martin; Steven Robinson, Amy Mulligan Kennedy, my neighbors especially Tom and Sue Brauner and Kevin and Heather Johannesen, and many others remain

unmentioned. Additionally, a special thank you to Dr. Karl Kammerer. You are a trusted advisor and, more importantly, a great friend.

Finally, I thank Kansas State University for helping fund this research through the Graduate Research, Scholarly and Creative Activities, and Discovery (RSCAD) Grant. I hope that this generosity will be life-giving to others. May the knowledge contained herein be helpful for academics, practitioners, and clients alike!

Dedication

This dissertation is dedicated to my lost children, Lucas and Sarah Anderson. Nature conspired to keep us apart. Your spirits remain in the laughter, the subtle flow of the wind, a ray of sunshine, the smile of a stranger, and most importantly, in our hearts. Megan and I miss you and wonder what our life would have been with you by our side. Blessed repose and eternal memory!

Chapter 1 – Introduction

Blockchain and its accompanying cryptocurrencies have had their share of the spotlight in recent years. With the meteoric rise of Bitcoin’s price and the stunning collapses of various cryptocurrency exchanges and companies, including FTX, the technology has collected its fair share of evangelists, critics, and casualties. Even more astonishing is the volatility¹ surrounding cryptocurrency as an investment: dizzying ten-thousand-dollar swings are not uncommon. A study by Chu et al. (2017) noted that cryptocurrencies “exhibit extreme volatility” only befitting “risk-seeking investors.” Ahmed et al. (2024) conducted a cryptocurrency volatility systematic review and found that cryptocurrency volatility is not only present but multifaceted (including historical, clustering, asymmetric, spillover, and mean reversion dynamics), in addition to evidence of cryptocurrency market inefficiency and documented extreme volatility. A look at cryptocurrency from mid-2023 through 2024 is telling. According to CoinMarketCap (2024a), on April 1, 2023, Bitcoin’s value was approximately \$28,500. Just one year later, it was hovering around \$70,000. By early December 2024, it skyrocketed to over \$100,000.

Unfortunately, this volatility comes with consequences for individual investors. Before the rise in Bitcoin’s price in early 2024, the “crypto boom” became the crypto bust, with bruised investors seeking safer assets such as gold (Singh, 2023). Fortunes are won – and lost – quickly in the cryptocurrency markets. Proponents claim the valuation of cryptocurrencies like Bitcoin will rise while critics foretell a plunge: either way, enthusiasm persists (Sider & Eisen, 2018). Investors, unfortunately, are caught in the middle of these extremes. Even so-called stablecoins (cryptocurrency bolstered by assets) failed to maintain predicted value in the face of external

¹ Woebeking (2021, p. 296), in a study on cryptocurrency volatility, notes that volatility is finance’s most commonly used risk metric.

pressures (Ostroff, 2022). Disparate advice flows from many sources. All the while, regulators such as the Financial Stability Oversight Council scramble to keep up while calling for increased regulation (Ackerman & Kiernan, 2022). *The Wall Street Journal* reporters Driebusch and Vigna (2022) aptly summed the chaotic state of affairs:

At times, crypto has looked like a combination of Beanie Babies, dot-com stocks and the Velvet Underground: It is manic, it is money, and all the cool people are into it. It has also shared characteristics with other bubbles throughout history, marked by speculation bordering on delusion, disregard and disrespect for risk, and greed.

How can consumers behave prudently in this space of ambiguity and risk? Investors must regularly experience the eerie feeling of sand shifting underfoot.

At the same time, the emergence of blockchain and cryptocurrencies came at the tail end of a technological revolution. The rise of computers has led to the upending of many traditional processes and business models, now ubiquitous across society. The modern phones in our pocket are cheaper and more capable than desktop computers from a decade ago. More recently, machine learning and artificial intelligence have made computational power more personalized. The proliferation of this technology has had a profound impact on daily living.

These technological developments are particularly revolutionary in personal finance. No longer does one need to visit the local bank: the teller has been replaced by the ATM and mobile app. No longer does one need to shout trades over the open exchange: millions of stocks are bought and sold with the click of a button. No longer does one need to visit the local financial planner (although many do): personalized advice comes from Robo-advisors and chatbots. To say technology has revolutionized finance in general – and the human race’s relationship to money specifically – is an understatement.

1.1 Problem Statement

As these revolutions unfold, a lingering question remains: Why do investors choose to invest in cryptocurrency and board the roller coaster? Indeed, several government and industry entities have warned about the inherent risk in cryptocurrency due to value fluctuations, lack of privacy, few insurance or legal protections, varying quality of companies in the sector, and divergence from fiat currencies (*Crypto Assets*, n.d.; *Cryptocurrency Risks*, 2025; *Hazards of Investing in Cryptocurrency*, 2022; *NASAA Informed Investor Advisory: Cryptocurrencies*, 2018). Researchers have acknowledged that cryptocurrency is among the riskiest assets to hold in a portfolio (Andrianto, 2017), and some investors have learned this lesson the hard way through the rise and fall of the value of their holdings (Fanelli, 2022; Pinsker & Ostroff, 2024; Vigna, 2022). Such a situation could be problematic unless these investments are diversified and aligned with the client's risk tolerance (Markowitz, 1952).

The previous question now leads to another: Do investors take this unnecessary risk due to the very nature of cryptocurrency, or something within themselves? Regarding the first part of the question, cryptocurrencies can only be accessed through *technology*, as they are *digital* in nature. Several intermediaries, including exchanges, miners and wallets, exist for this purpose with sellers standing ready to transact (Lo & Wang, 2014). Brauneis et al. (2022, p. 106) note that 95% of Bitcoin transfers now occur on exchanges instead of the blockchain. However, since cryptocurrency can only be purchased using technology, this undoubtedly limits the number of customers engaging in these marketplaces. Furthermore, it opens a deep theoretical base that seeks to explain why humans adopt (or reject) technology in general. Given the technological nature of cryptocurrency investment, a researcher might postulate differently about why an investor would approach cryptocurrency as a technology compared to cryptocurrency viewed

through some other framing. Simply said, the fact that cryptocurrency is closely tied to technology changes the assumptions about its acquisition. The underlying causes leading to the ease of acquisition of cryptocurrency as a technology could be markedly different from adopting cryptocurrency as an investment in alignment with a theory such as Modern Portfolio Theory (Markowitz, 1952). Regarding the second part of the question, perhaps something within the investors themselves, such as a penchant for risk-taking (i.e., risk propensity) or the enjoyment (i.e., hedonism) of investing in something that feels much like a game, is the true driver of investment.

Consequently, this study aims to explore the true drivers of cryptocurrency investment through a specific lens: that of cryptocurrency as technology. Theorizing in technology adoption has identified specific factors, such as perceived usefulness, joy, and curiosity, that might work to blind investors to the risky nature of cryptocurrency as an investment, leading to greater adoption due to its very nature. If this is the case, financial professionals should be aware of such factors and work to educate clients about their influence. Ideally, the effects of these influences would be sufficiently mitigated to arrive back to where cryptocurrency holdings align with one's financial goals, risk preferences, and prudent allocations.

1.2 Research Question

The research question for this study is: Do financial risk propensity and hedonism influence the behavioral intention to, and actual adoption of, cryptocurrency for investing purposes? In search of an answer, this study surveyed several hedonic constructs, including joy, curiosity, and perceived usefulness, to see how they related to adopting cryptocurrency as a technology. It also surveyed risk propensity across the domains of ethical, financial (gambling and investing), health and safety, recreation, and social domains to see how increasing risk

propensity influenced cryptocurrency adoption. These hedonic and risk propensity constructs have important implications for cryptocurrency investors, which will be surveyed in subsequent sections of this research project. It was hypothesized that individuals with heightened risk propensity and high hedonic drivers would more readily invest in cryptocurrency.

This dissertation used a public (the National Financial Capability Study – or the NFCS) and private dataset to study cryptocurrency holders. The NFCS dataset segregated investors in cryptocurrency and asked helpful hedonic and risk-related questions (it did not go far enough to answer the research question, however, as it did not explicitly query hedonic drivers surrounding cryptocurrency, but rather, investments in general). The NFCS also provided a framework for control variables for primary data collection. The survey constructed for this study captured data from cryptocurrency investors and non-investors using the Hedonic-Motivation System Adoption Model (HMSAM). The data gathered related to the potential hedonic motivations for adopting cryptocurrency as a technology. The survey also used The Domain-Specific Risk-Taking (DOSPERT) framework to gauge respondent risk propensity.

1.3 Why it Matters

Regulatory scrutiny on cryptocurrencies is increasing. Authors such as Simser (2015, p. 166) have outlined the challenging nature of cryptocurrency regulation, primarily due to the decentralized nature of cryptocurrency.² The Trump presidential administration has emphasized deregulation and promotion of cryptocurrency, with the President and First Lady recently launching meme coins (Ge Huang & Ostroff, 2025; Haur, 2024). Other organizations and

² The author also outlines the challenge faced by the financial crimes Enforcement Network (FinCEN) in defining distinctions between parties in order to regulate them, specifically, between those who create (mine) the coin and the institutions who transmit it (see page 162).

regulators, such as the Financial Action Task Force, the Board of Governors of the Federal Reserve System, the Federal Deposit Insurance Corporation (FDIC), and the Office of the Comptroller of the Currency (OCC), have issued statements or standards on cryptocurrency regulation in recent years (De Koker, 2020; *Joint Statement on Crypto-Asset Risks to Banking Organizations*, 2023). The State of New York has also joined the fray, with the State regulating cryptocurrency through the New York State Department of Financial Services (DFS). Under regulation 23 NYCRR Part 200, the department requires licensing of virtual currency businesses within its jurisdiction (Naheem, 2018; *Virtual Currency Businesses*, 2024). At the same time, clients are leaning more on their advisors to answer questions about cryptocurrency. According to a study by Bitwise/VettaFi (2024), 88% of advisors received a question about cryptocurrency from clients in the previous year. With this surge of interest, are advisors prepared to advise on this investment product, and do clients even realize the motivators behind the question in the first place?

For the personal financial services industry, the CFP Board published guidance in 2022 in a document entitled “Notice to CFP® Professionals Regarding Financial Advice About Cryptocurrency-Related Assets” to guide CFP® professionals in delivering financial advice for clients engaging in cryptocurrency transactions (*Notice to CFP® Professionals Regarding Financial Advice about Cryptocurrency-Related Assets*, 2022). This document is enlightening in terms of why this study is important to the field of personal financial planning: it points to the necessity for sound advice around cryptocurrency due to “significant risks that warrant careful evaluation” from regulators and professionals (*Notice to CFP® Professionals Regarding Financial Advice about Cryptocurrency-Related Assets*, 2022, p. 4). As might be expected, the CFP Board requires that a CFP recommend cryptocurrency assets only if in line with a client’s

risk tolerance and capacity for risk (*Notice to CFP® Professionals Regarding Financial Advice about Cryptocurrency-Related Assets*, 2022, p. 8). However, a CFP®’s duty goes beyond this basic, regulatory-driven requirement; he or she must also consider the client’s “goals...objectives, and financial and personal circumstances” (*Notice to CFP® Professionals Regarding Financial Advice about Cryptocurrency-Related Assets*, 2022, p. 8). The idea of a CFP® professional considering the “personal circumstances” of a client ties back to Section C1 and C.4.b. of the CFP Board’s Code of Ethics and Standards of Conduct (*Code of Ethics and Standards of Conduct*, 2024). Section C1 requires a CFP® professional to obtain qualitative and quantitative information when engaging in financial planning. Although quantitative information is straightforward – gathering income and expense information, for instance – qualitative information is quite broad. This wide-ranging list encompasses “health, life expectancy, family circumstances, values, attitudes, expectations, earnings potential, risk tolerance, goals, needs, priorities, and current course of action” (*Code of Ethics and Standards of Conduct*, 2024). Section C.4.b. emphasizes that any financial planning recommendations must be based on “the Client’s financial and personal circumstances, and how the recommendation integrates relevant elements of the Client’s personal and financial circumstances” (*Code of Ethics and Standards of Conduct*, 2024).

In other words, the CFP Board requires CFP® professionals to base a cryptocurrency recommendation on more than risk tolerance or capacity to take on the risk (i.e. the traditional financial considerations for investment decisions); they must also be interested in, and knowledgeable of, other factors that drive a client’s desire to invest in risky assets. This promotes the psychological factors of financial planning – and the psychology of why clients

might be drawn to cryptocurrency – to a principal place in the decision-making process.³ The promotion of these psychological factors represents a shift from traditional investment considerations to a more holistic understanding of why investors adopt cryptocurrency. As such, studying these unseen factors is also of elevated importance. Specifically for this study, if hedonism or risk propensity are drivers of cryptocurrency adoption, this knowledge would be valuable in understanding the “personal circumstances” required by the CFP Board when making financial planning recommendations. Not understanding or gathering information on hedonism or risk propensity – if indeed a major driver of behavior around cryptocurrency adoption – might limit the scope of a financial planning engagement or even push an advisor outside of acting in a fiduciary capacity. The heightened risk of cryptocurrency demands heightened due diligence to ensure a good fit with the client.

Although closely guarded and regulated by the CFP Board (see *Guide to the Use of the CFP Board Certification Marks*, 2023), the CFP® brand has yet to encompass all regulated financial professionals within financial services. If looking broadly at the financial advice industry in general, this study’s results might push regulators such as the Securities and Exchange Commission (SEC), Department of Labor (DOL), or Financial Industry Regulatory Authority (FINRA) to require the gathering of additional, non-financial and risk-driven data from clients before allowing the recommendation of risky assets such as cryptocurrency. An empirical understanding of these items might be crucial before such a change occurs. Suppose hedonism or risk propensity is a primary driver of cryptocurrency investment. In that case, such a

³ In 2021 the CFP Board promoted the psychology of financial planning as a core topic tested on the CFP exam, supplanting education planning (*CFP® Certification 2021 Principal Knowledge Topics*, 2021).

result could potentially encourage a change in the financial advisor regulations around cryptocurrency recommendations.

Beyond the CFP Board and regulators, understanding the underlying psychological motivations behind cryptocurrency adoption is important for investors themselves. Not only will their financial advisors increase their effectiveness by understanding the client's circumstances more holistically, but the individual investor will also be able to identify better their own personal motivations for investing in cryptocurrency. This self-knowledge will help inform future behavior around cryptocurrency and other risky assets, especially when investing behavior is detrimental to the owner's overall financial circumstances and well-being.

1.4 Summary

Given the riskiness of cryptocurrency due to its erratic pricing fluctuations, financial planners need to understand the drivers behind its adoption outside of traditional investment considerations to better inform and protect clients from the downside of this investment option. Given that cryptocurrency is accessed through technology alone, models of technology adoption might shed further light on why clients are attracted to it. Specifically, a model driven by hedonic and risk propensity constructs might unveil why clients engage with such a volatile asset class.

Chapter 2 – Review of Literature

2.1 Cryptocurrency

2.1.1 Cryptocurrency as an Investment

A systematic review by Almeida and Gonçalves (2023) found the study of cryptocurrency as an investment to be a common research theme in the top Chartered Association of Business Schools (ABS) journal list, with 482 papers across the areas of individual investor behavior, portfolio use, market structure, and volatility. For the individual investor, researchers have shown that cryptocurrencies are generally uncorrelated with other assets within a portfolio, which can increase the riskiness of the asset. Symitsi & Chalvatzis (2018) conclude that Bitcoin has low correlation to other assets, including stock indices. Ilter (2022, p. 84) discusses cryptocurrency as a method of exchange, noting that the underlying technology (blockchain) shows promise but is limited in use by volatility, calling it a “shaky investment alternative.” While Klose’s (2022) review of cryptocurrencies found some similarities between gold and cryptocurrencies, the two diverge significantly regarding use as a safe haven and store of value.⁴

Additionally, cryptocurrencies can be risky due to market manipulation, corruption, and market biases. Foley et al. (2019, p. 1800) estimate that as much as 46% of all Bitcoin transactions are associated with illicit behavior, while the Federal Bureau of Investigation’s 2023 Cryptocurrency Fraud Report reported a 53% increase in cryptocurrency-related investment fraud schemes for that year (*2023 Cryptocurrency Fraud Report*, 2023). Canh et al. (2019) analyzed systemic risk in the cryptocurrency market only to conclude that cryptocurrencies can

⁴ See also the cryptocurrency store of value research section in Ahmed et al. (2024).

lack diversification for an individual investor – and even be subject to market manipulation – especially when investment is not spread among multiple cryptocurrencies. Alnasaa et al. (2022) empirically demonstrated that use of cryptocurrencies is associated with countries with weaker capital controls and more corruption. Baur and Dimpfli (2018, p. 150) concluded that cryptocurrency volatility can be explained by “Fear of Missing Out” (FOMO) and market manipulation through “pump and dump” activities. Rubbaniy et al. (2021) documented the presence of a herd mentality in the cryptocurrency market during the COVID-19 pandemic. Simser (2015) outlined cryptocurrency's many misuses and downsides, including illegal transactions, theft, information asymmetry, and fraud. Dupuis and Gleason (2020) showed how criminals use cryptocurrency to launder money through six ‘open doors’ including Tumblers, the OTC market, privacy coins, decentralized exchanges, direct purchases, and mining. This fraud has a real impact on investor behavior: preliminary research from Lourie et al. (2023, 2024) indicated that individuals on the receiving end of cryptocurrency fraud decrease their investment activity in the asset.

Cryptocurrency can also be risky due to volatile returns. Ahmed et al. (2022)’s research serves as a warning to potential investors to proceed cautiously when investing in cryptocurrencies due to extreme and multifaceted volatility. De Pace and Rao’s (2023, p. 199) study of cryptocurrency markets ended with their note that “it is still difficult to claim anything certain about what drives prices in and across cryptocurrency markets; what determines cryptocurrency values; and what factors, if any, represent the common denominator(s) of these seemingly unrelated assets.” Tellingly, terms such as “distress,” “bubbles,” “sudden corrections,” “turmoil,” and “explosiveness” were used throughout the article. Due to this volatility, investors demand a premium for the risk incurred (Foley et al., 2022).

2.1.2 Cryptocurrency as a Technology

Cryptocurrency can be considered technology as well as an investment for three reasons. First, it can only be purchased through a technological medium (an exchange) unless created through a computer-based process called mining (Linebaugh et al., 2024; Tergesen, 2021; Vigna, 2021).⁵ Once cryptocurrency is created, it can be bought and sold through exchanges, much like other financial products. These exchanges also influence the reasons behind purchasing cryptocurrency. Philander (2023, p. 2) pointed to cryptocurrency exchanges alongside zero-fee retail brokerages as a technological phenomenon encouraging gambling behavior and speculative trading in meme stocks.

The second reason cryptocurrency can be considered technology is that cryptocurrency is built on top of blockchain technology. Blockchain is, at its core, a public distributed ledger technology (DLT) primarily used for money exchange (Sarmah, 2018). A report from the Financial Stability Oversight Council (FSOC) further elaborates:

The crypto-asset ecosystem has been the site of wide-ranging technological and financial innovations built atop DLT, which includes blockchain technology. DLT is the foundational innovation underlying the crypto-asset ecosystem. In principle, DLT has the potential to enable market participants to engage in nearly immutable transactions with crypto-assets without necessarily trusting the other party in the transaction or involving an intermediary and with transaction validation that avoids double spending problems.

Those basic potential characteristics have been the basis for several additional

⁵ Theoretically, cryptocurrency could be purchased “offline” in a face-to-face transaction with the coins on a hard drive, but this is not the typical scenario. See Simser (2015), section 3.3. Also, the process of mining is technologically-driven.

innovations (FSOC Report on Digital Asset Financial Stability Risks and Regulation, 2022, pp. 7–8).

The idea of a distributed ledger goes back as early as 1976 but was actualized in 2008 through a public key infrastructure method for encryption (Sarmah, 2018; Yli-Huumo et al., 2016). The blockchain, however, is a technology with broader applicability beyond coin-based finance; it has valuable applications in both the public (open source licenses, for example) and private (smart contracts and ledgers for user authentication) spheres (Pilkington, 2016). Research over time has tackled many issues surrounding this underlying technology, including usability, privacy, security, cryptography, and environmental impacts (Yli-Huumo et al., 2016). More recently, blockchain applications have been explored for the metaverse (Huynh-The et al., 2023), the internet of things (Tripathi et al., 2023, p. 12), and smart cities (Tripathi et al., 2023, pp. 4, 11; Ullah et al., 2023).

The third reason cryptocurrency is a technology is due to its differing nature from analog currency (i.e., cash). As opposed to analog currency, cryptocurrency can be used for digital transactions and e-commerce (Foley et al., 2019, p. 1801). These features give cryptocurrency impressive scale and flexibility of use – particularly in the digital sphere – compared to analog currency. According to a 2022 report from the Department of the Treasury, cryptocurrencies (and stablecoins in particular) can be used to increase the ‘speed and reliability of transfers in ownership’ in the digital space via distributed ledger technology and validations using the blockchain (The Future of Money and Payments, 2022, p. 18). It can also easily handle large transactions and instant settlement through a Central Bank Digital Currency (CBDC) (The Future of Money and Payments, 2022, pp. 19–20). These features, if implemented on a national or even

global scale, could accelerate the digitization of the economy by replacing paper currency. Such a change could only occur through a powerful technological medium like cryptocurrency.

2.1.3 Risk Considerations for Cryptocurrency Investors

2.1.3.1 Risk Tolerance

Risk tolerance measures ‘a household decisionmaker’s willingness to engage in a financial behavior in which the outcome is both uncertain and potentially negative’ (Rabbani & Nobre, 2022 as cited in Grable & Rabbani, 2023, p. 2). From a regulatory perspective, FINRA defines risk tolerance as “a customer's ‘ability and willingness to lose some or all of [the] original investment in exchange for greater potential returns’ (*Beginners’ Guide to Asset Allocation, Diversification, and Rebalancing*, 2009 as cited in *FINRA Rule 2111 (Suitability) FAQ*, 2025). In other words, risk tolerance is about a client’s willingness to engage in behavior with potential downsides or unknown outcomes, generally in pursuit of greater profits. FINRA Rule 2111 requires advisors to gather risk tolerance information to ensure a financial professional’s recommendation (“transaction or investment strategy”) is suitable for the client (*2111. Suitability*, 2025). Since gathering this information is required by regulation, risk tolerance is commonly quantified using various questionnaires such as the Grable and Lytton risk-tolerance scale (Kuzniak et al., 2015).

Risk tolerance has been studied extensively in personal financial planning, as it can influence important financial planning outcomes and behaviors. Grable and Lytton (2001, p. 43), researchers with significant experience researching and developing risk tolerance scales, summarized the importance of the measure as “a primary determinant of asset allocation choices, security choices, and goal planning strategies.” Risk tolerance is a multidimensional construct influenced by internal and external factors, including self-esteem, net worth, income, financial

knowledge, gender, age, marital status, and education, among other demographics (Grable, 2000; Grable & Joo, 2004).

This study is mostly concerned with risk tolerance to the extent it would influence the cryptocurrency investment decision. Therefore, a related and applicable category of research would be how risk tolerance affects investment decisions. Corter & Chen's (2006) research uncovered that investors with higher risk tolerance had riskier portfolios. Kuzniak et al. (2015) found higher risk tolerance to be associated with more higher-risk holdings (stock ownership) and fewer lower-risk holdings (bonds and cash). A similar result was found by Grable et al. (2019) using the Grable and Lytton risk-tolerance scale. A later study by Grable et al. (2024) found risk tolerance to be positively related to portfolio variance (a proxy for risk). On a corporate level, Heo et al. (2018) found that risk tolerance scores were related to S&P 500 stock market activity.

How does risk tolerance relate to cryptocurrency adoption? Hayashi and Routh (2024), researchers at the Federal Reserve Bank of Kansas City, used the 2022 Survey of Household Economics and Decisionmaking (SHED) to split cryptocurrency holders into three groups: investors, transactors, and mixed. Their research showed that cryptocurrency investors (and mixed users) reported higher risk tolerance than nonusers (and transactors). Research from Anderson and Lawson (2023) further established a relationship between increased risk tolerance and cryptocurrency holding. While studying financial knowledge, Zhao and Zhang (2021) found that holding cryptocurrency is positively correlated with risk tolerance as well as holding stocks and risky assets. The risk tolerance connection was confirmed later by Zhang et al. (2025). While studying the Fear of Missing Out (FOMO), Gerrans et al. (2023) found that risk tolerance had a

positive relationship with cryptocurrency investment in addition to FOMO for undergraduate students in Australia.

2.1.3.2 Risk Propensity

Risk propensity is defined in line with Sitkin and Pablo (1992, p. 12) “as the tendency of a decision maker either to take or to avoid risks.” As the definition implies, risk propensity can move toward or away from risk (i.e. risk-seeking or risk avoidance). Risk tolerance is a broader (or more holistic) concept compared to risk propensity, as risk propensity represents an *inclination* or *tendency* to take risks, while risk tolerance is a *willingness* to engage in financial outcome optimization (Davies & Brooks, 2014). Risk propensity and risk tolerance differ in their scope and coverage of risk as a broader concept. Cordell (2001, p. 36) considered risk propensity a part of risk tolerance in his proposed solution to measure the phenomenon⁶, calling it “the client’s real-life decisions in financial situations.” For purposes of this study, these concepts can be compared from broad to specific using the following pathway: risk (general umbrella concept) → risk tolerance → risk propensity (specific measure). This pathway is supported by the fact that propensity measures are one of three common risk assessment methods of testing risk tolerance (Kwak & Grable, 2024).

In terms of cryptocurrency, risk propensity comes into play when considering risk tolerance and the asset’s volatility. Yilmaz and Hazar (2018) used conjoint analysis to show that investors prefer to invest in cryptocurrency due to its perceived profitability. The logical conclusion here is that cryptocurrency investors hold such assets hoping to increase overall returns. However, returns on cryptocurrencies are not equally remunerative due to volatility, as

⁶ Cordell later theorized risk consisted of “two dimensions”: risk attitude and risk capacity (Cordell, 2002). Grable (2008) later extended this understanding with RiskCAT.

noted previously in the literature review. This perception gap might be further exacerbated as there is evidence to suggest investors in cryptocurrency are overconfident, i.e., their subjective financial literacy exceeds objective financial literacy (Kim et al., 2023). The previous survey of cryptocurrency as an investment prompts an important question: Given the asset's volatility, when should it be held in a portfolio? The answer is that these studies indicate that, due to the riskiness of cryptocurrency investment, investors should only consider investing in cryptocurrency when risk tolerance is high.

Therefore, is it appropriate to classify cryptocurrency investors as risk-seeking beyond the established connection between risk tolerance and investment risk (Masters, 1989)? After all, research from Smutny et al. (2021) started from the assumption “that people with a particular tendency to take risks will have a more proactive and open approach to investment in cryptocurrency.” A potential answer can be found in the work of Pelster et al. (2019). This research team used brokerage data to show that cryptocurrency investors are risk and excitement-seeking. Specifically, the author team found that cryptocurrency investors increasingly took risks when trading stocks (Pelster et al., 2019, p. 100). As mentioned previously, Zhao and Zhang (2021) used the 2018 NFCS to demonstrate that holding cryptocurrency is positively correlated with holding stocks and risky assets. Robba et al. (2024) used scales comprised of financial risk aversion, risk tolerance, and impulsivity questions to create six different personality clusters; the “self-aware risk-seekers” profile was the most likely to currently own cryptocurrencies for Italian respondents.⁷ Given these studies, it is possible that the riskiness of cryptocurrency is not off-putting to some investors but rather something that is approached voluntarily.

⁷ On a related note, “needlessly confident impulsive risk-seekers” were most likely to historically own cryptocurrencies.

Stated another way, the riskiness of cryptocurrency might be a source of utility or pleasure for some investors. Such a hypothesis would not be without precedent, as previous research discusses a view of risk rooted in emotions and culture instead of outcome optimization (Loewenstein et al., 2001; Parker & Stanworth, 2005, p. 333). A study in the social sciences by Lupton and Tulloch (2002) investigated voluntary risk-taking and found that some individuals approach risk without coercion in contrast to the traditional view of risk's relationship to avoidance and fear. Voluntary risk-taking can be found in other pursuits such as solo sailing (Brown & Penney, 2014), entrepreneurship (Antoncic et al., 2018; Chanda & Unel, 2021), and humanitarian assistance (Roth, 2015). Informed by his experience in skydiving culture, Lyng (1990) proposed a new framework called “Edgework” to explain why individuals willfully engage in risk-seeking activities that threaten mental and physical well-being⁸. Interestingly, he noted that Edgework participants can maintain an “elitist orientation,” believing that they have special abilities “possessed by only a select few and who often feel a powerful solidarity with one another based on their perceived elite status” (Lyng, 1990, p. 860). The parallel that could be drawn between this sentiment and cryptocurrency investor culture is an interesting one. From his research, McGivern (2023, p. 142) concluded that cryptocurrency trading “retains a sense of exhilaration that is cushioned by a broader sense of inclusion” for investors.

2.1.3.3 Gambling Behavior

Taken to an extreme, cryptocurrency trading can be compared to gambling behavior. Within a broader context, gambling behaviors can help explain investing. A study by James (2012, p. 12) looked at fMRI brain scans to understand client decision-making while playing a stock-market game. It concluded that “some research on gambling behavior may be usefully

⁸ See also Brown & Penney, 2014, pp. 271–272

applied to investment choices and advisor selection” within the field of personal financial planning. Specifically related to cryptocurrency trading, in an article published in the *Journal of Behavioral Addictions*, Delfabbro (2021) and his author team explained that cryptocurrency trading is potentially hazardous to investors due to dangerous psychological relationships with Fear of Missing Out (FOMO) and excessive social media use. McGivern (2023) and Şentürk et al. (2023) concurred and found that cryptocurrency trading can include multiple cognitive biases, including anchoring, optimism, confirmation biases, FOMO, herding behavior, and anti-establishment tendencies. Crucially, McGivern (2023, p. 141) found that some investors were attracted to cryptocurrency's “high-risk, high-reward” nature. Mills and Nower’s (2019, p. 138) research found that 53% of the gamblers in their study traded in cryptocurrencies within the last year, demonstrating a direct link between trading cryptocurrency and problem gambling. This result was later confirmed by Androulakis et al. (2021, p. 13); similar problem behavior was found for cryptocurrency investors in a study by Sonkurt and Altınöz (2021). Kim et al. (2020) found that Korean Bitcoin users displayed gambling tendencies, including a high desire for novelty with short investment periods to chase losses. This literature-backed discussion of risk propensity justifies its separation from risk tolerance, discussed in the previous section, as a stand-alone construct when considering cryptocurrency adoption.

2.1.3.4 Measuring Risk Propensity with DOSPERT

Harrison et al. (2005) cataloged several risk propensity measures through a systematic review. Of the fourteen measures studied, three scales (DOSPERT⁹, portfolio of risk measures¹⁰,

⁹ (Blais & Weber, 2006; Weber et al., 2002)

¹⁰ (MacCrimmon & Wehrung, 1985)

and Risk Propensity Scale.¹¹) were identified for use in the finance risk domain. According to the article, the Domain-Specific Risk-Taking (DOSPERT) scale alone was assessed for both internal and external validity in the original study. Additionally, the DOSPERT framework excels in identifying risk propensity across content domains and gender (Weber et al., 2002). The framework has broad applicability across disciplines and has been applied in numerous fields, including medicine (i.e., neuroscience and neurophysiology), finance, management, and psychology. It has been used to demonstrate the value of measuring domain-specific risk propensity (i.e., using specific domains of life such as financial, health, etc.) on a national scale (Frey et al., 2023). DOSPERT measures risk propensity within the domains of ethical, financial (which includes both investing and gambling components), health and safety, recreation, and social. The framework's scale has since been shortened from forty to thirty questions across the domains by Blais and Weber (2006).

DOSPERT was created by Weber et al. (2002) to address two key issues in then-existing risk propensity scales. According to the authors, DOSPERT “distinguishes between...risk perception and attitudes toward perceived risk” and “examines risk-taking and its determinants in several distinct content areas” (Weber et al., 2002, p. 264). This allows it to measure between risk attitude – conventionally defined as the utility function of personal choice in line with Expected Utility Theory and seen as connected to personality – and the perception of the risk of any given activity (Blais & Weber, 2006, p. 33; Weber et al., 2002, pp. 264, 282). The development of the framework showed that risk attitudes observed from behaviors were tied to the perception of the risk of activities across content areas such as ethical, financial, health and safety, recreational, and social (Weber et al., 2002, p. 282). For instance, a person might be risk-

¹¹ (Nicholson et al., 2005)

averse in social situations while quite comfortable with risk in the financial arena. This distinction was demonstrated empirically in a study by Hanoch et al. (2006) that showed the risk propensities of specific groups (males, females, athletes, investors, gamblers, smokers, etc.) were not uniform across the DOSPERT content areas. For example, the authors found that the mean DOSPERT score for investors was higher in the investing content area as compared to recreation, gambling, or health (Hanoch et al., 2006, p. 302). DOSPERT can be particularly advantageous when looking at risk propensity between men and women, as differences in risk perceptions between these groups vary across domains (Harris & Jenkins, 2006; Weber et al., 2002). DOSPERT has been used to study risk-taking in narcissists (Foster et al., 2009), personality's influence on risk-propensity (Weller & Tikir, 2011), music's influence on risk-taking behaviors (Enström & Schmaltz, 2017), and even mate choice (Wilke et al., 2006).

DOSPERS has not been used to study cryptocurrency investing behaviors. In addition to the Hanoch et al. (2006) study referenced above, other studies have been created using DOSPERT to study financial and gambling phenomena. Markiewicz and Weber (2013) used the DOSPERT gambling subscale to show traders increased trade rates and day trading with risk propensity. This research has been cited by other studies investigating cryptocurrency and gambling behaviors (see Kim et al., 2020; Sonkurt, 2023; Sonkurt & Altınöz, 2021). Highhouse et al. (2017) used DOSPERT to show that the health domain could be used to predict financial strain. Wilke et al. (2014) used DOSPERT to find that problem gamblers perceived the rewards of their behavior differently than non-gamblers, while Mishra et al. (2010) used it to show a positive correlation between risk attitudes and gambling behaviors.

From a biological perspective, DOSPERT has been used to study the human brain's anterior cingulate cortex (ACC), serotonin transportation, and therapeutic applications of

electroencephalography (EEG) technology. The ACC is responsible for portions of executive functioning and, importantly for this study, the mental computations behind risk perception. A study by Brown and Braver (2007, p. 275) found that the respondents within the “high gambling subgroup” mentally processed expected risk differently than others in the study. A later study by this author team found additional differences when studying learning rate and negative reinforcement (Brown & Braver, 2008). A study by Crişan et al. (2009) used DOSPERT to show potential genetic differences in risk-taking by studying the 5-HTT-linked polymorphic region (i.e., 5-TTLPR). Finally, Lee and Jeong (2013, p. 2177) found that electroencephalography (EEG) technology results were closely associated with DOSPERT results. **Figure 2.1.** shows the conceptual model for DOSPERT.

Figure 2.1. Conceptual model for DOSPERT



In line with the findings of this section, it is hypothesized that risk propensity – and specifically risk propensity in the domain of financial-gambling – are important variables in the overall modeling of cryptocurrency investment.

2.1.4 Purposes of Cryptocurrency Use

Individuals use cryptocurrency for different purposes. Overarchingly, a study by Hayashi and Routh (2024) used the 2022 SHED to show cryptocurrency holders have one of two general use cases: to invest or transact. The study demonstrated that the motivation for holding cryptocurrency was largely skewed toward investors (73% of cryptocurrency holders within the study), with a minority holding it for transactions (16%)¹² or for both purposes (11%) (Hayashi & Routh, 2024, p. 6). This bifurcation was also used in research by Maciejasz-Świątkiewicz and Poskart (2020, p. 195), who queried respondents who most often viewed cryptocurrencies as a digital asset and medium of exchange. Summary results from the Federal Reserve's 2023 Survey and Diary of Consumer Payment Choice also confirmed that the majority (64%) of holders of cryptocurrency did so for investment purposes, whereas 2.3% used it to make anonymous payments, with 22.4% holding it simply because they were interested in new technologies (Foster et al., 2024, p. 21). Steinmetz et al. (2021, p. 8) also found that previous studies split cryptocurrency usage into the arenas of payments and investments, similar to research by Hayashi and Routh (2024).

It should also be noted that previous studies in this literature review have pointed to a more nefarious use case: criminal behavior and concealment. Steinmetz et al. (2021, p. 14) found that, at least for Germans, the main drivers of cryptocurrency use were speculation, criminal acts, and concealment. Christopher (2014) also added money laundering to a list of motivations for using cryptocurrency including speculation/investment, trust in the algorithms, and spending power. Two of these align closely with the investment (i.e. investment/speculation) and

¹² SHED includes buying something, making a payment, or sending money within the category of transactions (*Survey of Household Economics and Decisionmaking*, 2024).

transactional (i.e. spending power) uses outlined previously. Leuprecht et al. (2022, p. 1042) found cryptocurrency to be a common tool for laundering money internationally, with Bitcoin taking a leading role in this illicit activity.

Even considering the grand scope of illicit activity surrounding cryptocurrency, this activity is best categorized into the transactions use case. Foley et al. (2019, p. 1801) noted that “illegal users predominantly (or solely) use bitcoin as a payment system to facilitate trade in illegal goods/services, some legal users treat bitcoin as an investment or speculative asset.” Turner and Irwin (2018, p. 109) noted that illicit activity was found in the transaction areas of drug operations and nefarious internet behavior (bots, spying, dark web, money laundering, and terrorist financing). Members of the media have likened cryptocurrency transactions to handing over cash in a dark alley (Krugman, 2013 as cited in Simser, 2015). To minimize selection bias, only one use case (using cryptocurrency as an investment instead of a transaction medium) was included in the primary survey to answer the study’s research question.

2.1.5 Motivations of Cryptocurrency Use

2.1.5.1 Investment Duration

Within the category of using cryptocurrency for investing purposes, a split between investors who hold cryptocurrency for short-term (i.e., speculation) versus long-term becomes apparent. Whereas many users are drawn to cryptocurrency for investment purposes, research from Glaser et al. (2014) concluded that new users tend to acquire Bitcoin to speculate, not to trade. Maciejasz-Świątkiewicz and Poskart’s (2020, p. 198) research surveyed respondent’s willingness to speculate and save with cryptocurrency. The authors found that 36.85% of respondents were willing to use cryptocurrencies to speculate (with 39.47% answering “no”),

and 16.25% were willing to save with it (with 56.25% answering “no”). Accordingly, a recent review by Vasudeva (2023) identified cryptocurrency speculation as a growing research topic.

2.1.5.2 Ideology: Social and Values

Bashir et al. (2016) studied a specific cryptocurrency, Bitcoin, and categorized it as a community in addition to a currency and software platform. The authors found that the community surrounding Bitcoin had specific characteristics, including a Libertarian ideology and an attraction to anonymity and novelty. Littrell et al. (2024) found cryptocurrency owners had fringe personality traits, beliefs, and political affiliations in addition to a dislike of authoritarianism. This study was important because it extended beyond the investment and transaction use cases to include a social component that might motivate users' decision-making process. This social component was further underscored by research from Dodd (2018), who framed cryptocurrency as an *ideology* or value system. Dodd explained that Bitcoin's ideology centers around its disintermediation from financial institutions and the state, and yet it has its own “social space” that can be defined as a “social movement” centered around the values of protesting the system, personal privacy, and freedom (Dodd, 2018, pp. 37, 40). Matke (2021) also explored several motivations for investing in cryptocurrency, including profit expectancy and the support of Bitcoin ideology. These studies suggested that cryptocurrency has a practical use (money through transactions or investment) and a social use (i.e., users feel part of something larger than themselves). The practical and social components of cryptocurrency use cases have been well-researched.

The ideology that creates the social adhesion inherent to cryptocurrency is centered around specific, unique ideas and values. Gagarina et al. (2019, p. 8) showed that, at least for individuals aged 17-30, attitudes attached to cryptocurrency include a desire for financial

autonomy and a lack of trust in social institutions, although Auer and Tercero-Lucas (2022, pp. 4, 29) used the U.S. Survey of Consumer Payment Choice to show that consumers did not seek out cryptocurrency due to a lack of trust in regulated finance. Steinmetz et al. (2021, p. 16) found ideology to be an “important factor” regarding individuals “attracted to currency schemes that are free from government influence.” Mattke (2021, p. 279) concluded from their research (noted previously) that:

...support of bitcoin ideology is specifically relevant to bitcoin investment. Bitcoin embodies a new ideology representing decentralisation, independence from intermediaries and the empowerment of individuals, such that this characteristic distinguishes bitcoin investment from other forms of investment.

2.1.5.3 Learning

Research regarding users motivated to acquire cryptocurrency for learning purposes is limited. However, a large study by Andreianova et al. (2022) of LocalBitcoins users ($n = 66,000$) showed that the majority engaged with Bitcoin to trade and invest (24.5% investing and 25.5% trading), as a store of value (10.4%), and to pay or remit (23.6% total with 13.9% payments and 9.7% remittance). The study surveyed other reasons, such as learning (8.5%), gambling (2.2%), and salary (2.3%), but these represented smaller portions of the whole.

In line with the previous literature review – and to compare the primary survey results to the investor motivation questions found in the NFCS – the cryptocurrency motivation question in the primary survey was structured to ask the same six motivation questions, specifically, for short-term or long-term investment, hedonic motivations, social, values (which capture a comprehensive view of ideology), and learning. Descriptive statistics for these questions from the NFCS can be found in Table 4.2.

2.2 Perspectives on Technology Adoption

2.2.6 Technology Readiness (TR) Model

Multiple models are useful for exploring the adoption of cryptocurrency as a technology. One such model is the Technology Readiness Model (TR). The TR model was created by A. Parasuraman and Rockbridge Associates using focus groups, the National Technology Readiness Study (NTRS), and a commissioned study by Sallie Mae (Parasuraman, 2000). This initial research was compiled into a battery of questions used to gauge technology readiness for internal and external stakeholders. The TR model contains four concepts: two enablers and two inhibitors for individuals adopting or rejecting technology (Parasuraman, 2000). The two enablers are optimism and innovativeness. The two inhibitors are discomfort and insecurity. The two enablers encourage technology adoption, whereas the inhibitors discourage this. The first enabling construct of innovativeness measures “a tendency to be a technology pioneer and thought leader” (Parasuraman, 2000, p. 311). Questions used to test for innovativeness probe an individual’s willingness to adopt new technologies, typically before others. Innovativeness also means the adopter has fewer problems with technology and can figure out how to use it within an area of interest (Parasuraman, 2000, p. 312). The second enabling construct of optimism measures “a positive view of technology and a belief that it offers people increased control, flexibility, and efficiency in their lives” (Parasuraman, 2000, p. 311). Questions used to test for optimism include an individual’s favorable view of technology, engagement in technological learning, and a desire to use cutting-edge technologies (Parasuraman, 2000, p. 312).

The TR model has been used to study cryptocurrency. Sohaib et al. (2020) used various technology adoption models – including the key TR constructs of optimism, innovativeness, insecurity, and discomfort – to demonstrate that their model explained why users adopt

cryptocurrency and blockchain. The most direct testing of the model is found in a study by Alharbi and Sohaib (2020), who used a structural equation model (PLS-SEM) to test optimism, innovativeness, insecurity, and discomfort for cryptocurrency adoption. As expected, optimism and innovativeness positively related to cryptocurrency adoption, whereas the insecurity and discomfort coefficients were negatively related. Rahardja et al. (2023) studied the intention to use cryptocurrency with a multi-dimensional construct that included positive and negative technology readiness in addition to mindfulness, perceived trust, perceived risk, and financial literacy. Negative technology readiness was a significant pathway in the PLS-SEM model. Khan et al. (2022) integrated the Technology Readiness Index (TRI) into a broader technology adoption model to study blockchain technology for digital library resources. Optimism and innovativeness were significant, positive pathways in their PLS-SEM model. Hariguna et al. (2023) integrated TR with the expectation confirmation model (ECM) to show that the TR construct did not have a significant path to the continued use of cryptocurrency but was positive and significant when adding Perceived Use (PU). Finally, Alkhwalidi et al. (2023) found, for Jordanians, personal innovativeness was positively related to cryptocurrency readiness, but cryptocurrency readiness was not related to the adoption of cryptocurrency. Abbasi et al. (2021), however, found evidence for a positive, significant relationship between personal innovativeness and behavioral intention to adopt cryptocurrency for Malaysians.

2.2.7 Technology Acceptance Model (TAM, TAM2, and TAM3)

One of the most widely used models for technology acceptance is the Technology Acceptance Model (TAM). Davis first proposed TAM (1985) in his doctoral dissertation at the Massachusetts Institute of Technology and later codified in articles by Davis (1989) and Davis et al. (1989) in the academic journals *MIS Quarterly* and *Management Science*. Venkatesh (2000,

p. 343) called TAM “the most widely applied model of user acceptance and usage.” This theory was built on multiple theories, including Bandura’s (1982) self-efficacy theory and proposed that perceived usefulness and perceived ease of use are core drivers of technology acceptance (Davis, 1989). Specifically, these two factors contribute to one’s attitude toward using technology, which in turn influences the behavioral intention to use. Behavioral intention to use then moves to actual system use (the behavior) (Wibowo, 2019).

TAM was later modified (TAM2) to include social influence (subjective norms, voluntariness, and image) and cognitive instrumental (job relevance, output quality, result demonstrability) processes along with experience (Venkatesh & Davis, 2000) and TAM3 to include individual differences, system characteristics, social influence, and facilitating conditions (Venkatesh & Bala, 2008). In research published in the same year as the TAM2 article, Venkatesh (2000) proposed playfulness and perceived enjoyment as determinants of perceived ease of use, building on previous work with intrinsic motivation (Venkatesh, 1999), perceived enjoyment by Davis (1992), and computer playfulness by Webster and Martocchio (1992). In these models, “hedonic motivation is ‘the fun or pleasure derived from using a technology’ without any specific extra benefit” (Venkatesh et al. 2012, p. 161 and Davis et al., 1992 as cited in Salimon et al., 2017). In other words, utility and hedonism are seen as separate concepts when modeling technology adoption (Chaudhry et al., 2023; Wu & Lu, 2013, p. 155). Subsequent research in this line of theory established hedonic motivation as a mediating influence in the model for online banking adoption (Salimon et al., 2017).

Similar to TR, TAM has largely been used to study cryptocurrency adoption, primarily internationally. Balaji et al. (2023) used TAM to build a structural equation model to demonstrate cryptocurrency investment utility, ease of use, and risk-in-trade affected investor

behavior. Jariyapan et al. (2022) studied Pakistanis using TAM3 to find that computer anxiety and self-efficacy, subjective norms, perceived usefulness, and perceived ease of use influenced behavioral intention to adopt cryptocurrency, with perceived usefulness the main driver. Atellu (2024) used TAM to find that perceived ease of use, perceived usefulness, and attitude toward technology were positive determinants of intention to adopt cryptocurrency for Kenyans¹³.

Idrees et al. (2024) found cryptocurrency ease of use, usefulness, and awareness to be positively related to cryptocurrency adoption in Pakistan. Similarly, Sagheer et al. (2022) discovered that, for respondents in Generation Z in Pakistan, perceived ease of use, perceived usefulness, and perceived risk positively influenced behavioral intention to adopt cryptocurrency for financial transactions.

2.2.8 Hedonic Information Systems and the Hedonic-Motivation System Adoption Model (HMSAM)

To better understand the use of systems that might be focused more on leisure, fun, or pleasure, van der Heijden (2004) proposed a new model to understand the adoption of hedonic information systems. van de Heijden noted in his seminal paper that TAM primarily focused on understanding the acceptance of technology systems that provide perceived usefulness, or utility to the user. Even though a later study by Davis et al. (1992) included a measure of intrinsic motivation and enjoyment, it was not a significant driver as compared to perceived usefulness and not generally included in the final model used by researchers (van der Heijden, 2004, p. 696), although exceptions exist when researchers had the desire to investigate intrinsic

¹³ The reader should note the rather strange questions deployed to measure behavioral intention to use in this paper, specifically, to educate others on cryptocurrency, thinking that cryptocurrency will allow the respondent to complete tasks on schedule, and transact internationally.

motivation specifically.¹⁴ Consequently, van der Heijden's new model offered an alternative for systems focused on fun, such as games, gamified training, and the internet (van der Heijden, 2004, p. 696). It also brought to the field an emotional component to systems adoption theory (Chaudhry et al., 2023). The final constructs were perceived ease of use, perceived enjoyment, and perceived usefulness, leading to a greater intention to use the system.

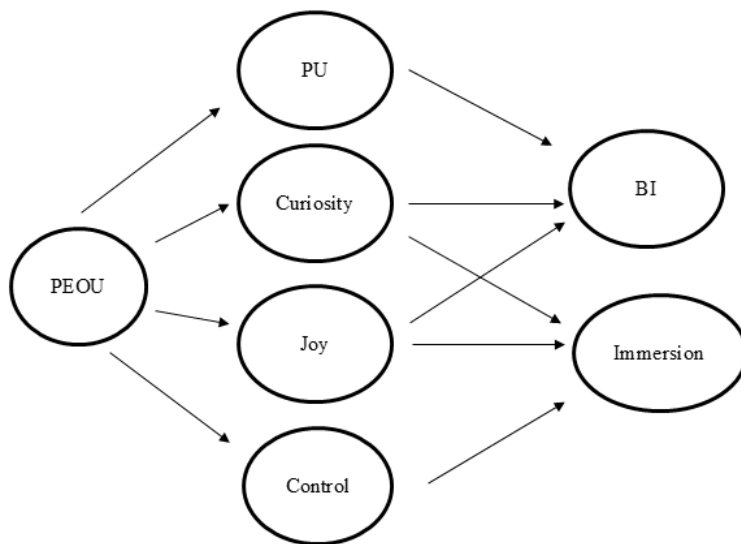
In 2013, a research team led by Paul Lowry further refined van de Heijden's model. The new model was called the Hedonic-Motivation System Adoption Model, or HMSAM. In contrast to TAM and van der Heijden's model, HMSAM further developed the idea of perceived enjoyment. HMSAM focused on intrinsic motivation and replaced perceived enjoyment with the construct of cognitive absorption – an idea initially proposed by Agarwal and Karahanna (2000) – while building out the underlying drivers of this phenomenon. Specifically, cognitive absorption's underlying drivers were control, curiosity, joy, focused immersion, and temporal dissociation (the last was later dropped after testing).

The HMSAM model greatly expanded the sub-constructs of hedonic motivation. Merriam-Webster's dictionary defines hedonic as “of, relating to, or characterized by pleasure” (*Hedonic Definition & Meaning*, 2024). The HMSAM model expands on one's perceived enjoyment in using technology outside of productive use (Hong & Tam, 2006 and Lee et al., 2005 as cited in Lowry et al., 2013, p. 620). As mentioned, Lowry et al. (2013) used the HMSAM model to expand joy into a larger construct of Cognitive Absorption (also known as CA). CA includes control (‘the user's perception of being in charge of the interaction’), curiosity (‘the extent the experience arouses an individual's sensory and cognitive curiosity’), joy (“the pleasurable aspects of the interaction described as being fun and enjoyable rather than boring”),

¹⁴ For an example, see (Fagan et al., 2008) and (Allam et al., 2019).

and focused immersion (‘the experience of total engagement where other attentional demands are, in essence, ignored’)(Agarwal & Karahanna, 2000, p. 673 as cited in Lowry et al., 2013, p. 622). Perceived usefulness is framed *hedonically* (instead of a focus on *utility*) as a given technology’s ‘usefulness for pursuing pleasure’ (Gu et al. 2010, p. 297 as cited in Lowry et al., 2013, p. 620).¹⁵ This hedonic framing of perceived usefulness separates HMSAM from many other technology acceptance models, including TAM. Figure 2.2 shows the conceptual model for HMSAM.

Figure 2.2. Conceptual model for HMSAM



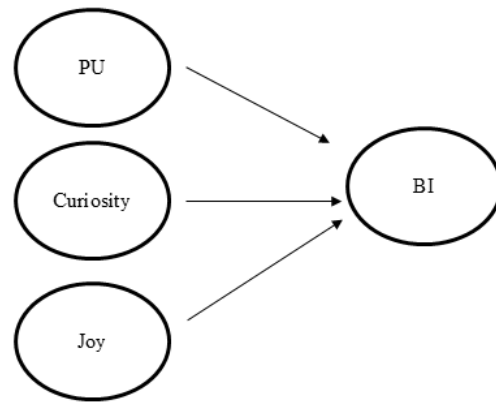
HMSAM and hedonic motivation have been extensively used to study a broad range of technology adoption scenarios, including the adoption of financial technologies like mobile commerce (Hu et al., 2023). HMSAM has also been used to explore gamified learning (Behl et

¹⁵ There is a small discrepancy here in the quoting by Lowry et al. The original source says, “the usefulness for pursuing pleasure” whereas Lowry quotes it as “the usefulness of pursuing pleasure.” This paper uses the correct, original wording in Gu et al.

al., 2022; Lin et al., 2024; Oluwajana et al., 2019), virtual reality (Hsu, 2024; M. J. Kim & Hall, 2019; Putranda et al., 2023), artificial reality (Putranda et al., 2023; Samala et al., 2024; Tu & Jia, 2024), Learning Management Systems (Rehy & Tambotoh, 2022), and learning to program (Kong & Lin, 2022). To date, no example has been found that applies HMSAM to cryptocurrency investment, although HMSAM or hedonic motivation, in general, have been used to study cryptocurrency scenarios in a few cases (Alsmadi et al., 2023; Perez et al., 2023). Applying this specific model to cryptocurrency investment is one of the main contributions of this study to the field, not only because the HMSAM model has not been used to study cryptocurrency investment but also because it could help uncover if investors are adopting the asset for reasons beyond traditional investment considerations. In other words, the HMSAM model will help uncover if investors adopt cryptocurrency to the extent it arouses curiosity and endues feelings of enjoyment, fun, or satisfaction and simultaneously explain, from a theoretical perspective, why investors adopt cryptocurrency as a *technology* for investment purposes.

Rather than studying the entire model, this study focused on the relevant hedonic pathways leading to behavioral intention (BI), specifically, the behavioral intention to invest in cryptocurrency as a technology. Figure 2.3 shows the narrower model consisting of the specific hedonic pathways leading to behavioral intention (to invest).

Figure 2.3. Hedonic pathways to behavioral intention to use (BI)



2.2.9 Unified Theory of Acceptance and Use of Technology (UTAUT and UTAUT2)

One additional theoretical framework deserves mention in this literature review: the Unified Theory of Acceptance and Use of Technology, or UTAUT. Venkatesh et al. (2003, pp. 428–436) created this new model to study organizational technology adoption and integrate several desperate technology acceptance theories, including the Theory of Reasoned Action, TAM, the Motivational Model, and the Theory of Planned Behavior, among others. The overarching constructs of the model included performance expectancy, effort expectancy, social influence, facilitating conditions, behavioral intentions, and use behavior (Venkatesh et al., 2003, p. 447). An updated model, UTAUT2, added hedonic motivation, price value, and habit to study consumer technology adoption (Venkatesh et al., 2012). Although the UTAUT2 model contains a component of hedonic motivation, it offers a more limited view of this multidimensional construct as compared to HMSAM. UTAUT2 has a mere three questions on fun, enjoyment, and entertainment within this dimension (Venkatesh et al., 2012, p. 178).¹⁶ In contrast, HMSAM

¹⁶ The original article included the questions “Using mobile Internet is fun”, “Using mobile Internet is enjoyable”, and “Using mobile Internet is very entertaining.”

allows for a greater understanding of the underlying factors of hedonic motivation with nineteen questions across the categories of joy, control, curiosity, and immersion. Therefore, HMSAM was used to create the survey instrument for this dissertation.

A few studies, again primarily international, have used UTAUT and UTAUT2 to study cryptocurrency or related systems. Arias-Oliva et al. (2019) used TAM and UTAUT2 (a model explained in a preceding section) to “explain 84.8% of the variance in the intention to use cryptocurrencies” in Spain. Recskó and Aranyossy (2024) used UTAUT2 to show Hungarian acceptance of social network-backed cryptocurrency payment systems was driven by performance expectancy, effort expectancy, perceived trust, and perceived risk. In the context of South African e-commerce, Mbeya and Mofokeng (2024) found hedonism and habit to be positively related to the behavioral intention to adopt Bitcoin. Alkhwalidi et al. (2023) studied Jordanian cryptocurrency use with UTAUT and found performance expectancy, effort expectancy, and facilitating conditions had a significant positive relationship with behavioral intention to use, whereas Alzyoud et al. (2025) later found that performance expectancy played a direct and mediating role within the model for a similar sample. A team led by Ji-Xi (2021) found the same relationships for Malaysians, while Abbasi et al. (2021) mirrored this for Malaysians with the exception of facilitating conditions. Note, however, that this study focused on cryptocurrency in the transaction space (not investing). Jergeson et al. (2023) found that hedonic motivation, social influence, customer innovativeness, performance expectancy, and price value positively related to the behavioral intention to use cryptocurrency for payments in the United Arab Emirates. Finally, Restuputri et al. (2023) and Puspanegara et al. (2024) studied Indonesian cryptocurrency adoption and found performance and effort expectancy, social influence, facilitating conditions, hedonic motivation, and price value to be positively related,

while producing conflicting results about habit. A summary of the four technology theories and their relationship to cryptocurrency can be found in Table 2.1.

Table 2.1. Comparison of four technology adoption theories

Model	Constructs	Cryptocurrency Studies	Cryptocurrency Drivers	Hedonic Constructs
Technology Readiness Model (TR)	Two enablers (optimism, innovativeness) and two inhibitors (discomfort and insecurity)	Sohaib et al. (2020), Alharbi and Sohaib (2020), Rahardja et al. (2023), Khan et al. (2022), Hariguna et al. (2023)	Innovativeness (+), optimism (+), discomfort (-), insecurity (-)	No
Technology Acceptance Model (TAM, TAM2, and TAM3)	Perceived usefulness (utility), perceived ease of use, attitude toward using technology, social influence processes, cognitive instrumental processes, individual differences, system characteristics, social influence, and facilitating conditions	Balaji et al. (2023), Jariyapan et al. (2022), Atellu (2024), Idrees et al. (2024), Sagheer et al. (2022)	Perceived usefulness (+), Perceived ease of use (+), attitude toward using technology (+), computer anxiety (+), computer self-efficacy (+)	Yes, as a determinant of perceived ease of use
Unified Theory of Acceptance and Use of Technology (UTAUT and UTAUT2)	Performance expectancy, effort expectancy, social influence, and facilitating conditions, hedonic motivation, price value, and habit	Arias-Oliva et al. (2019), Recskó & Aran, Mbeya and Mofokeng (2024), Alkhwalidi et al. (2023), Ji-Xi (2021), Abbasi et al. (2021), Restuputri et al. (2023), Puspanegara et al. (2024), (Jegerson et al., 2023), (Alzyoud et al., 2025)	performance expectancy (+), effort expectancy (+), hedonic motivation (+), habit (+), facilitating conditions (+), price value (+), social influence (mixed results)	Yes (UTAUT2)
Hedonic-Motivation System	Perceived usefulness (hedonic), perceived	None	Perceived usefulness (+), perceived ease	Yes

Adoption Model (HMSAM)	ease of use, control, joy, curiosity, immersion	of use (+), control (+), joy (+), curiosity (+), immersion (+) (hypothesized)
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2.3 Hypothesis Development

This dissertation explores seven hypotheses about risk propensity, hedonic motivation, and cryptocurrency investment. Based on the literature review, the first hypothesis represents the overall understanding that hedonic motivators will positively influence cryptocurrency use when utilized to invest instead of transact. The first place to test such a concept would be with hedonic motivation for investing in general, then moving to cryptocurrency investing in particular.

Therefore, the first hypothesis is related to general investing motivations:

H1: Investors acknowledging hedonic motivators for investing will be more likely to invest in cryptocurrency than those without hedonic motivators.

Primary data collection is needed to move beyond general investing motivations (captured in the NFCS). The subsequent three hypotheses relate to the primary data collection and the HMSAM model constructs of perceived usefulness (PU), curiosity, joy, and behavioral intention to use (BI). Previous studies have used HMSAM to demonstrate a positive relationship between PU and BI, curiosity and BI, and joy and BI. For evidence supporting this proposition, see Firdaus's (2019) research on student acceptance of MOOC technology demonstrating a positive relationship between PU, curiosity, and joy to BI, Tu and Jia's (2024) study of augmented reality broadcasting showing curiosity and joy with a positive relationship to

intention to pay, as well as Hsu (2024), Rehy and Tambotoh's (2022)¹⁷, and Perez et al.'s (2023) research showing PU, curiosity, and joy's positive relationship to BI in the virtual reality, Learning Management System (LMS), and Non-Fungible Tokens (NFTs) spaces.

H2: Perceived usefulness (PU) will have a positive relationship with behavioral intention to use (BI) cryptocurrency.

H3: Curiosity will have a positive relationship with behavioral intention to use cryptocurrency.

H4: Joy will have a positive relationship with behavioral intention to use cryptocurrency.

The following hypothesis relates to the primary data collection's review of risk propensity using the DOSPERT model. A study by Sonkurt and Altinöz (2021) demonstrated problematic, perhaps even pathological, gambling behaviors among cryptocurrency holders in addition to a subsequent individual case report published on a cryptocurrency trader who demonstrated gambling-like behaviors (Sonkurt, 2023). As mentioned previously, Mills and Nower (2019), Androulakis et al. (2021), and Kim et al. (2020) have found similar gambling-like behavior surrounding cryptocurrency.

H5: Risk propensity scores in the financial-gambling domain will have a positive relationship with behavioral intention to use cryptocurrency.

Finally, this dissertation moves beyond subjective behavioral intention to the objective behavior of adopting cryptocurrency. Such a move was not without precedent; for example, see Firdaus's (2019) research, which moved beyond BI to system adoption, and Jegerson et al. (2023) who studied the connection between BI and cryptocurrency adoption. The final three hypotheses investigate cryptocurrency adoption, keeping the same positive hypothesized relationships for PU, curiosity, joy, and financial-gambling to BI:

¹⁷ For this study, only PU → BI and curiosity → BI met the significance threshold of $p < 0.05$

H6: Perceived usefulness (PU) will have a positive relationship with cryptocurrency investment.

H7: Curiosity will have a positive relationship with cryptocurrency investment.

H8: Joy will have a positive relationship with cryptocurrency investment.

H9: Risk propensity scores in the financial-gambling domain will have a positive relationship with cryptocurrency investment.

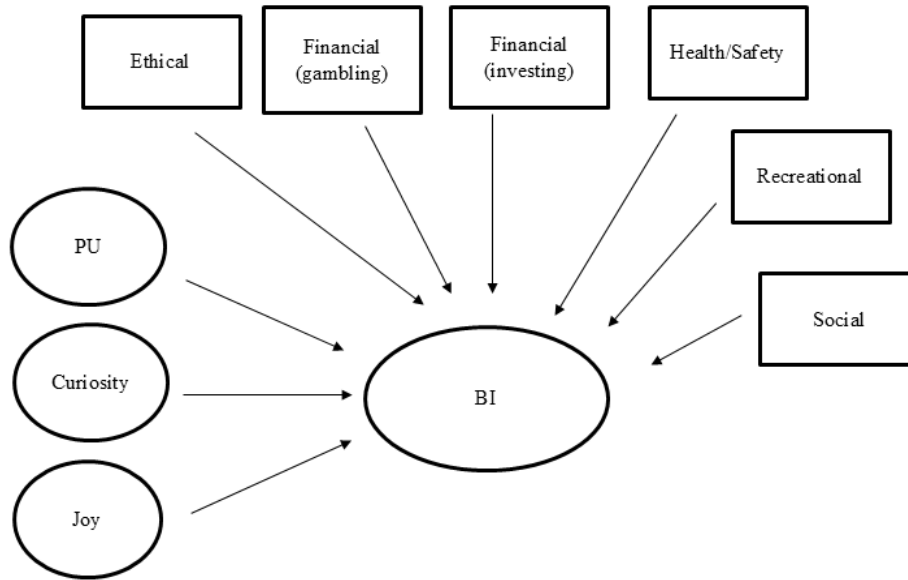
Chapter 3 – Methodology

3.1 Development of Survey Measures

This study used a newly created survey to investigate the adoption of cryptocurrency as a technology for investment purposes, considering individual risk propensity and hedonic enjoyment. The target population was individuals at least 18 years old living in the United States to align with the NFCS. A survey was created to measure investor and non-investor motivations for adopting cryptocurrency using the Hedonic-Motivation System Adoption Model (HMSAM) and DOSPERT. See Appendix A for the questions included in the final survey. The merging of HMSAM and DOSPERT in this survey is not without precedent, as DOSPERT has previously been modified to answer specific research questions. For example, DOSPERT questions have been shortened to fit various experimental designs (Harris & Jenkins, 2006; Roberts et al., 2008, p. 85) or only use specific items from domains such as financial, health, or gambling (Bapna et al., 2010; Brown & Braver, 2007; Cox et al., 2020; Li et al., 2015; Markiewicz & Weber, 2013; Wilke et al., 2014).

The survey was designed to include questions related to behavioral intention to use (BI) and hedonism from the Hedonic-Motivation System Adoption Model (HMSAM) instrument developed by Lowry et al. (2013). As mentioned earlier, to align with the primary research question, the survey was designed to contain a truncated HMSAM model focused on pathways flowing to BI instead of the full model, which aligns with testing both the *subjective* behavioral intention to invest in cryptocurrency and *objective* cryptocurrency investment. To focus on investing in cryptocurrency, questions in the Lowry et al. (2013) study were modified to relate to that action instead of playing a video game. The empirical model is shown below in Figure 3.1.

Figure 3.1. Empirical model



3.2 Variable Measurement

The sixty-five-question primary survey (see Appendix A) was comprised of questions from four areas: cryptocurrency, demographics, risk propensity (general risk propensity and DOSPERT), and hedonic motivations (HMSAM)¹⁸. The survey was developed to align with multiple questions from the NFCS so that the results from the two surveys could be compared using matching questions (using the 2018 and 2021 waves.¹⁹). As such, thirteen questions were used to compare the primary survey sample to the investor sample within the NFCS. The NFCS questions measure cryptocurrency investment status, gauge risk tolerance, understand motivations for cryptocurrency adoption as an investment²⁰ (including hedonic enjoyment), and gather demographic information. Questions Crypto1 (“Have you invested in cryptocurrencies,

¹⁸ The sixty-five question survey comprised of the following: 1 question for informed consent, 6 questions for cryptocurrency, 11 questions for demographics, risk tolerance and general risk propensity; 30 questions for DOSPERT, and 17 questions for HMSAM

¹⁹ The cryptocurrency variable was first introduced into the survey in the 2018 wave of the NFCS

²⁰ This is compared to the same question in the NFCS which only asks motivations for investing in general

either directly or through a fund that invests in cryptocurrencies?”) and Risk1 (“When thinking of your financial investments, how willing are you to take risks?”) were added verbatim from the NFCS whereas Crypto2 (“How well does each of the following describe why you invest in cryptocurrency?”) was modified to query cryptocurrency investment versus investing in general. Crypto2 was added to the survey from the NFCS to gauge the underlying reason for investing in cryptocurrency, including “for entertainment/excitement/fun/playing a game” to test for hedonic motivation. Crypto1 measures cryptocurrency investment with responses of yes, no, don’t know, or prefer not to say. Risk1 is measured using a scale of 1 (“not at all willing”) to 10 (“very willing”). Crypto2, cryptocurrency investment motivations, has answers of long-term gain, short-term gain, hedonism, social influence, values, and learning. Crypto3 asks, “In your opinion, how risky are cryptocurrencies as an investment?” with answers ranging from “not at all risky” to “extremely risky.” Three additional questions were added beyond the NFCS to measure investment frequency (Crypto4 “How often do you invest in cryptocurrency?” with answers of rarely, sometimes, and often), investment history (Crypto5 “For how long have you invested in cryptocurrency?” with answers of less than 1 year, 1-3 years, 3-5 years, and greater than 5 years), and investment instruments (Crypto6 “Which cryptocurrency have you invested in?”). The answers for Crypto6 were selected by identifying the top ten coins per coinmarketcap and Corporate Finance Institute on December 26, 2024 (CoinMarketCap, 2024b; Corporate Finance Institute, 2024). Those coins were Bitcoin (BTC), Ethereum (ETH), Tether (USDT), USD Coin (USDC), Binance Coin (BNB), Ripple (XRP), Cardano (ADA), Binance USD (BUSD), Solana (SOL), TRON (TRX), Polkadot (DOT), and Dogecoin (DOGE). These selections also align with the top coins by market capitalization and volume listed in research by Ahmed et al. (2024). Nine additional demographic variables from the NFCS were added including age (a range of 18 to 130

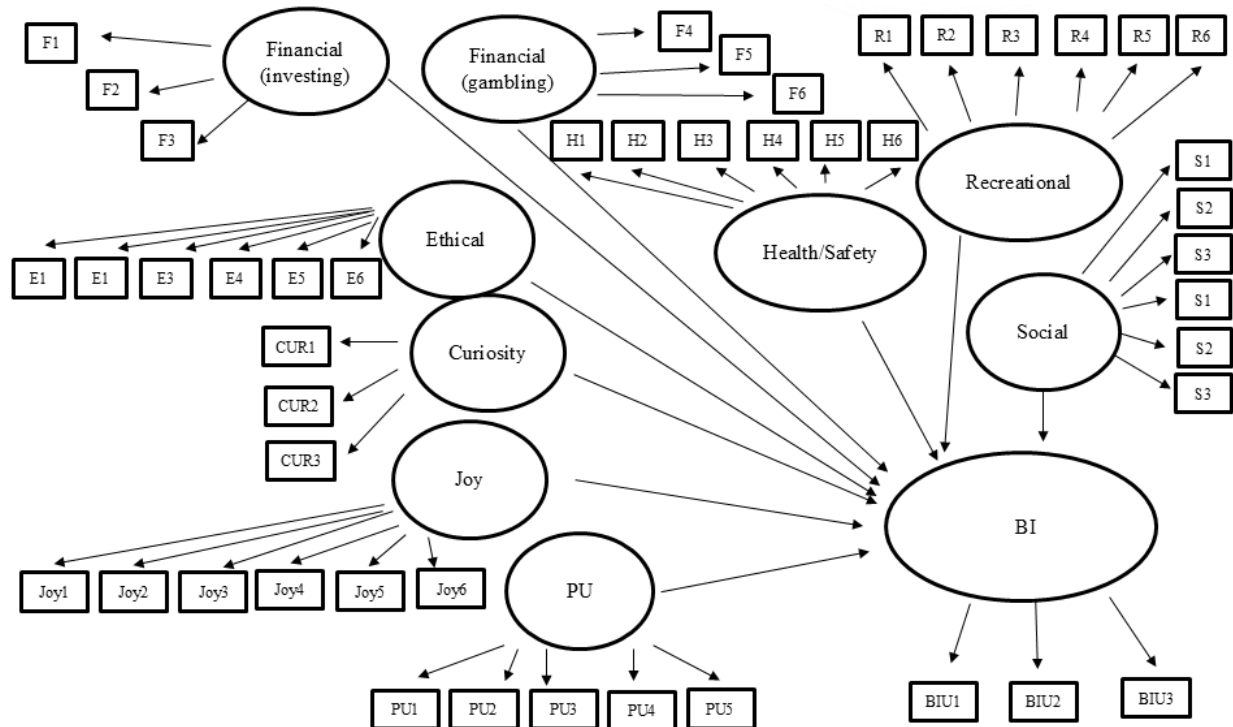
in one year increments), gender (man, woman, or self-described as “some other way”), marital status (married, single, separated, divorced, and widowed/widower), living arrangements (only adult in household, living with significant other, living in parent’s home, and living with someone else), race/ethnicity (white, black, Hispanic, Asian, Native American or Pacific Islander, American Indian or Alaskan Native, and other), level of education (did not complete high school, high school graduate – diploma, high school graduate – GED, some college but no degree, associate’s degree, bachelor’s degree, and post-graduate degree), income (a range of less than \$15,000 to \$300,000 or more), dependent children (range of zero to four or more), and employment status (self-employed, full-time, part-time, homemaker, full-time student, permanently sick/disabled/unable to work, unemployed or temporarily laid off, and retired). These questions are labeled Dem1-9 in the survey. Finally, a general risk propensity (GRP) measure was added to the survey (Dohmen et al., 2011). That question asked, “How do you see yourself: Are you generally a person who is fully prepared to take risks or do you try to avoid taking risks?” and collected answers on a scale of 1 “not at all willing to take risks” to 10 “very willing to take risks.”

The HMSAM constructs of joy, curiosity, BI, and PU were used in the survey for a total of seventeen questions. Joy includes six questions, curiosity three, BI three, and PU five. Answers were on a seven-point Likert scale from strongly disagree to strongly agree. These questions were modified to query these concepts specifically pertaining to cryptocurrency investment. The survey also included modified question structures for respondents who answered they had either 1) never invested in cryptocurrency or 2) selected don’t know or prefer not to say, to prevent confusion, typically by inserting the word *would* (i.e., the statement “I found investing in cryptocurrency to be enjoyable” was changed to “I *would* find investing in cryptocurrency to

be enjoyable” and “Investing in cryptocurrency excited my curiosity” was changed to “Investing in cryptocurrency *would* excite my curiosity,” etc.).

The DOSPERT scale was used in the survey, consisting of thirty questions measuring risk propensity across ethical, financial, health and safety, recreational, and social domains. Each question asked the respondent to rate their likelihood of engaging in a specific risky behavior on a seven-point Likert scale of extremely unlikely to extremely likely. Each domain included six questions. A conceptual framework with a survey question mapping diagram is found in Figure 3.2. Questions for both HMSAM and DOSPERT can be found in the Appendix, section A.2.

Figure 3.2. Conceptual framework with survey question mapping



3.2 Survey Administration, Reliability, and Validity

3.2.10 Survey Platform Quality Control Measures

Primary data was collected using CloudResearch and Qualtrics. CloudResearch's Connect is an online survey platform used by respondents who are incentivized to complete surveys for compensation. Although alternative platforms such as MTurk are quickly growing methods for collecting primary data, various methodological concerns exist around data quality, representativeness, respondent inattention, misrepresentation, and bias (Aguinis et al., 2021; Buhrmester et al., 2018; Follmer et al., 2017; Hunt & Scheetz, 2019). CloudResearch uses a robust screening process including various control measures to increase data quality. Although CloudResearch's underlying vetting technology (called Sentry®) is proprietary and therefore, not fully transparent, the company confirms that it includes various behavioral and technological checks to ensure respondent attention and weed out bot activity (Hartman et al., 2023). The CloudResearch team continues to vet participant response quality after enrollment (Hartman et al., 2023). Quality control was increased through enabling Qualtrics features such as third-party verification with Google reCAPTCHA, rejection of multiple submissions, security scan monitor, and RelevantID scoring (to reduce fraudulent or biased submissions). To ensure privacy and to decrease self-report bias, Qualtrics was set up to anonymize responses. All questions within Qualtrics were required to encourage the completion of the survey with no missing data. Survey participants were paid \$0.88 for a completed survey; this pricing structure met the minimum pricing standards for CloudResearch Connect projects.

3.2.11 CloudResearch Census Matching

CloudResearch's Connect was also chosen as a survey administration platform to select a more representative sample of United States citizens. United States citizens were chosen as the desired sample for this study for two purposes. First, surveying United States citizens allowed for

direct comparison to the NFCS dataset to check for unexpected results or bias in the primary data collection. Second, gathering data on United States citizens added to the literature, as many technology adoption papers studying cryptocurrency surveyed international demographics, as shown in the literature review. To this end, CloudResearch offered the marked advantage of the ability to apply census matching for respondent recruiting for better comparison to the NFCS (FGS Global & FINRA Investor Education Foundation, 2021; *Setting Quotas*, 2025). Although Census quotas were relaxed late in the survey administration process to gather the necessary sample size (see the next section for full details), this feature gathered a similar demographic profile to the NFCS (see demographic statistics in Chapter 4, specifically, Tables 4.1, 4.2, 4.3, 4.5, 4.6, and 4.8).

3.2.12 Survey Pilot Testing and Fraud Scores

In January 2025, three fifty-person pilot studies were sent out on the CloudResearch Connect platform to test the survey before full release (50-person pilots are the maximum allowed by the platform). The first pilot concluded successfully but included six respondents with a Qualtrics fraud score greater than 30.²¹ The second pilot included seven respondents with a Qualtrics fraud score >30. After the first two pilots, Qualtrics calculated a response quality of 97% and detected potential bot activity. To increase the quality of subsequent responses, a captcha question was added after the informed consent section to defend survey integrity. A third, fifty-person pilot was run after this change, and only three respondents demonstrated a high fraud score. The quality of responses did not subsequently decrease: it remained at 97% for the third pilot and persisted at that level through the end of the data collection process. The complete survey was administered after the third pilot. Census quotas held steady until the last

²¹ Qualtrics considers 30 to be an important, albeit arbitrary, cutoff point for fraud. See *Fraud Detection*, 2025.

25 respondents (i.e., 1,575/1,600) as there were not enough White and Hispanic men aged 60-99 to complete the survey. Upon completion, 100 respondents were added to reach a goal of 1,700. The survey data collection lasted three days. In line with the IRB application, all participants who completed a survey through CloudResearch were paid even if their responses had a potentially fraudulent score per Qualtrics.

3.2.13 Primary Data Cronbach's Alpha

DOSPERS and HMSAM reliability and validity were tested in the original articles by their authors. The revised, 30-question DOSPERT survey questions were found to have good internal consistency with Chronbach's alpha scores ranging from .71 to .86 (Blais & Weber, 2006, p. 38). The HMSAM survey was found to have composite reliability (rho) scores²² ranging from .84 to 0.98 (Lowry et al., 2013, p. 629). To decrease bias, only four questions in the primary data collection survey were created outside of previously validated or professionally administered surveys (i.e., the NFCS), and none of these questions were included in the analysis or results of this paper (Crypto4, Crypto5, Crypto6, and GRP; more specific DOSPERT risk measures were used instead of GRP).

Before conducting SEM and logistic regression analyses, DOSPERT and HMSAM questions, as administered for this study, were again tested for item agreement using Cronbach's alpha (Cronbach, 1951). Each measure, except for the social risk propensity construct, had a Cronbach's alpha measure greater than 0.7; this threshold is a common cutoff range for the social sciences (Nunnally, 1978). The social risk propensity construct fell below this level with an

²² The authors chose to use this test instead of Chronbach's alpha, but the interpretation is similar in that 0.7 is the baseline expectation (Cicchetti, 1994, p. 286).

alpha score of 0.66 and was therefore dropped from use in the SEM model to improve fit. The summary results from the Cronbach's alpha analysis are listed in Table 4.11.

Table 3.1. Cronbach's alpha for DOSPERT and HMSAM

Construct	Items in Scale	Avg. Interim Covariance	Alpha Coefficient
HMSAM total	17	1.961	0.966
HMSAM joy	6	1.940	0.916
HMSAM curiosity	3	2.851	0.952
HMSAM perceived usefulness (PU)	5	1.927	0.932
HMSAM behavioral intention to use (BI)	3	4.000	0.991
DOSPERT total	30	0.550	0.873
DOSPERT recreational	6	1.290	0.785
DOSPERT social	6	0.694	0.667
DOSPERT financial	6	1.121	0.801
DOSPERT financial-gambling	3	1.610	0.893
DOSPERT financial-investment	6	1.645	0.739
DOSPERT ethical	6	0.716	0.745
DOSPERT health/safety	6	1.015	0.703

3.3 Data Cleaning and Variable Coding

Survey data was collected from CloudResearch and Qualtrics and cleaned in Excel and Stata version 17.0. First, eleven respondents marked as timeouts by CloudResearch completed surveys within Qualtrics; these records were adjusted accordingly. One respondent messaged through the CloudResearch platform to explain an erroneous answer for the dependents question (Dem8). This answer was manually changed per the respondent's request. Incomplete (21 observations), in-progress (26 observations), and respondents who did not provide consent (1 observation) were deleted from the dataset (representing 2.83% of the total sample). Additionally, respondents with a Qualtrics fraud score of over 30 were dropped from the study (62 observations representing 3.65% of total respondents). The final sample size was 1,648,

which was well above the breakpoint for a large sample size (200+) referenced in Kline (2005, as cited in Memon et al., 2020) for Structural Equation Modeling (SEM).

Excel was also used to create a merged income variable: the original survey had two income questions (Dem7) – one for those who lived alone and one for households (based on the respondent’s answer to Dem4) and was recoded to the following categories: less than \$15,000, 15-25,000, 25-35,000, 35-50,000, 50-75,000, 75-100,000, 100-150,000, and greater than 150,000²³. The individual items from the DOSPERT and HMSAM seven-point Likert scales were recoded to 1) calculate an average score (out of seven) across items in the domain construct for use in descriptive statistics and 2) assign a total score across items in the domain construct to each respondent for use in the cryptocurrency investment logistic regression. The HMSAM questions for investors and non-investors were combined into one variable for each question. Three questions for the joy construct (Joy3, Joy4, and Joy6) had to be reverse-coded into new variables per the original scale’s design. The cryptocurrency risk perception variable was recoded into the three categories of “slight” (including not at all risky and slightly risky), “moderate” (including moderately risky), and “high” (including very risky and extremely risky). Age was recoded from a continuous variable to the age brackets of less than or equal to 24, 25-34, 35-44, 45-54, 55-64, and greater than 65. The risk tolerance variable was recoded into three categories: low (0-3), medium (4-7), and high (8-10). Ethnicity was recoded to “White” and “non-White” for better compatibility with NFCS. In fact, most of these changes were completed to increase the analysis's interpretability or comparability with the NFCS dataset.

²³ These ranges are listed as labels for ease of interpretation. The ranges are technically from the lower value on the range (inclusive) to higher value on the range (not inclusive). So, the true categories are less than \$15,000, 15-24,999, 25-34,999, 35-49,999, 50-74,999, 75-99,999, 100-149,999, and greater than 150,000.

3.4 Secondary Dataset: National Financial Capability Study (NFCS)

The secondary dataset used in this dissertation is the National Financial Capability Study, or NFCS for short. The FINRA Investor Education Foundation sponsors the NFCS. The cross-sectional survey collects data in tri-annual waves on 25,000 households within the United States (FINRA Foundation, n.d.). The survey was designed to approximate the U.S. Census distributions and offers compensation to fill out the instrument (FGS Global & FINRA Investor Education Foundation, 2021). The survey data includes a general data collection (called the State-by-State survey) and an investor-specific data collection (called the Investor survey). This secondary survey is quite similar to the primary one; the NFCS variables were coded to closely align with the primary data collection for comparison purposes. Cryptocurrency investment (binary variable), cryptocurrency risk perception (three categories, ordinal: “slight”, “moderate”, and “high”), risk tolerance (three categories, ordinal: “low,” 0-3, “medium,” 4-7, and “high,” 8-10), age (six categories, ordinal), gender (binary with male/female options), marital status (five categories, nominal), living arrangements (five categories, nominal), ethnicity (binary with “White” and “non-White”), level of education (seven categories, ordinal, ranging from “did not complete high school” to “post graduate degree”), income (eight categories, ordinal, from “less than \$15,000” to “150,000 or more”), dependent children (6 categories, ordinal), and employment (8 categories, nominal) were coded in the same fashion used during the primary research data cleaning process.

3.5 Analytical Framework

The analysis was conducted through logistic regression (to study the relationships between the binary cryptocurrency investing variable with others collected by the primary and secondary surveys) and SEM (to examine the significant paths using the HMSAM and

DOSPERT latent constructs to BI). For SEM, the latent variables of the DOSPERT risk propensity categories (recreation, financial-investing and financial-gambling, health/safety, and ethical)²⁴, perceived usefulness (PU), behavioral intention to use (BI), curiosity, and joy were fit within MPlus 8.10 using Confirmatory Factor Analysis (CFA). Subsequently, BI was regressed on PU, curiosity, joy, and the risk propensity categories of the DOSPERT model. The HMSAM model pathways were aligned with previous research, including Firdaus et al. (2019), Tu and Jia (2024), Hsu (2024), Perez et al. (2023), and Rehy and Tambotoh (2022) in addition to the original model proposed by Lowry et al. (2013). The DOSPERT model pathways are in line with previous research using SEM to fit the domain areas as latent constructs (or for use to fit a latent construct of a general risk score or risk attitudes), with this study choosing to investigate direct effects between the domains and the outcome variable instead of forming an interim latent risk propensity construct (Abroshan et al., 2021; Courtney et al., 2012; Reeck et al., 2022).

²⁴ Social was dropped from the model due to a low Cronbach's alpha score, as outlined earlier in the paper.

Chapter 4 – Findings and Results

4.1 Descriptive Statistics

4.1.1 NFCS Descriptive Statistics

4.1.1.1 General Investors

For comparison purposes (to the primary data collection sample) and to build a general profile of cryptocurrency investors, descriptive statistics were calculated using the combined NFCS state-by-state and investor surveys. Table 4.1 shows the descriptive statistics for investors in the combined NFCS 2018 and 2021 survey cohorts, equaling 4,827 observations. The sample contained 86.6% non-cryptocurrency investors and 13.4% cryptocurrency investors. Regarding cryptocurrency risk perceptions, 6.1% considered cryptocurrency slightly risky, 15.8% moderately risky, and 67.7% highly risky. The sample mostly fell within the medium risk tolerance category, with 15.4% classified as low risk tolerance, 58% as medium risk tolerance, and 26.2% as high risk tolerance. The sample was generally older, White, married, and highly educated (with 69% holding an advanced degree), with the majority (63.4%) exceeding the age of 55. The sample collected more male responses (59%) than female (41%). Over 37.4% reported an income exceeding \$100,000, with 36.6% reporting full-time employment and 41.1% retired.

Table 4.1. NFCS investor descriptive statistics

	Mean	Std. Dev.
Cryptocurrency investor status		
No crypto	0.866	0.341
Crypto	0.134	0.341
Crypto risk perceptions		
Slightly risky	0.061	0.239
Moderately risky	0.158	0.365
Highly risky	0.677	0.468
Risk tolerance		

Age	Low (1-3)	0.154	0.361
	Medium (4-7)	0.580	0.494
	High (8-10)	0.262	0.440
Age	18-24	0.030	0.171
	25-34	0.080	0.272
	35-44	0.117	0.322
	45-54	0.138	0.345
	55-64	0.224	0.417
	65+	0.410	0.492
Gender	Male	0.590	0.492
	Female	0.410	0.492
Marital status	Married	0.652	0.477
	Single	0.185	0.389
	Separated	0.006	0.079
	Divorced	0.100	0.300
	Widowed	0.057	0.231
Living arrangements	Only adult in household	0.250	0.433
	Live with significant other	0.675	0.468
	Live in parent's home	0.027	0.163
	Live with others	0.048	0.213
Ethnicity	White	0.811	0.392
	Non-White	0.189	0.392
Education	No high school	0.002	0.050
	High school diploma	0.099	0.298
	High school graduate - alternative degree	0.028	0.165
	Some college	0.181	0.385
	Associate's	0.097	0.296
	Bachelor's	0.357	0.479
	Post-graduate	0.236	0.424
Income	<15K	0.018	0.132
	15-25K	0.039	0.194
	25-35K	0.058	0.233
	35-50K	0.110	0.312

	50-75K	0.210	0.407
	75-100K	0.192	0.394
	100-150K	0.218	0.413
	150+	0.156	0.362
Dependent children			
	1	0.115	0.319
	2	0.093	0.290
	3	0.031	0.174
	4 or more	0.013	0.114
	No dependent children	0.435	0.496
	No children	0.313	0.464
Employment			
	Self-employed	0.082	0.275
	Work full-time	0.366	0.482
	Work part-time	0.069	0.254
	Homemaker	0.030	0.170
	Full-time student	0.008	0.091
	Disabled	0.011	0.102
	Unemployed	0.022	0.146
	Retired	0.411	0.492

Note: 2018 and 2021 combined cohorts; $n = 4,827$ except for crypto risk perceptions, which has 4,191 due to missing values

4.1.1.2 Investor Motivations

Since the NFCS investor survey motivation question (“How well does each of the following describe why you invest?”) was new to the 2021 cohort, the descriptive statistics for the answers to that question are listed separately in Table 4.2. The strongest motivator for investing (in general, not just cryptocurrency) was to make money in the long term (77.5% of respondents selected “describes very well” as the answer to this question). For the answer selection of “describes very well,” the next strongest motivators were to make money short-term (21.0%), learn about investing (18.9%), to make a difference in the world (10.2%), hedonic motivation (8.1%), and connect with others (7.2%). When looking at hedonic motivation (i.e., investing for entertainment, excitement, fun, or to play a game), the majority (69.7%) of the

sample said this did not describe their motivation for investing, while 19.0% stated somewhat, and 8.1% very well.

Table 4.2. NFCS investor motivation descriptive statistics

	Mean	Std. Dev.
Invest for short-term		
Does not describe	0.298	0.457
Describes somewhat	0.467	0.499
Describes very well	0.210	0.407
Invest for long-term		
Does not describe	0.017	0.129
Describes somewhat	0.188	0.391
Describes very well	0.775	0.418
Invest for hedonic motivations		
Does not describe	0.697	0.460
Describes somewhat	0.190	0.392
Describes very well	0.081	0.272
Invest for social		
Does not describe	0.742	0.438
Describes somewhat	0.130	0.336
Describes very well	0.072	0.258
Invest for values		
Does not describe	0.557	0.497
Describes somewhat	0.282	0.450
Describes very well	0.102	0.303
Invest to learn		
Does not describe	0.370	0.483
Describes somewhat	0.399	0.490
Describes very well	0.189	0.392

Note: 2021 cohort; $n = 2,824$

4.1.1.3 Cryptocurrency Investors

The combined NFCS general cohort from Table 4.1 was further reduced to show cryptocurrency holders only ($n = 649$). The results are shown in Table 4.3. Only 21.6% of cryptocurrency holders considered it slightly risky, whereas 35.6% considered it moderately risky and 41.6% highly risky. The highly risky category was a lower percentage than the NFCS

investor sample (41.6% compared to 67.7%). The sample was classified as 44.7% medium risk tolerance and 49.9% high risk tolerance (with a higher percentage of high risk tolerance individuals compared to NFCS investors at 26.2%). Nearly half of the sample (48.7%) fell in the age range of 25-44, with 59.5% married and 70.9% White. The sample collected more male responses (72.7%) than female (27.3%). The sample was well-educated, with 65.6% holding a college degree and 35.9% having an income exceeding \$100,000. The majority (63.0%) were employed full-time with only 9.6% reporting retired.

Table 4.3. NFCS cryptocurrency holder descriptive statistics

	Mean	Std. Dev.
Crypto risk perceptions		
Slightly risky	0.216	0.412
Moderately risky	0.356	0.479
Highly risky	0.416	0.493
Risk tolerance		
Low (1-3)	0.051	0.220
Medium (4-7)	0.447	0.498
High (8-10)	0.499	0.500
Age		
18-24	0.105	0.307
25-34	0.231	0.422
35-44	0.256	0.437
45-54	0.176	0.381
55-64	0.154	0.361
65+	0.079	0.269
Gender		
Male	0.727	0.446
Female	0.273	0.446
Marital status		
Married	0.595	0.491
Single	0.308	0.462
Separated	0.012	0.110
Divorced	0.076	0.264
Widowed	0.009	0.096
Living arrangements		
Only adult in household	0.294	0.456

	Live with significant other	0.595	0.491
	Live in parent's home	0.059	0.235
	Live with others	0.052	0.223
Ethnicity			
	White	0.709	0.455
	Non-White	0.291	0.455
Education			
	No high school	0.002	0.039
	High school diploma	0.102	0.302
	High school graduate - alternative degree	0.031	0.173
	Some college	0.211	0.408
	Associate's	0.119	0.324
	Bachelor's	0.347	0.476
	Post-graduate	0.190	0.392
Income			
	<15K	0.035	0.185
	15-25K	0.052	0.223
	25-35K	0.080	0.272
	35-50K	0.117	0.322
	50-75K	0.185	0.389
	75-100K	0.171	0.377
	100-150K	0.210	0.407
	150+	0.149	0.357
Dependent children			
	1	0.208	0.406
	2	0.160	0.367
	3	0.074	0.262
	4 or more	0.031	0.173
	No dependent children	0.176	0.381
	No children	0.351	0.478
Employment			
	Self-employed	0.111	0.314
	Work full-time	0.630	0.483
	Work part-time	0.065	0.246
	Homemaker	0.023	0.150
	Full-time student	0.018	0.135
	Disabled	0.017	0.129
	Unemployed	0.040	0.196
	Retired	0.096	0.294

Note: 2018 and 2021 combined cohorts; $n = 649$

4.1.1.4 Mann-Whitney U Test for NFCS

A Mann-Whitney U test was conducted on the combined NFCS 2018 and 2021 survey cohorts to explore the statistically significant differences between cryptocurrency and non-cryptocurrency investors for the NFCS dataset. The non-parametric Mann-Whitney U test was selected over an independent samples t-test due to the non-normality of the binary dependent variable (which is, by definition, not continuous). Statistically significant differences were found in the underlying distributions of each descriptive variable category except marital status and living arrangements. The results of the Mann-Whitney U test are outlined in Table 4.4. For comparison purposes, independent samples t-test and z-test results are listed in Appendix A.4.

Table 4.4. Mann-Whitney U test for NFCS

	Cryptocurrency		Z-Value	
	Non-Investor (<i>n</i> = 4,178)	Investor (<i>n</i> = 649)		
	Rank Sum	Rank Sum		
Crypto risk perceptions	7967855.0	816481.0	23.19	***
Risk tolerance	9657093.5	1995284.5	-14.66	***
Age	10870662.0	781716.5	24.85	***
Gender	10301013.0	1351365.5	7.65	***
Marital status	10054858.0	1597520.5	-1.10	
Living arrangements	10110240.0	1542138.5	0.90	
Ethnicity	9925809.0	1726569.0	-7.14	***
Education	10185339.0	1467039.5	3.12	**
Income	10171753.0	1480625.5	2.65	**
Dependent children	10271403.0	1380975.5	5.98	***
Employment	10604527.0	1047851.0	16.74	***

* Significant at $p < 0.05$; ** significant at $p < 0.01$; *** significant at $p < 0.001$

Note: for crypto risk perceptions $n = 3,542$ and $n = 649$, respectively, due to missing values

4.1.2 Primary Data – Descriptive Statistics

4.1.2.1 All Respondents

Descriptive statistics were calculated for all respondents in the primary data collection and presented in Table 4.5. The primary data collection, as mentioned previously, consisted of

1,648 respondents after data cleaning procedures. The sample contained more cryptocurrency investors than non-investors at 50.2% and 47.4%, respectively. Of the sample, 5.5% considered cryptocurrency slightly risky, 25.3% moderately risky, and 66.9% highly risky. Most respondents had medium risk tolerance (49.7%), with 39.9% low and 10.4% high. The sample represented a sizeable portion of each age category, with 75.4% White (24.6% non-White) and 44.1% single (versus 39.0% married). Most of the sample (87.8%) had at least some college education or more (with 37.3% holding a bachelor's degree). The sample was evenly split between males and females (49.5% versus 50.5%). Income earners exceeding \$100,000 represented 23.6% of respondents, and 45.8% were employed full-time. The average total DOSPERT score was 2.97. The average HMSAM joy score was 4.12, curiosity, 4.19, and PU, 2.75.

Table 4.5. Descriptive statistics for all respondents in primary data collection

		Mean	Std. Dev.
Cryptocurrency investor status			
	No crypto	0.474	0.499
	Crypto	0.502	0.500
Crypto risk perceptions			
	Slightly risky	0.055	0.228
	Moderately risky	0.253	0.435
	Highly risky	0.669	0.471
Risk tolerance			
	Low (1-3)	0.399	0.490
	Medium (4-7)	0.497	0.500
	High (8-10)	0.104	0.305
Age			
	18-24	0.087	0.282
	25-34	0.215	0.411
	35-44	0.178	0.382
	45-54	0.203	0.402
	55-64	0.158	0.365
	65+	0.159	0.366
Gender			

	Male	0.495	0.500
	Female	0.505	0.500
Marital status			
	Married	0.390	0.488
	Single	0.441	0.497
	Separated	0.008	0.092
	Divorced	0.123	0.328
	Widowed	0.033	0.178
Living arrangements			
	Only adult in household	0.269	0.443
	Live with significant other	0.465	0.499
	Live in parent's home	0.112	0.316
	Live with others	0.145	0.352
Ethnicity			
	White	0.754	0.431
	Non-White	0.246	0.431
Education			
	No high school	0.004	0.060
	High school diploma	0.088	0.283
	High school graduate - alternative degree	0.029	0.167
	Some college	0.226	0.419
	Associate's	0.112	0.315
	Bachelor's	0.373	0.484
	Post-graduate	0.167	0.374
Income			
	<15K	0.081	0.272
	15-25K	0.090	0.286
	25-35K	0.091	0.288
	35-50K	0.150	0.357
	50-75K	0.186	0.389
	75-100K	0.147	0.354
	100-150K	0.141	0.348
	150+	0.095	0.293
Dependent children			
	1	0.130	0.337
	2	0.137	0.344
	3	0.029	0.168
	4 or more	0.012	0.110
	No dependent children	0.218	0.413
	No children	0.466	0.499
Employment			

Self-employed	0.147	0.355
Work full-time	0.458	0.498
Work part-time	0.096	0.295
Homemaker	0.036	0.187
Full-time student	0.046	0.210
Disabled	0.016	0.127
Unemployed	0.061	0.240
Retired	0.133	0.340
DOSPERT average total score	2.972	0.796
DOSPERT average ethical score	1.990	0.980
DOSPERT average financial score	2.722	1.183
DOSPERT average financial-investing score	3.633	1.492
DOSPERT average financial-gambling score	1.810	1.343
DOSPERT average health/safety score	2.586	1.201
DOSPERT average recreation score	2.493	1.283
DOSPERT average social score	5.068	1.021
HMSAM average joy score	4.116	1.455
HMSAM average curiosity score	4.189	1.730
HMSAM average PU score	2.747	1.438
HMSAM average BI score	3.775	2.009

n = 1,648

4.1.2.2 Cryptocurrency Investors

Descriptive statistics were calculated for the smaller pool of cryptocurrency investors and presented in Table 4.6, *n* = 828. For this cohort, cryptocurrency risk perceptions were slightly higher in the moderately risky (31.8%) and slightly risky (6.8%) categories, with highly risky lower at 61.4% compared to the total sample of *n* = 1,648. Like the larger sample, most respondents had medium risk tolerance (59.7%), with a smaller percentage claiming the lower category (22.6%). The high risk tolerance category was 17.8% (compared to 10.4% for the larger sample). Cryptocurrency investors were 70.4% White (29.6% non-White), 40.2% married, and 47.2% single. Even more of this sample (90.2%) had at least some college education or more (compared to the larger sample at 87.8%). More males invested in cryptocurrency (65.0%) than women (35.0%). Income earners exceeding \$100,000 represented 27.3% of cryptocurrency

investors, with 54.8% employed full-time. The average total DOSPERT score was higher in this subsample at 3.22 (compared to 2.97). The average HMSAM scores were higher, with an average joy score of 4.91, curiosity, 5.08, and PU, 3.41.

Table 4.6. Descriptive statistics for cryptocurrency investors in primary data collection

		Mean	Std. Dev.
Crypto risk perceptions			
	Slightly risky	0.068	0.251
	Moderately risky	0.318	0.466
	Highly risky	0.614	0.487
Risk tolerance			
	Low (1-3)	0.226	0.418
	Medium (4-7)	0.597	0.491
	High (8-10)	0.178	0.382
Age			
	18-24	0.089	0.285
	25-34	0.273	0.446
	35-44	0.215	0.411
	45-54	0.209	0.407
	55-64	0.123	0.329
	65+	0.091	0.287
Gender			
	Male	0.650	0.477
	Female	0.350	0.477
Marital status			
	Married	0.402	0.491
	Single	0.472	0.500
	Separated	0.010	0.098
	Divorced	0.101	0.302
	Widowed	0.010	0.098
Living arrangements			
	Only adult in household	0.249	0.433
	Live with significant other	0.486	0.500
	Live in parent's home	0.116	0.320
	Live with others	0.139	0.346
Ethnicity			
	White	0.704	0.457
	Non-White	0.296	0.457
Education			

	No high school	0.001	0.035
	High school diploma	0.070	0.255
	High school graduate - alternative degree	0.024	0.154
	Some college	0.222	0.416
	Associate's	0.101	0.302
	Bachelor's	0.424	0.494
	Post-graduate	0.155	0.362
Income			
	<15K	0.072	0.259
	15-25K	0.068	0.251
	25-35K	0.075	0.263
	35-50K	0.136	0.343
	50-75K	0.197	0.398
	75-100K	0.163	0.370
	100-150K	0.162	0.369
	150+	0.111	0.314
Dependent children			
	1	0.152	0.359
	2	0.167	0.373
	3	0.035	0.184
	4 or more	0.017	0.129
	No dependent children	0.159	0.366
	No children	0.463	0.499
Employment			
	Self-employed	0.138	0.345
	Work full-time	0.548	0.498
	Work part-time	0.083	0.277
	Homemaker	0.025	0.157
	Full-time student	0.052	0.222
	Disabled	0.010	0.098
	Unemployed	0.056	0.229
	Retired	0.082	0.275
DOSPERT average total score		3.215	0.836
DOSPERT average ethical score		2.188	1.098
DOSPERT average financial score		3.118	1.228
DOSPERT average financial-investing score		4.087	1.446
DOSPERT average financial-gambling score		2.149	1.526
DOSPERT average health/safety score		2.862	1.285
DOSPERT average recreation score		2.778	1.349
DOSPERT average social score		5.127	0.990
HMSAM average joy score		4.911	1.216

HMSAM average curiosity score	5.081	1.262
HMSAM average PU score	3.407	1.400
HMSAM average BI score	5.082	1.530

$n = 828$

4.1.2.3 Mann-Whitney U Test for Primary Data

The Mann-Whitney U test was used to uncover differences between cryptocurrency and non-cryptocurrency investors. Similar to the NFCS analysis, the non-parametric Mann-Whitney U test was selected due to the non-normality of the binary dependent variable. Statistically significant differences were found in the underlying distributions of each descriptive variable category except for living arrangements. This result points to the need for further analysis with SEM and logistic regression to explore these relationships. The results of the Mann-Whitney U test are outlined in Table 4.7. Again, independent samples t-test and z-test results are also listed in Appendix A.4.

Table 4.7. Mann-Whitney U test for primary data collection

	Cryptocurrency		Z-Value	
	Non-Investor ($n=820$)	Investor ($n=828$)		
	Rank Sum	Rank Sum		
Crypto risk perceptions	737190.0	621586.0	7.65	***
Risk tolerance	539806.5	818969.5	-15.65	***
Age	758347.0	600429.0	8.66	***
Gender	781992.0	576784.0	12.66	***
Marital status	702525.0	656251.0	2.96	***
Living arrangements	666920.0	691856.0	-1.01	
Ethnicity	709886.0	648890.0	4.69	***
Education	654925.0	703851.0	-2.27	*
Income	630597.0	728179.0	-4.75	***
Dependent children	698380.0	660396.0	2.46	*
Employment	724260.0	634516.0	5.26	***
DOSPRT average total score	556133.5	802642.5	-12.42	***
DOSPRT average ethical score	605673.0	753103.0	-7.33	***
DOSPRT average financial score	540508.0	818268.0	-14.05	***

DOSPERT average financial-investing score	553354.0	805422.0	-12.74	***
DOSPERT average financial-gambling score	582532.0	776244.0	-10.80	***
DOSPERT average health/safety score	589549.5	769226.5	-8.97	***
DOSPERT average recreation score	589027.5	769748.5	-9.03	***
DOSPERT average social score	651489.5	707286.5	-2.55	*
HMSAM average joy score	457120.5	901655.5	-22.69	***
HMSAM average curiosity score	472025.5	886750.5	-21.24	***
HMSAM average PU score	495316.5	863459.5	-18.81	***
HMSAM average BI score	420870.0	937906.0	-26.64	***

* Significant at $p < 0.05$; ** significant at $p < 0.01$; *** significant at $p < 0.001$

4.1.2.4 Cryptocurrency Investor Motivations

Cryptocurrency investor motivations are outlined in Table 4.8. This table summarizes results that filled a significant knowledge gap with the NFCS secondary dataset, which only queried these motivations for investing in general. Figure 4.1 summarizes the top respondent motivations for investing in cryptocurrency. Across the cryptocurrency investor sample, making money in the long term came in as the primary motivator (answer = “describes very well”), followed by making money in the short term, learning about investing, and finally, hedonic motivation (i.e., investing in cryptocurrency “for entertainment/excitement/fun/playing a game”). In other words, hedonic motivation ranked fourth out of six potential motivators. This finding slightly deviated from the NFCS general investor motivations found in Table 4.2 with the heightened ranking of hedonism in the cryptocurrency context, ranking fourth instead of fifth (the NFCS “describes very well” ranking for general investment motivations was long-term profit, short-term profit, learning, values, hedonism, and social).

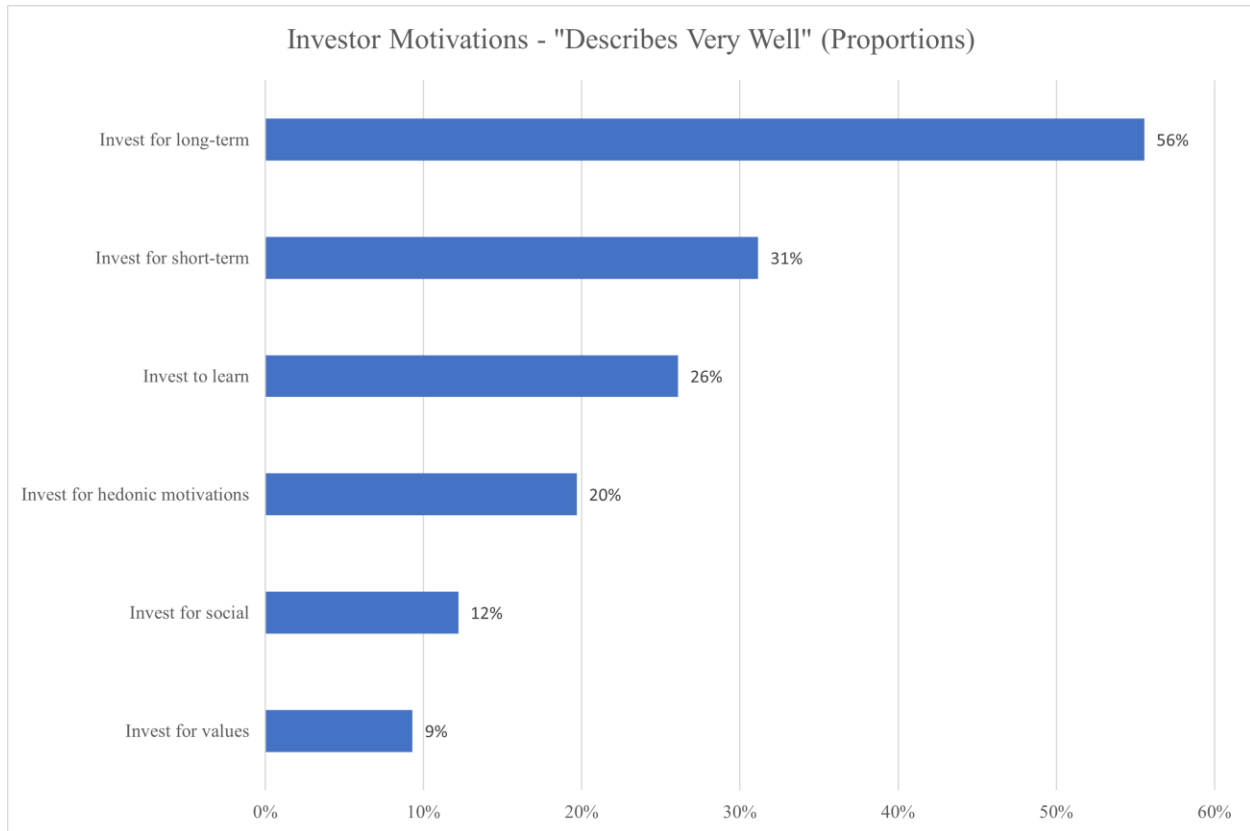
Table 4.8. Investment motivations for cryptocurrency investors in primary data collection

	Mean	Std. Dev.
Invest for short-term		
Does not describe	0.210	0.408

Describes somewhat	0.470	0.499
Describes very well	0.312	0.463
Invest for long-term		
Does not describe	0.121	0.326
Describes somewhat	0.307	0.461
Describes very well	0.556	0.497
Invest for hedonic motivations		
Does not describe	0.423	0.494
Describes somewhat	0.371	0.483
Describes very well	0.197	0.398
Invest for social		
Does not describe	0.570	0.495
Describes somewhat	0.283	0.451
Describes very well	0.122	0.327
Invest for values		
Does not describe	0.702	0.458
Describes somewhat	0.169	0.375
Describes very well	0.093	0.291
Invest to learn		
Does not describe	0.264	0.441
Describes somewhat	0.465	0.499
Describes very well	0.261	0.439

$n = 828$

Figure 4.1. Investment motivations for cryptocurrency investors in primary data collection



4.2 Analysis

4.2.1 NFCS Cryptocurrency Logistic Regression (2018 and 2021 cohorts)

A logistic regression was run using the combined NFCS investor dataset for the 2018 and 2021 survey cohorts on the binary cryptocurrency holding variable. Before the model run, it was observed that the cryptocurrency risk perception variable had 636 missing observations. These missing observations were handled through listwise deletion (636 represented 13.2% of total observations, a change from $n = 4,827$ to $n = 4,191$), as attempting to estimate the missing values with multiple imputation using a multinomial logit model in Stata 17.0 was unsuccessful due to the presence of perfect predictors (*Mi Impute: Stata User Manual*, n.d.). The results of the model run are listed in Table 4.9. Model results show that cryptocurrency risk perceptions and risk tolerance played a significant role in cryptocurrency adoption. NFCS investors who perceived

cryptocurrency as highly risky versus slightly risky were 0.18 times the odds of investing in cryptocurrency (a significant, negative relationship). On the other hand, NFCS investors who had high risk tolerance compared to low risk tolerance were 2.90 times the odds of investing in cryptocurrency (a significant, positive relationship). Starting in the age category of 35-44, being older was negatively associated with investing in cryptocurrency compared to younger individuals in the 18-24 age bracket. Females were 0.55 times the odds of investing in cryptocurrency compared to males. Being single, divorced, and widowed was negatively associated with investing in crypto versus being married. Finally, living with a significant other or parents was negatively associated with cryptocurrency investment compared to living alone.

Table 4.9. Logistic regression for cryptocurrency investors (2018 and 2021 cohorts)

		Coeff.		SE	Odds Ratio
Crypto risk perceptions (base: slightly risky)					
	Moderately risky	-0.452	**	0.174	0.637
	Highly risky	-1.719	***	0.164	0.179
Risk tolerance (base: low)					
	Medium (4-7)	0.424	*	0.212	1.529
	High (8-10)	1.064	***	0.218	2.899
Age (base 18-24)					
	25-34	-0.343		0.266	0.710
	35-44	-0.920	**	0.269	0.399
	45-54	-1.272	***	0.274	0.280
	55-64	-1.809	***	0.286	0.164
	65+	-2.592	***	0.333	0.075
Gender (base: male)					
	Female	-0.599	***	0.119	0.549
Marital status (base: married)					
	Single	-0.690	**	0.217	0.501
	Separated	0.145		0.557	1.156
	Divorced	-0.513	*	0.244	0.599
	Widowed	-1.466	**	0.481	0.231
Living arrangements (base: only adult in household)					

Live with significant other	-0.768	***	0.196	0.464
Live in parent's home	-0.585	*	0.290	0.557
Live with others	-0.157		0.248	0.854
Ethnicity (base: White)				
Non-White	0.118		0.123	1.125
Education (base: no high school)				
High school diploma	1.545		1.163	4.687
High school graduate - alternative degree	1.597		1.194	4.936
Some college	1.618		1.156	5.042
Associate's	1.589		1.163	4.901
Bachelor's	1.198		1.156	3.312
Post-graduate	1.196		1.160	3.308
Income (base: <15K)				
15-25K	0.093		0.402	1.097
25-35K	0.178		0.391	1.194
35-50K	0.115		0.374	1.122
50-75K	-0.406		0.367	0.666
75-100K	-0.433		0.373	0.648
100-150K	-0.345		0.374	0.708
150+	-0.184		0.385	0.832
Dependent children (base: 1)				
2	-0.187		0.185	0.829
3	0.046		0.248	1.047
4 or more	0.321		0.353	1.378
No dependent children	-0.268		0.187	0.765
No children	-0.250		0.166	0.779
Employment (base: self-employed)				
Work full-time	0.046		0.175	1.047
Work part-time	-0.202		0.257	0.817
Homemaker	-0.059		0.359	0.943
Full-time student	-0.627		0.458	0.534
Disabled	0.365		0.446	1.440
Unemployed	0.094		0.333	1.099
Retired	-0.431		0.233	0.650
Constant	0.587		1.2232	1.799
Model fit statistics				
Log-likelihood	-			
	1249.670			
McFadden pseudo R ²	0.308			

* Significant at p < 0.05; ** significant at p < 0.01; *** significant at p < 0.001

4.2.2 NFCS Cryptocurrency Logistic Regression with Investor Motivation Variable (2021 cohort)

A second logistic regression was run using the combined NFCS investor dataset to analyze the investor motivation variable, of which hedonic motivation is a part. Given that this question was asked for the first time in 2021, the combined state-by-state and investor survey for only that year was used. In this model, the binary-dependent cryptocurrency holding variable was regressed on the independent variables identified in the secondary dataset. Before the model run, it was observed that the cryptocurrency risk perception variable had 349 missing observations. These missing observations were handled through listwise deletion (see the note from section 4.2.1 on perfect predictors influencing this choice on handling missing values; 349 missing observations represented 12.4% of total observations, a change from $n = 2,824$ to $n = 2,475$). The results of the model run are listed in Table 4.10. Model results show that investors who were highly motivated to invest due to hedonic motivators (“describes very well”) – as compared to those who were not (“does not describe”) – were 2.86 times the odds to own cryptocurrency compared to non-cryptocurrency holders. As such, hypothesis 1 was supported. Also, investors who were highly motivated to invest for short-term gain (“describes very well”) – as compared to those who were not (“does not describe”) – were 1.87 times the odds of owning cryptocurrency. Investing to learn was also a significant result, showing that investors who were highly motivated to invest to learn (“describes very well”) – as compared to those who were not (“does not describe”) – were 1.81 times the odds to own cryptocurrency. As would be expected, the same negative relationship existed between those who considered cryptocurrency highly risky (as compared to slightly risky), older (45-65+) compared to younger (18-24), and females

compared to males and investing in cryptocurrency. Also, those who had high risk tolerance, compared to low risk tolerance, were 2.43 times the odds of investing in cryptocurrency.

Table 4.10. Logistic regression for cryptocurrency investors with investor motivation variable (2021 Cohort)

		Coeff.		SE	Odds Ratio
Invest for short-term (base: does not describe)					
	Describes somewhat	0.553	**	0.180	1.739
	Describes very well	0.624	**	0.202	1.867
Invest for long-term (base: does not describe)					
	Describes somewhat	-0.435		0.593	0.648
	Describes very well	-0.280		0.581	0.756
Invest for hedonic motivations (base: does not describe)					
	Describes somewhat	0.850	***	0.158	2.341
	Describes very well	1.052	***	0.247	2.863
Invest for social (base: does not describe)					
	Describes somewhat	0.098		0.193	1.103
	Describes very well	0.035		0.277	1.035
Invest for values (base: does not describe)					
	Describes somewhat	-0.169		0.168	0.845
	Describes very well	-0.162		0.235	0.850
Invest to learn (base: does not describe)					
	Describes somewhat	0.342		0.185	1.408
	Describes very well	0.592	**	0.213	1.808
Crypto risk perceptions (base: slightly risky)					
	Moderately risky	-0.241		0.223	0.786
	Highly risky	-1.252	***	0.214	0.286
Risk tolerance (base: low)					
	Medium (4-7)	0.311		0.258	1.365
	High (8-10)	0.887	**	0.269	2.428
Age (base 18-24)					
	25-34	-0.176		0.380	0.838
	35-44	-0.730		0.380	0.482
	45-54	-0.811	*	0.391	0.444
	55-64	-1.410	***	0.405	0.244

	65+	-2.142	***	0.453	0.117
Gender (base: male)					
	Female	-0.692	***	0.156	0.501
Marital status (base: married)					
	Single	-0.274		0.290	0.760
	Separated	0.121		0.766	1.129
	Divorced	-0.164		0.322	0.849
	Widowed	-0.938		0.561	0.392
Living arrangements (base: only adult in household)					
	Live with significant other	-0.668	*	0.267	0.513
	Live in parent's home	-0.855	*	0.384	0.425
	Live with others	-0.073		0.309	0.929
Ethnicity (base: White)					
	Non-White	0.026		0.163	1.026
Education (base: no high school)					
	High school diploma	0.387		0.294	1.473
	High school graduate - alternative degree	0.169		0.477	1.184
	Some college	0.458	*	0.227	1.581
	Associate's	0.208		0.255	1.231
	Bachelor's	-0.119		0.190	0.888
	Post-graduate	-		-	-
Income (base: <15K)					
	15-25K	0.192		0.537	1.212
	25-35K	0.390		0.508	1.476
	35-50K	0.613		0.489	1.846
	50-75K	-0.167		0.481	0.846
	75-100K	-0.430		0.489	0.651
	100-150K	-0.050		0.489	0.951
	150-200K	-0.025		0.523	0.975
	200-300K	0.317		0.545	1.373
	300k+	-0.136		0.643	0.873
Dependent children (base: 1)					
	2	-0.262		0.239	0.770
	3	0.188		0.322	1.207
	4 or more	0.314		0.548	1.368
	No dependent children	-0.081		0.236	0.922
	No children	-0.313		0.217	0.731
Employment (base: self-employed)					
	Work full-time	0.000		0.225	1.000
	Work part-time	-0.559		0.343	0.572

	Homemaker	0.544	0.438	1.724
	Full-time student	-0.317	0.649	0.728
	Disabled	-0.008	0.563	0.992
	Unemployed	0.135	0.398	1.145
	Retired	-0.537	0.282	0.584
Constant		0.478	0.931	1.613
Model fit statistics				
Log-likelihood		-		
		784.591		
McFadden pseudo R ²		0.363		

* Significant at $p < 0.05$; ** significant at $p < 0.01$; *** significant at $p < 0.001$

4.2.3 Confirmatory Factor Analysis

Confirmatory Factor Analysis (CFA) was conducted in MPlus 8.10 for the latent variables in the conceptual model including the HMSAM constructs of PU, curiosity, joy, and BI and the DOSPERT constructs of ethical, financial-gambling, financial-investing, health/safety, and recreational. The fit statistics are summarized in Table 4.11. The latent constructs of BI, curiosity, financial-gambling, and financial-investment were just identified whereas joy, PU, ethical, health/safety, and recreational were fit successfully. Besides those just identified, all latent constructs had χ^2 p -values $> .05$, TLI and CFI > 0.95 , RMSEA < 0.05 , and SRMR < 0.08 , except for the χ^2 p -value for DOSPERT recreational, which was significant at the $p < 0.05$ level. However, the alternative fit statistics for that latent construct were well within the acceptable ranges.

Table 4.11. CFA model fit statistics

Latent Construct	$\chi^2(df)$	p	TLI	CFI	RMSEA	SRMR
DOSPERT ethical	10.686(8)	0.220	0.997	0.999	0.014	0.009
DOSPERT health/safety	5.912(4)	0.2058	0.995	0.999	0.017	0.008
DOSPERT recreational	9.874(4)	0.043	0.992	0.998	0.030	0.008
DOSPERT financial-gambling			Just identified			

DOSPERT financial-investing			Just identified			
HMSAM joy	6.116(4)	0.191	0.999	1.000	0.018	0.002
HMSAM PU	2.566(2)	0.2772	1.000	1.000	0.013	0.003
HMSAM BI			Just identified			
HMSAM curiosity			Just identified			

While fitting the latent constructs of ethical, health/safety, and recreational risk propensity and perceived usefulness, curiosity, and joy in MPlus, the software's modification indices suggested improvements by correlating select questions within each scale. As the questions in each latent variable's domain were designed to query the same construct (i.e. HMSAM gathering information on hedonism and DOSPERT gathering information on risk tolerance across specific domains), these suggestions were judged to align with the study's theoretical frameworks. Chi-square difference testing allowed the author to monitor each modification's change in fit statistics, including χ^2 and degrees of freedom. The changes made, with corresponding changes in χ^2 and degrees of freedom, are outlined in Table 4.12.

Table 4.12. χ^2 difference testing results

Latent Construct	Addition to the base model	Original		New	
		χ^2	df	χ^2	df
DOSPERT ethical	dpert29_e WITH dpert9_e	23.89	9	10.69	8
DOSPERT health/safety	dpert15_hs WITH dpert5_hs; dpert20_hs WITH dpert17_hs; dpert26_hs WITH dpert23_hs; dpert23_hs WITH dpert5_hs; dpert23_hs WITH dpert15_hs	143.55	9	5.91	4
DOSPERT recreational	dpert24_r WITH dpert19_r; dpert25_r WITH dpert19_r; dpert13_r WITH dpert2_r; dpert25_r WITH dpert2_r; dpert25_r WITH dpert24_r	232.07	9	9.874	4
HMSAM joy	tru_j_6 WITH tru_j_4; tru_j_6 WITH tru_j_3; tru_j_4 WITH tru_j_3; joy_2 WITH joy_1; tru_j_6 WITH joy_5	737.25	9	6.116	4
HMSAM PU	pu_3 WITH pu_2; pu_5 WITH pu_3; pu_4 WITH pu_2	399.46	5	2.566	2

4.2.4 SEM Results – Behavioral Intention to Invest in Cryptocurrency

After analyzing the latent constructs for validity and reliability using a CFA, a full Structural Equation Model was fit in line with the conceptual model presented in Chapter 3, Figure 3.1. Considering that the HMSAM model questions were modified to ask about cryptocurrency investment, it was appropriate to add control variables related to cryptocurrency investing. The following controls were added to the model in alignment with studies on cryptocurrency: age, gender, marital status, living arrangements, education, income, dependents, employment, ethnicity, financial risk tolerance, and cryptocurrency risk perceptions. These controls were in line with other studies investigating cryptocurrency ownership including Steinmetz et al. (2021)²⁵, Auer and Tercero-Lucas (2022)²⁶, and Henry et al. (2019)²⁷. Research from Bhattacharjee et al. (2024) showed, at least among Indian investors, high risk perception for cryptocurrency investors. Almajali et al. (2022) found a negative relationship between perceived cryptocurrency risk and behavioral intention to use cryptocurrency for Jordanians, although many questions were geared toward cryptocurrency payments and transactions (not investing). Two other cryptocurrency studies looked at perceived concern (Abramova et al., 2021) and an expected collapse in cryptocurrency markets (Teker et al., 2023), concepts that were closely related to the cryptocurrency risk perceptions control variable. Moreover, logic follows that this control variable could have an impact on an individual's behavioral intention to invest in

²⁵ Demographic variables included age, gender, income, education, and cryptocurrency-related variables such as knowledge of cryptocurrency and different coins

²⁶ Demographic variables included income, education, marital status, age, employment, gender, and ethnicity and cryptocurrency-related variables such as knowledge of cryptocurrency

²⁷ This study showed differences in Canadian cryptocurrency holdings by gender, education, income, and age, lending support for using these variables as controls. See also the original study which looked at geography and cryptocurrency knowledge (Henry et al., 2018).

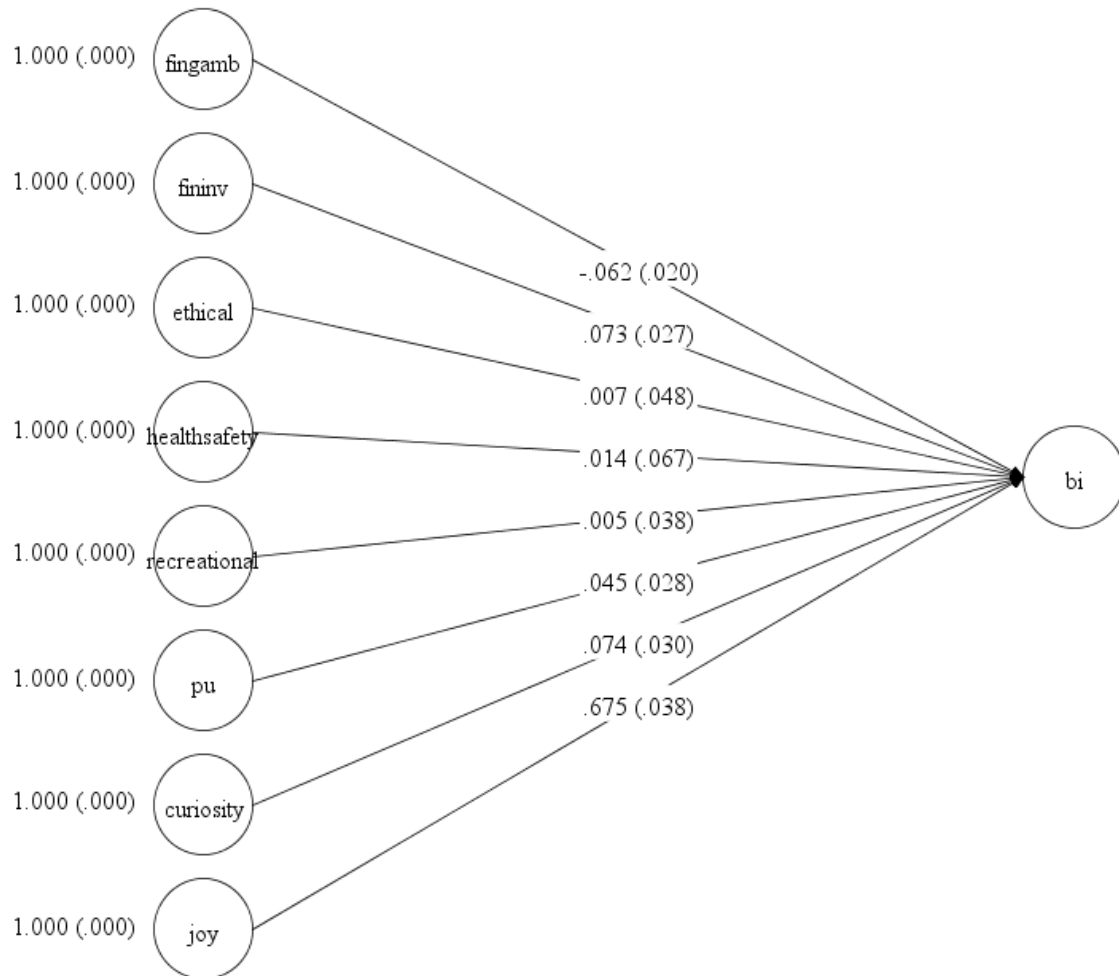
cryptocurrency. Furthermore, these controls were used in the NFCS and primary data collection logistic regression models, so including them increased comparability between those models and SEM.

The first model executed successfully in MPlus with the following fit statistics: $\chi^2(1163) = 5254.715, p < .0001; TLI = .918; CFI = .925; RMSEA = .046; SRMR = .091$. The model fit indices indicated correlating risk tolerance with financial-investing would improve model fit, a reasonable recommendation given the study's theoretical underpinnings. A chi-square difference test was initiated with the final model executing successfully with acceptable, improved fit statistics ($\chi^2(1165) = 4560.761, p < .0001; TLI = .932; CFI = .938; RMSEA = .042; SRMR = .070$) (Kline, 2016). Four of the seven regression paths were significant, evidencing curiosity, joy, and financial-investing risk propensity were positively related to behavioral intention to invest in cryptocurrency. On the other hand, financial-gambling risk propensity was negatively related to behavioral intention to invest in cryptocurrency. Hypotheses 3 and 4 were supported, while hypotheses 2 and 5 were rejected. Standardized model factor loadings show that joy was the best predictor of behavioral intention to adopt cryptocurrency within this model. For a one standard deviation increase in joy, there was a 0.68 standard deviation increase in behavioral intention to adopt cryptocurrency, for a one standard deviation increase in curiosity, a 0.07 standard deviation increase in BI, for a one standard deviation increase in financial-investment risk propensity, a 0.07 standard deviation increase, and for a one standard deviation increase in financial-gambling risk propensity, a 0.06 standard deviation decrease. Overall, the model explained seventy-four percent ($R^2 = 0.740$) of the variance in behavioral intention to adopt cryptocurrency. The SEM model's direct effects are outlined in Table 4.13. Figure 4.2 shows standardized results for direct effects pathways for the empirical model.

Table 4.13. Standardized and significance levels (direct effects) for the Structural Equation Model – behavioral intention to invest in cryptocurrency

<i>Parameter Estimate</i>	<i>β (SE β)</i>	<i>p</i>
Structural Model		
PU → BI	.045(.028)	0.107
Curiosity → BI	.074(.030)	<.0.05
Joy → BI	.675(.038)	<.0.0001
Financial (gambling) → BI	-.062(.020)	<0.01
Financial (investing) → BI	.073(.027)	<0.01
Ethical → BI	.007(.048)	0.875
Health/safety → BI	.014(.067)	0.835
Recreational → BI	.005(.038)	0.904
<i>Note: $\chi^2(1165) = 4560.761, p < .0001$; TLI = .932; CFI = .938; RMSEA = .042; SRMR = .070</i>		

Figure 4.2. Empirical model overlay diagram showing standardized and significance levels (direct effects) for the Structural Equation Model – behavioral intention to invest in cryptocurrency



4.2.5 Primary Data Cryptocurrency Logistic Regression

To explore beyond behavioral intention (a subjective indicator) to actual investment behavior (objective), logistic regression was conducted using cryptocurrency holding as a binary, dependent variable. Model results are presented in Table 4.14. Respondents with high risk propensity, compared to low risk propensity, were 2.93 times the odds of investing in cryptocurrency compared to non-investors. Individuals 65+, compared to those aged 18-24, were 0.41 times the odds of investing in cryptocurrency compared to non-investors. Similarly, females were less likely than males to invest in cryptocurrency compared to non-investors, coming in at 0.34 times the odds. Interestingly, respondents listing separated as their relationship status,

compared to married individuals, were 5.86 times the odds of investing in cryptocurrency compared to non-investors. For risk propensity measures, ethical had a positive relationship with investing in cryptocurrency. For hedonic measures, joy and curiosity had a positive relationship with investing in cryptocurrency. Across the significant risk propensity and hedonic measures, joy had the greatest effect (odds ratio = 1.13). The financial-investing and financial-gambling estimates were not significant with p values > 0.05 . Based on these results, hypotheses 7 and 8 were supported whereas hypotheses 6 and 9 were rejected.

Table 4.14. Logistic regression results for cryptocurrency investing in primary data collection

		Coeff.		SE	Odds Ratio
Crypto risk perceptions (base: slightly risky)					
	Moderately risky	0.055		0.296	1.056
	Highly risky	0.005		0.289	1.005
Risk tolerance (base: low)					
	Medium (4-7)	0.412	*	0.160	1.510
	High (8-10)	1.075	**	0.315	2.930
Age (base 18-24)					
	25-34	0.559		0.287	1.749
	35-44	0.175		0.310	1.192
	45-54	-0.214		0.315	0.807
	55-64	-0.672		0.343	0.511
	65+	-0.872	*	0.401	0.418
Gender (base: male)					
	Female	-1.069	***	0.149	0.343
Marital status (base: married)					
	Single	0.181		0.273	1.198
	Separated	1.767	*	0.763	5.855
	Divorced	0.504		0.309	1.655
	Widowed	-0.280		0.539	0.756
Living arrangements (base: only adult in household)					
	Live with significant other	0.320		0.267	1.377
	Live in parent's home	0.076		0.279	1.079
	Live with others	-0.093		0.236	0.911

Ethnicity (base: White)				
	Non-White	0.125	0.174	1.133
Education (base: no high school)				
	High school diploma	1.475	1.333	4.370
	High school graduate - alternative degree	1.677	1.376	5.352
	Some college	1.903	1.322	6.709
	Associate's	2.027	1.331	7.593
	Bachelor's	1.990	1.322	7.319
	Post-graduate	1.791	1.334	5.996
Income (base: <15K)				
	15-25K	0.042	0.342	1.043
	25-35K	-0.039	0.358	0.962
	35-50K	0.003	0.325	1.003
	50-75K	0.178	0.331	1.195
	75-100K	0.427	0.352	1.533
	100-150K	0.371	0.357	1.449
	150+	0.769	0.397	2.158
Dependent children (base: 1)				
	2	-0.354	0.266	0.702
	3	-0.136	0.449	0.873
	4 or more	0.631	0.728	1.879
	No dependent children	-0.124	0.263	0.883
	No children	-0.387	0.237	0.679
Employment (base: self-employed)				
	Work full-time	0.001	0.225	1.001
	Work part-time	-0.169	0.280	0.844
	Homemaker	-0.496	0.414	0.609
	Full-time student	0.498	0.396	1.645
	Disabled	-0.142	0.605	0.868
	Unemployed	-0.093	0.338	0.912
	Retired	-0.114	0.299	0.892
	DOSPERT total ethical score	0.046	**	0.016
	DOSPERT total financial-investing score	-0.030		0.020
	DOSPERT total financial-gambling score	0.006		0.021
	DOSPERT total health/safety score	-0.005		0.014
	DOSPERT total recreation score	0.006		0.011
	DOSPERT total social score	0.008		0.012
	HMSAM total joy score	0.118	***	0.014
	HMSAM total curiosity score	0.089	***	0.022
	HMSAM total PU Score	0.006		0.015
	Constant	-6.400	***	1.531

Model fit statistics

Log-likelihood -702.373

McFadden pseudo R^2 0.383

* Significant at $p < 0.05$; ** significant at $p < 0.01$; *** significant at $p < 0.001$

Chapter 5 – Discussion, Implications, and Conclusions

5.1 Discussion

This study endeavored to understand why cryptocurrency investors voluntarily engage with an asset class marked by volatility and potential downside losses. The specific framing undertaken herein was crucial to shed light on this phenomenon while probing it from specific angles. First, cryptocurrency, in this context, was being used as a tool to invest instead of transact. Second, cryptocurrency is a technology and, therefore, must be studied in light of models exploring why individuals adopt technology. Given previous literature, which outlined the role of risk tolerance, risk propensity, and motivations for investing in cryptocurrency, the primary research question considered the influence of financial risk propensity and hedonism on the behavioral intention to, and actual adoption of, cryptocurrency for investing purposes. Hedonism, for the purposes of this paper, was deconstructed into the three components of joy, perceived usefulness, and curiosity. It was hypothesized that these hedonic drivers would increase the subjective intention to use – and objective adoption of – cryptocurrency as an investment. It was also hypothesized that risk propensity scores in the financial gambling domain would increase the intention to use – and adoption of – cryptocurrency as an investment. Two datasets, the secondary NFCS and the primary data collection using HMSAM and DOSPERT, provided answers to the research question and hypotheses. A summary of the hypotheses and study results are listed below in Table 5.1.

Table 5.1. Hypotheses testing results

Hypothesis	Analysis	Table	Conclusion
------------	----------	-------	------------

H1: Investors acknowledging hedonic motivators for investing will be more likely to invest in cryptocurrency than those without hedonic motivators.	Binary logistic regression	4.8	Supported
H2: Perceived usefulness will have a positive relationship with behavioral intention to use cryptocurrency.	Structural Equation Modeling	4.12	Rejected
H3: Curiosity will have a positive relationship with behavioral intention to use cryptocurrency.	Structural Equation Modeling	4.12	Supported
H4: Joy will have a positive relationship with behavioral intention to use cryptocurrency.	Structural Equation Modeling	4.12	Supported
H5: Risk propensity scores in the financial gambling domain will have a positive relationship with behavioral intention to use cryptocurrency.	Structural Equation Modeling	4.12	Rejected
H6: Perceived usefulness will have a positive relationship with cryptocurrency investment.	Binary logistic regression	4.13	Rejected
H7: Curiosity will have a positive relationship with cryptocurrency investment.	Binary logistic regression	4.13	Supported
H8: Joy will have a positive relationship with cryptocurrency investment.	Binary logistic regression	4.13	Supported
H9: Risk propensity scores in the financial gambling domain will have a positive relationship with cryptocurrency investment.	Binary logistic regression	4.13	Rejected

5.1.1 Descriptive Statistics

The descriptive statistics from the secondary dataset, the NFCS, painted a broad profile of a cryptocurrency investor. A comparison of cryptocurrency investors versus general investors using NFCS data showed a lower percentage of cryptocurrency holders who considered the investment highly risky while also having a higher percentage of individuals classified as high risk tolerance, among other demographic differences such as a greater percentage of male, young, and the full-time employed. The results painted a specific profile for cryptocurrency investing: a young male with high risk tolerance but a low perception of the riskiness of cryptocurrency.

Descriptive statistics for the primary research study were enlightening as well. A comparison of cryptocurrency investors versus all respondents showed that cryptocurrency investors found it to be less risky (i.e., those considering it “highly risky” was a lower percentage of the sample), had a greater percentage of individuals reporting high risk tolerance, and had higher average total DOSPERT, joy, curiosity, and PU scores. In terms of a simple comparison of cohort percentages, they were better educated, more likely to be male, and made more money. Importantly, when queried specifically regarding motivations for investing in cryptocurrency (primary data collection) versus investing in general (NFCS data), hedonic motivation moved up the rankings for the “describes very well” response (ranking fourth instead of fifth).

Descriptive statistics from the primary data collection indicated that hedonism was a lower motivation for investing in cryptocurrency than short and long-term profit or learning. So, too, for investing for social reasons – coming in the fifth of six options – which is surprising considering the literature review highlighting the cult-like social structures surrounding cryptocurrency. This is in line with a finding by Henry et al. (2019) showing the social aspect (“My friends own Bitcoin”) as a lower reason for owning Bitcoin than investing.²⁸ However, the motivations for social and investing might not be mutually inclusive. The “hodling” movement within cryptocurrency²⁹ – where cryptocurrency investors refuse to sell and “hold on for dear life” instead – demonstrates an example of a mixed purpose, e.g., investing for long-term gain while also doing it as part of a larger movement with social connection. Perhaps a similar dynamic exists between investing for gain and hedonism.

²⁸ This study updated an earlier finding showing interest in new technologies as the main reason for ownership of Bitcoin, see (Henry et al., 2018). That reason is more related to the learning motivation in this study.

²⁹ For more information on this movement, see Investopedia’s article on the concept (*HODL: The Cryptocurrency Strategy of “Hold on for Dear Life” Explained*, 2024) or (Auer & Tercero-Lucas, 2022).

5.1.2 Hypothesis Testing Results

Beyond a better understanding of the descriptive profile of the cryptocurrency investor, the primary data collection unveiled the answers to the research question: Do financial risk propensity and hedonism influence the behavioral intention to, and actual adoption of, cryptocurrency for investing purposes? Evidence suggests that the hedonic constructs of joy and curiosity positively influence the behavioral intention to adopt – and actual adoption of – cryptocurrency for investing purposes. This is especially true of joy as a hedonic construct. However, the answer for financial risk propensity is more nuanced. When looking specifically at financial-gambling risk propensity, there is no evidence for a direct, positive relationship. In fact, the SEM analysis demonstrated a negative relationship. Although hypotheses H5 and H9 were rejected when investigating financial-gambling risk propensity, a positive relationship was found between risk propensity in the financial-investment domain and behavioral intention to adopt cryptocurrency for investing purposes. However, this relationship was not found when looking at the objective behavior of cryptocurrency investment. In fact, the only significant, positive risk propensity relationship to cryptocurrency investment was ethical. However, this construct did not show the same relationship with behavioral intention to adopt cryptocurrency.

5.1.3 Hedonic Motivation

This study first investigated NFCS investors who were highly motivated to invest due to hedonic motivators were 2.86 times the odds of investing in cryptocurrency compared to non-cryptocurrency holders. This finding aligns with a recently published paper by Zhang et al. (2025) which showed the hedonic motivation variable as one of the strongest motivators for

investing in cryptocurrency when analyzing only the 2021 NFCS investor survey.³⁰ This result showed the power of hedonism, but only within the context of motivators for general investing, not cryptocurrency. Survey respondents for the primary data collection showed higher-ranking hedonic motivation for cryptocurrency (“Describes very well” response ranking fourth instead of fifth in the NFCS). Although this was a promising result for hedonism's importance in cryptocurrency investment, it must be interpreted in the context of the stronger motivations: investing (for short or long-term gain) and learning. These motivations had much higher percentages of “describes very well” responses than hedonism. Specifically, the top-ranking motivation (long-term gain) had a 55.6% response to this question compared to hedonism’s 19.7% – well over double. In other words, it is more likely that cryptocurrency holders are motivated by traditional investment considerations (i.e., to make a profit) as compared to a feeling of excitement or gamification.

5.1.4 Perceived Usefulness

Hedonic perceived usefulness is a given technology’s ‘usefulness for pursuing pleasure’ (Gu et al. 2010, p. 297 as cited in Lowry et al., 2013, p. 620). This construct was not a significant driver of behavioral intention to use cryptocurrency (SEM model) or cryptocurrency investment. Note that this study framed perceived usefulness in terms of hedonism, not utility, as defined by other technology acceptance models such as TAM (Davis, 1989). Although perceived usefulness

³⁰ This paper was published in the late stages of this dissertation's development. Although the Zhang et al. study relates to hypothesis 1, the current study still occupies a unique place in the literature by combining NFCS waves for the first logistic regression (4.2.1.), and including “don’t know” and “prefer not to say” answers, alternative variable orchestration (such as adding living arrangements) with more nuanced levels (i.e. investor motivation variables were split into categories) for the second logistic regression (Table 4.2.2.). The Zhang et al. study, however, serves as a useful robustness check for the findings herein.

(focused on utility) has been found to boost behavioral intention to adopt cryptocurrency in international populations (Atellu, 2024; Idrees et al., 2024; Jariyapan et al., 2022; Sagheer et al., 2022), hedonic perceived usefulness does not seem to have the same effect. Practically, this result means the respondents did not find cryptocurrency useful as a technological conduit for pleasure (Gu et al., 2010, p. 297). This interpretation would be in line with more cryptocurrency investors citing investment gain and learning as motivators to invest in the asset. However, it is quite possible that respondents were, in fact, motivated by hedonism (i.e., the joy effect, as mentioned below) but did not *perceive* cryptocurrency as useful for pleasure. The upcoming implications section (5.2) discusses this result more.

5.1.5 Curiosity

As a reminder, curiosity is defined as ‘the extent the experience arouses an individual’s sensory and cognitive curiosity’ (Agarwal & Karahanna, 2000, p. 673, as cited in Lowry et al., 2013, p. 622). The curiosity questions in this study asked if the respondents experienced an increase in curiosity or arousal of imagination when interacting (or imagined interaction, in the case of non-investors) with cryptocurrency. Curiosity was found to have a positive relationship with behavioral intention to adopt cryptocurrency and actual cryptocurrency investment, and the average curiosity score for all respondents was higher than joy or perceived usefulness. This finding aligns well with the fact that 1) the third-highest-ranking motivator for cryptocurrency investment was learning and 2) learning as a *general* investment motivator drives cryptocurrency investment, as shown in Table 4.10. Apparently, engaging with cryptocurrency excites investor curiosity and imagination, perhaps due to its relatively recent entry into the investment space or regular appearances in the media (studies by Aurer & Tercero-Lucas (2022), Idrees et al. (2024), Shahzad et al. (2024), and Steinmetz et al. (2021) show knowledge or awareness’s important

relationship to cryptocurrency adoption).³¹ However, this result should be interpreted in light of the fact that curiosity was weaker than joy as a driver of the behavioral intention to, or investment in, cryptocurrency (see Tables 4.13 and 4.14).

5.1.6 Joy

Joy, as studied in this paper, represents the respondent's positive feelings when interacting with cryptocurrency as a technology, specifically feelings of enjoyment, fun, and satisfaction. One of the overarching reasons for conducting this study was the author's hunch – from experiences as a financial guide to clients in industry – that cryptocurrency holders might be investing in cryptocurrency because it feels more like engaging with a game rather than an investment. The most surprising result of this dissertation was joy's strong relationship to behavioral intention to use cryptocurrency and investment. Specifically, for a one standard deviation increase in joy, there was a 0.68 standard deviation increase in behavioral intention to adopt cryptocurrency. Also, joy had a positive relationship with investing in cryptocurrency (with an odds ratio of 1.13).

Lowry et al.'s (2013, p. 620, 622) paper that created the HMSAM questions used for this study had older, alternative names for joy – perceived enjoyment or heightened enjoyment – references back to previous studies in the study of technology adoption (Agarwal & Karahanna, 2000; Davis et al., 1992; van der Heijden, 2004; Venkatesh, 2000). Lowry et al. (and van der Heijden, Davis, and Venkatesh before this team) further developed the concept of perceived or heightened enjoyment to better model why individuals would adopt an information technology system focused more on intrinsic rewards versus external rewards. Lowry et al. (2013, p. 620)

³¹ Furthermore, a study by Campino and Yang (2024) showed adoption of cryptocurrency for *payments* might be partially based on the popularity of the coin.

explained that joy is “the extent to which using a system is perceived to bring pleasure and fulfillment for *their own sake*” (emphasis added). As applied to the topic under investigation, seeking pleasure and fulfillment through cryptocurrency as technology is aligned with the idea of intrinsic motivation as opposed to the pursuit of external rewards like the profit motive. In other words, the result that joy is positively related to behavioral intention to adopt cryptocurrency (SEM model) and cryptocurrency investment (logistic regression model) points to the fact that cryptocurrency investors are motivated by intrinsic rewards as well as their perceived external rewards. Stated plainly: the positive relationship demonstrated for the joy construct holds true even while respondents *think* they are investing for external profit (as shown in the descriptive statistics). This potential mismatch is something for which clients and advisors should be aware.

As deployed by this study, joy is a similar concept to perceived usefulness. Therefore, examining the underlying questions for each gives insight as to how these concepts are similar. See Table 5.2.

Table 5.2. Survey question topics for joy and perceived usefulness

Question	Question Code	Topic
Joy		
I found investing in cryptocurrency to be enjoyable.	Inv_Joy_1	Enjoyment
I had fun investing in cryptocurrency.	Inv_Joy_2	Fun
Investing in cryptocurrency was boring. (reverse-coded)	Inv_Joy_3	Fun
Investing in cryptocurrency really annoyed me. (reverse-coded)	Inv_Joy_4	Satisfaction
Investing in cryptocurrency was pleasurable.	Inv_Joy_5	Enjoyment
Investing in cryptocurrency left me unsatisfied. (reverse-coded)	Inv_Joy_6	Satisfaction
Perceived usefulness		
Investing in cryptocurrency decreased my stress.	Inv_PU_1	Stress relief
Investing in cryptocurrency helped me better pass time.	Inv_PU_2	Rest and relaxation
Investing in cryptocurrency provided a useful escape.	Inv_PU_3	Escaping boredom
Investing in cryptocurrency helped me think more clearly.	Inv_PU_4	Thinking clearly
Investing in cryptocurrency helped me feel rejuvenated.	Inv_PU_5	Rest and relaxation

Note: Questions taken from the investor-centric pathway in the survey

As can be seen from the table, joy is laser-focused on the user's feelings of enjoyment, fun, and satisfaction while interacting with technology (in this case, cryptocurrency). Perceived usefulness questions, on the other hand, focus on the system's role as a technological conduit for pleasurable experiences such as stress relief, the ability to relax, and greater focus of thought. A perplexing finding of this study was the fact that there were no positive, significant relationships between perceived usefulness and the behavioral intention to adopt cryptocurrency or investment. However, this might be explained by the fact that, for investors, engaging with cryptocurrency might be fun or enjoyable while also not helping clarify one's thoughts, relieve stress, or relax. This is especially true given the volatility of cryptocurrency. Boarding the volatility roller coaster might get one's heart racing (exciting, a thrill, a break in the boredom of life) but not relieve stress or focus one's thoughts.

5.1.7 Financial-gambling

Why would the SEM analysis demonstrate a negative relationship between financial-gambling risk propensity and behavioral intention to invest in cryptocurrency? The answer might be that cryptocurrency investors perceived it differently than betting a significant amount of income at horse races, sporting events, or high-stakes poker tables (which is what the DOSPERT questions asked). Even if some financial professionals believe investing in cryptocurrency is akin to gambling, this might not be true for those who voluntarily invest in this instrument. In other words, the person who gambles might not do so in cryptocurrency, at least in their own estimation. On the other hand, cryptocurrency investors, especially those motivated to gain long-term (or even short-term) investment rewards, might be the type of person who invests in a speculative stock, mutual fund, or business venture (the questions for DOSPERT financial-

investment). What about the flip-flopping results of ethical risk propensity? In this case, it might not be the DOSPERT questions themselves, but rather, the relatively minor influence it has on cryptocurrency investing with a coefficient of .05 (or odds ratio of 1.05). It is possible that this construct simply did not have enough influence to translate to behavioral intention in a related but markedly different context.

In the primary data collection, risk perception of cryptocurrency was not a significant driver in cryptocurrency adoption for investment purposes. Although this result did not align with the NFCS regression models, where results suggested high risk perceptions of cryptocurrency had a significant, negative relationship with cryptocurrency investment,³² ³³ it is not without precedent in previous literature, especially from an international perspective. Although this study investigated members of a different population (i.e., citizens of the United States), Jariyapan et al. (2022, p. 15) found risk perceptions were not significantly related to behavioral intention to use cryptocurrency for Pakistanis, concluding that this sample was “ignoring the risk” associated with the asset. Almajali et al. (2022) found a negative relationship between perceived cryptocurrency risk and behavioral intention to use cryptocurrency for payments for Jordanians, whereas Recskó & Aranyossy (2024, p. 16) found this negative relationship for Hungarian payment systems based on social network-backed cryptocurrency. Although the primary study’s logistic regression results went beyond behavioral intention to actual use (i.e. cryptocurrency investment), it is possible survey respondents in the United States are either 1) ignoring the risk similar to the results of these studies or 2) more likely to make a

³² Studies by Zhao and Zhang (2021) and Zhang et al. (2025) confirmed this result using the 2018 and 2021 NFCS cohorts separately (instead of the combined cohort used in this study).

³³ Missing values could have influenced this mismatch between the NFCS and the primary data collection. Additional primary data collection studies could help confirm this result across samples.

decision to invest in cryptocurrency based on factors not included in the previous studies' models including risk tolerance, age, gender, and hedonism. Given that most respondents in the NFCS and primary samples considered cryptocurrency to be moderately or highly risky (the NFCS sample was 15.8% moderately risky and 67.7% highly risky, whereas the primary data collection was 25.3% moderately risky and 66.9% highly risky), the first option is improbable. If the latter is true, this study certainly provided a wider lens, with better controls, to investigate these drivers.

5.2 Implications

A primary impetus for this study was the increasing regulatory watchfulness on cryptocurrencies from regulators such as the Federal Reserve Bank, the Federal Deposit Insurance Corporation (FDIC), and the Office of the Comptroller of the Currency (OCC). What is the proper response to this increased scrutiny from personal financial planning professionals? A good first step is to understand the investing instrument itself (i.e., cryptocurrency's proper use in the portfolio, correlation with other assets, volatility metrics, etc.) and the client's psychology behind adoption. Why might a client select this instrument to accomplish certain financial goals? The CFP® – or other professionals – can better answer this question and tailor appropriate guidance by understanding the client's psychological drivers.

This regulatory scrutiny lines up with recent moves and practice standards promulgated by the CFP Board. The CFP Board recognizes the inherent risks in such a volatile asset, thus shifting a higher burden on the financial professional to engage in asset-specific and client-tailored due diligence before making any recommendations. This dissertation's focus on risk propensity's relationship to cryptocurrency investment and other variables, such as risk tolerance, aligns with the CFP Board's discussion of the financial planner's obligation to

consider a client's risk tolerance and capacity for risk. Its analysis showed that risk tolerance influences cryptocurrency investment, as did joy and certain types of risk propensity. Risk tolerance is emphasized greatly from a regulatory perspective when engaging with clients. Why not also emphasize measures of risk propensity or hedonism? To push beyond the CFP Board, other regulators of financial advice – specifically the Securities and Exchange Commission (SEC) or Financial Industry Regulatory Authority (FINRA) – could follow suit and require increased client knowledge and due diligence around cryptocurrency.

At the very least, these results encourage these measures to be included in the financial planning fact-finding and data-gathering process. In other words, this study encourages the expansion of the definition of the relevant quantitative or qualitative information that should be gathered around cryptocurrency investment decisions to gain a sufficient understanding of the client's personal circumstances as required by Section C1 and C.4.b. of the CFP Board's Code of Ethics and Standards of Conduct and the suitability and "Know Your Customer" requirements of FINRA Rules 2111 and 2090. The financial professional should ask themselves: Why does my client trade in cryptocurrency? After learning from these results, that professional knows the potential influence of hedonism, risk propensity, risk tolerance, or other factors shown herein. At some point, relevant hedonic and risk propensity measures could be included in regularly administered intake forms or risk tolerance questionnaires to gather the necessary information for advisors. After all, Grable et al. (2024) have already argued the merits of collecting both financial risk tolerance and risk aversion (a concept closely related to risk propensity) data in one measure.

Indeed, the financial professional is crucial in the client's self-appraisal. The discussion for this paper cited two times (for joy and perceived usefulness) when cryptocurrency investors

reported investing in cryptocurrency for one reason (i.e. short or long-term gain, for instance) but were likely to do so for other reasons (i.e. experiencing joy interacting with cryptocurrency). This points to an additional need for the unbiased, fiduciary advice of financial professionals. Sometimes clients simply do not know the exact reasons why they are motivated to take a specific course of action, in this case, investing in cryptocurrency. A financial professional could help tease out the true reasons through knowledge of the customer, insightful questions, and continued study of underlying motivations. Advisors in this trusted role can function as a mirror for clients to reflect inward.³⁴

A well-known notion of personal finance since the introduction of Modern Portfolio Theory (Markowitz, 1952) is that investment holdings should be *diversified* and *constructed in coordination with an investor's risk preferences and profile*. However, given the nature of the investment, cryptocurrency should only be added to the portfolio if an investor's risk preference is aligned with taking risk at such a high level and in careful coordination with other holdings.³⁵ This study showed that other factors such as hedonism, age, gender, marital status, and ethical risk propensity influence cryptocurrency investment in addition to a client's risk tolerance. It is the advisor's role to work with a client to sort out what factors – both known and unknown to the client – are driving an investment decision and help the client mitigate these biases moving forward to again return to a more objective investment decision.

³⁴ The NFCS logistic regression (Table 4.10) is a helpful reference here, even though it was focused on general investment motivations. This analysis showed that investors highly motivated by short-term gain, as compared to those who were not, were 1.87 times the odds of owning cryptocurrency. For hedonism, this figure was 2.86 times the odds.

³⁵ Careful coordination within a portfolio means using cryptocurrency to increase divergent correlations between asset classes to improve risk-adjusted returns.

5.3 Limitations and Future Research

Risk-taking aligned with risk tolerance is generally praised within financial planning, as increased risk can lead to greater financial rewards through a higher return on investment. Increased returns over time can lead to better success rates within the financial plan. This study showed that cryptocurrency holders demonstrate increased risk tolerance compared to their peer investors. This is a positive characteristic at face value, given that it can lead to better planning outcomes.

However, that praise dissipates, and rightly so, when the discussion shifts to more problematic behaviors, such as gambling. Dr. Mark Griffiths, Distinguished Professor of Behavioural Addictions at Nottingham Trent University, while discussing cryptocurrency, identifies three factors that separate risk-taking from gambling:

(i) the exchange is determined by a future event, which at the time of staking money (or something of financial value) the outcome is unknown, (ii) the result is determined (at least partly or wholly) by chance, (iii) the re-allocation of wealth (i.e., the exchange of money or something of financial value) usually without the introduction of productive work on either side, and (iv) losses incurred can be avoided by simply not taking part in the activity in the first place. (Griffiths (1995) as cited in Griffiths (2018)).

Two important points can be extrapolated from this insightful definition. First, clients with gambling tendencies have the chance to lose money unnecessarily. Second, there seems to be some compulsion involved with gambling-like behavior, especially since this financial loss can be avoided by simply opting out. Financial advisors do not like clients losing money unnecessarily, *especially* if the losses could have been voluntarily avoided. Luckily for clients

and advisors, this study did not show a positive relationship between financial-gambling risk propensity and investing in cryptocurrency.

However, note that the financial-gambling construct measured something entirely different from gambling behavior. Gambling is more problematic. That relationship was not explored here – and the results should be viewed in that reality – given that previous research has shown a connection between gambling-like behaviors and cryptocurrency (Androulakis-Korakakis et al., 2021; Kim et al., 2020; McGivern, 2023; Mills & Nower, 2019; Sonkurt, 2023; Sonkurt & Altınöz, 2021). On the other hand, remember that this paper framed risk tolerance as a client's willingness to engage in behavior with potential downsides or unknown outcomes, generally in pursuit of greater profits. When framed in this light, risk tolerance aligns closely to the behavior seen from cryptocurrency investors as found in this paper; Indeed, high risk tolerance was a key driver of cryptocurrency adoption. The downsides of cryptocurrency investment are still quite real for investors with high risk tolerance, even if they are not technically engaging in gambling behavior. *Caveat emptor!*

The primary research study had an abnormally large percentage of cryptocurrency holders (50.2% cryptocurrency investors versus 49.8% non-cryptocurrency investors) compared to the NFCS (13.4% cryptocurrency investors and 86.6% non-cryptocurrency investors). Considering that Census quotas were applied during the data collection phase, this difference is likely due to the unique characteristics of the respondents recruited through the panel company, CloudResearch. Possible explanations for this anomaly are 1) cryptocurrency holders were more likely to self-select into this survey once they saw it pop up in their survey options within

CloudResearch³⁶ and 2) the profile of a person who is likely to fill out an online survey for compensation fits that of a person who is likely to invest in cryptocurrency. Although this anomaly introduced bias, it also represented a unique opportunity to study a larger group (by percentage) of cryptocurrency holders compared to established datasets in personal finance, such as the NFCS (even if this bias limited the generalizability of the results). Future research could replicate this study with respondent-facing study descriptions that better conceal the cryptocurrency aspect (and hopefully improve the problem of self-selection bias).

It is unclear why the DOSPERT social construct had a low Cronbach's alpha score. It is possible that this concept did not translate well into the cryptocurrency space. A review of the social risk propensity questions shows they primarily focused on pushing through a feeling of awkwardness (by disagreeing, speaking one's mind, etc.) with friends, authority figures, and colleagues, distancing oneself from family, or choosing a new career pathway when inconvenient. These are not precisely situations that appear, at face value, to be related to cryptocurrency investing, which might have confused respondents already primed to complete the survey within that context. Although not directly applicable to this study's use case of cryptocurrency (i.e., to invest), Chen and Farkas (2019) attempted to create a risk perception scale for cryptocurrency transactions in the social and financial domain, with promising results (i.e., statistical significance). Unfortunately, they lacked sufficient responses to make concrete assertions regarding relationships. Perhaps future research, by this team or others, will bring insight into the relationship between social risk propensity and cryptocurrency investing.

³⁶ Their dashboard would have shown the title of the study "Cryptocurrency Study" and the description "This study will ask you demographic and risk tolerance questions in addition to questions around cryptocurrency." Such a proposition might have been more attractive to those with experience investing in cryptocurrency.

Another strain of research with the potential to shed light on the low Cronbach's alpha score for the DOSPERT social construct is studies that used the UTAUT model of technology adoption to study cryptocurrency. As a reminder, the UTAUT model has a social influence construct, which is defined "as the degree to which an individual perceives that important others believe he or she should use the new system", or later, "the extent to which consumers perceive that important others (e.g., family and friends) believe they should use a particular technology" (Venkatesh et al., 2003, p. 451; 2012, p. 159). A few studies, when investigating cryptocurrency adoption, have concluded the UTAUT social construct was an insignificant driver. Examples of this include Recskó and Aranyossy (2024) when studying cryptocurrency payment systems, Mbeya and Mofokeng (2024) when studying Bitcoin adoption, and Arias-Oliva et al. (2019), Alkhwaldi et al. (2023), and Abbasi et al. (2021) when studying cryptocurrency use.

Studies cited as support for the control variables for this paper often queried respondents about their knowledge of cryptocurrency (Auer & Tercero-Lucas, 2022; Henry et al., 2019; Steinmetz et al., 2021). Specifically, Steinmetz et al. (2021) found cryptocurrency knowledge³⁷ to be a significant predictor of cryptocurrency ownership. This result makes logical sense given that knowledge could lead to a higher level of comfort engaging with the investment vehicle, a better understanding of how the investment fits within one's overall financial goals, how it compares to other opportunities, and even how to purchase the investment. Future researchers should consider a question querying respondents' knowledge of cryptocurrency to add a valuable control or predictor variable when studying cryptocurrency investment behavior.

³⁷ Specifically, the Steinmetz et al. (2021) team asked respondents to rank their knowledge regarding blockchain and cryptocurrency as well as the number of coins about which they were familiar.

An interesting constraint on this research was its focus on *cryptocurrency as an investment* (versus for transactions or some other purpose) and *cryptocurrency as a technology* (from a theoretical perspective) instead of some alternative framing. Framing outside of these contexts would require different theoretical approaches, models, and variables. The differences between this and another approach, both known and unknown, may explain why risk propensity in the financial-investment domain was positively correlated to cryptocurrency holding while financial-gambling was not. It is possible that cryptocurrency's uses outside of investing (for example, to transact, even though this occurs less frequently) could be more in line with gambling risk, another domain's risk propensity measures, or gambling behaviors in general. If so, this could be an important insight, especially as government interest in the cryptocurrency transaction use case continues to grow.

Another area that could be expanded in future research was this study's framing of perceived usefulness. This paper framed perceived usefulness *hedonically* as a technology's "usefulness for pursuing pleasure" (Gu et al., 2010, p. 297). The questions used to test this construct within the primary survey focused on stress relief, thinking clearly, rest and relaxation, and escaping boredom (see Table 5.2). However, perceived usefulness can also be tested from a *utility* perspective, i.e., a technology's ability to increase productivity and efficiency, as shown by Gu et al. (2010, p. 297). Future research introducing questions focused on productivity and efficiency could uncover any potential connections between perceived usefulness (focused on utility) and behavioral intention to adopt cryptocurrency or actual investment.

Finally, it is common for psychological constructs to have multiple options for measurement. A good example in financial planning is the measurement of risk tolerance, which has become a battleground for many researchers and companies suggesting the optimal

measurement schema (see works from Dr. John Grable at the University of Georgia). The same optionality for measurement exists for risk propensity and hedonism, with each option having the potential to shine light on a new facet of these constructs and offer new insights. Future research can pick from several measurements, scales, and theories to expand the field's understanding of risk propensity and hedonism. Top contenders for risk propensity include the Balloon Analogue Risk Task (BART)(Lejuez et al., 2002) and the Choice Dilemma Questionnaire (CDQ)(Kogan & Wallach, 1964)³⁸, and the Hedonic and Eudaimonic Motives for Activities (HEMA or HEMA-R) scale (Huta & Ryan, 2010) and UTAUT2 (Venkatesh et al., 2012) for hedonism.

5.4 Conclusion

This dissertation highlighted the reasons behind subjective and objective cryptocurrency adoption while framing cryptocurrency as a technology and investment. Results from primary and secondary data collection (using HMSAM and DOSPERT) provide evidence that joy and curiosity are significant predictors of the behavioral intention to, and actual adoption of, cryptocurrency for investing purposes. Further research on the relationships between risk propensity and hedonic motivators will continue to unveil relationships important to financial professionals as they guide client decision-making around this volatile investment.

³⁸ See (Harrison et al., 2005) for more ideas.

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Appendix A – Survey and Supplemental Analysis

A.1. IRB Approval

TO: Congrong Ouyang
Personal Financial Planning

FROM: Lisa Rubin, Chair
Committee on Research Involving Human Subjects

DATE: 01/10/2025

RE: Proposal #IRB-12436, entitled “Title: A study of risk propensity and hedonic drivers of cryptocurrency adoption. This project is a part of my dissertation and PFP 999 - Dissertation Research..”

MODIFICATION OF IRB PROTOCOL #IRB-12436, ENTITLED, “Title: A study of risk propensity and hedonic drivers of cryptocurrency adoption. This project is a part of my dissertation and PFP 999 - Dissertation Research.”

EXPIRATION DATE: Exempt

The Committee on Research Involving Human Subjects (IRB) has reviewed and approved the request identified above as a modification of a previously approved protocol. **Please note that the original expiration remains the same.**

All approved IRB protocols are subject to continuing review at least annually, which may include the examination of records connected with the project. Announced in-progress reviews may also be performed during the course of this approval period by a member of the University Research Compliance Office staff. Unanticipated adverse events involving risk to subjects or to others must be reported immediately to the Chair of the IRB, and / or the URCO

It is important that your human subjects activity is consistent with submissions to funding / contract entities. It is your responsibility to initiate notification procedures to any funding / contract entity of any changes in your activity that affects the use of human subjects.

Electronically signed by Heath Ritter on 01/10/2025 12:11 PM ET

A.2. Survey Instrument

The Qualtrics survey instrument is listed below:

INFORMED CONSENT AND CAPTCHA

Informed Consent

PROJECT TITLE: Cryptocurrency Adoption Study

PROJECT APPROVAL DATE: 12/18/2024

PROJECT EXPIRATION DATE: 12/18/2025

LENGTH OF STUDY: 2 weeks

PRINCIPAL INVESTIGATOR: Congrong Ouyang

CO-INVESTIGATOR(S): Jason Anderson (responsible graduate student), Blake Gray, Martin Seay, Tareque Nasser

CONTACT DETAILS FOR PROBLEMS/QUESTIONS:

Jason Anderson

jasonanderson@ksu.edu

IRB CHAIR CONTACT INFORMATION:

Lisa Rubin, Chair

Committee on Research Involving Human Subjects

203 Fairchild Hall, Kansas State University, Manhattan, KS 66506

(785) 532-3224

Brad Woods, Associate

Vice President for Research Compliance

203 Fairchild Hall

785-532-3224

PROJECT SPONSOR: Part of this research is funded by the Graduate Research, Scholarly and Creative Activities, and Discovery (RSCAD) Grant at Kansas State University.

PURPOSE OF THE RESEARCH: The purpose of this research is to uncover reasons why individuals adopt cryptocurrencies.

PROCEDURES OR METHODS TO BE USED: This study will ask you demographic and risk tolerance questions in addition to questions around cryptocurrency.

BIOLOGICAL SAMPLES COLLECTED (Describe procedure, storage, etc.): Biological samples will not be collected in this study.

ALTERNATIVE PROCEDURES OR TREATMENTS, IF ANY, THAT MIGHT BE ADVANTAGEOUS TO SUBJECT: There are no identified additional treatments that might be advantageous to you.

RISKS OR DISCOMFORTS ANTICIPATED: Survey participants can be excluded or rejected from the survey if manipulation or fraud are detected by the survey administration systems. The survey administration systems are set up to detect bots, reject multiple submissions, and detect anomalies in computer system/location data. This can affect eventual compensation and/or your CloudResearch status or ranking. Other than the risk of rejection, this study does not have any identified risks or discomforts for survey participants. Participation is voluntary and subjects can withdraw their consent to participate at any time without penalty.

BENEFITS ANTICIPATED: Survey participants will be compensated for fully completing the questionnaire and successfully passing all fraud checks. The compensation rate is \$0.88/survey. This study does not have any additional identified benefits for survey participants.

EXTENT OF CONFIDENTIALITY: Data gathered from this experiment will be available to the investigators of this study and will be stored in online storage provided by Kansas State University. The information that will be collected as part of this research could be used for future research studies or distributed to other investigators for future research studies without additional informed consent.

IS COMPENSATION OR MEDICAL TREATMENT AVAILABLE IF INJURY OCCURS?: No

Informed Consent 1: Please indicate if you would like to participate in this study by checking one of the boxes below (Answers: I consent to participate in this study, I do not consent to participate in this study)

Captcha_Verification: Please verify you are a human.

CRYPTOCURRENCY QUESTIONS

Crypto1: Have you invested in cryptocurrencies, either directly or through a fund that invests in cryptocurrencies? (Answers: Yes, No, Don't know, Prefer not to say)

Crypto2*: How well does each of the following describe why you invest in cryptocurrency? (Answers: Does not describe, Describes somewhat, Describes very well, Don't know, Prefer not to say)

- To make money in the short term (Crypto2_1)
- To make money in the long term (Crypto2_2)
- For entertainment/excitement/fun/playing a game (Crypto2_3)
- My peers are doing it/social activity/connecting with others (Crypto2_4)
- To make a difference in the world/support values I care about/be socially responsible (Crypto2_5)
- To learn about investing (Crypto2_6)

Crypto3: In your opinion, how risky are cryptocurrencies as an investment? (Answers: Not at all risky, Slightly risky, Moderately risky, Very risky, Extremely risky, Don't know, Prefer not to say)

Crypto4*: How often do you invest in cryptocurrency? (Answers: Rarely, Sometimes, Often)

Crypto5*: For how long have you invested in cryptocurrency? (Answers: Less than 1 year, 1-3 years, 3-5 years, Greater than 5 years)

Crypto6*: Which cryptocurrency have you invested in? (Select at that apply) (Answers: Bitcoin (BTC), Ethereum (ETH), Tether (USDT), USD Coin (USDC), Binance Coin (BNB), Ripple (XRP), Cardano (ADA), Binance USD (BUSD), Solana (SOL), TRON (TRX), Polkadot (DOT), Dogecoin (DOGE), XRP (XRP), Other)³⁹

Risk1: When thinking of your financial investments, how willing are you to take risks? (Answers: scale from 1 “Not At All Willing” to 10 “Very Willing”)

DEMOGRAPHIC QUESTIONS

Dem1: What is your age (answer using a whole number)? (Answers: range from 18-130)

Dem2: Do you describe yourself as a man, a woman, or in some other way? (Answers: Man, Woman, Some other way)

Dem3: What is your marital status? (Answers: Married, Single, Separated, Divorced, Widowed/widower, Prefer not to say)

Dem4: Which of the following describes your current living arrangements? (Answers: I am the only adult in the household, I live with my spouse/partner/significant other, I live in my parents' home, I live with other family, friends, or roommates, Prefer not to say)

Dem5: Which of the following best describes your race or ethnicity? (select all that apply)

³⁹ Ripple (XRP) and XRP were both included erroneously as duplicate answers. These were combined in the data analysis stage.

(Answers: White or Caucasian, Black or African-American, Hispanic or Latino/a, Asian, Native Hawaiian or other Pacific Islander, American Indian or Alaska Native, Other, Prefer not to say)

Dem6: What was the highest level of education that you completed? (Answers: Did not complete high school, High school graduate – regular high school diploma, High school graduate – GED or alternative credential, Some college, no degree, Associate’s degree, Bachelor’s degree, Post graduate degree, Prefer not to say)

Dem7(a): What is your approximate annual income including wages, tips, investment income, public assistance, income from retirement plans, etc.? (Answers: Less than \$15,000, At least \$15,000 but less than \$25,000, At least \$25,000 but less than \$35,000, At least \$35,000 but less than \$50,000, At least \$50,000 but less than \$75,000, At least \$75,000 but less than \$100,000, At least \$100,000 but less than \$150,000, At least \$150,000 but less than \$200,000, At least \$200,000 but less than \$300,000, \$300,000 or more, Don’t know, Prefer not to say)

Dem7(b): *This question is the same as Dem6 but for households* (answer “I live with my spouse/partner/significant other” to Dem4)

Dem8: How many children do you have who are financially dependent on you (and/or your spouse or partner)? Please include children not living at home, and step-children as well (Answers: 1, 2, 3, 4 or more, No financially dependent children, Do not have any children, Prefer not to say)

Dem9 - Which of the following best describes your current employment or work status? (Answers: Self-employed, Work full-time for an employer or military, Work part-time for an employer or military, Homemaker, Full-time student, Permanently sick, disabled, or unable to work, Unemployed or temporarily laid off, Retired, Prefer not to say)

GRP: How do you see yourself: Are you generally a person who is fully prepared to take risks or do you try to avoid taking risks? (Answers: scale from 1 “Not At All Willing to Take Risks” to 10 “Very Willing to Take Risks”)

DOSPERT SCALE

DOSPERT1: For each of the following statements, please indicate the **likelihood** that you would engage in the described activity or behavior if you were to find yourself in that situation. Provide a rating from 'Extremely Unlikely' to 'Extremely Likely', using the following scale: (Answers: 7-point Likert scale from 'Extremely Unlikely' to 'Extremely Likely')

- Admitting that your tastes are different from those of a friend. (DOSPERT1_S)
- Going camping in the wilderness. (DOSPERT2_R)
- Betting a day’s income at the horse races. (DOSPERT3_FG)
- Investing 10% of your annual income in a moderate growth mutual fund. (DOSPERT4_FI)
- Drinking heavily at a social function. (DOSPERT5_HS)
- Taking some questionable deductions on your income tax return. (DOSPERT6_E)

DOSPERT2: For each of the following statements, please indicate the **likelihood** that you would engage in the described activity or behavior if you were to find yourself in that situation. Provide a rating from 'Extremely Unlikely' to 'Extremely Likely', using the following scale: (Answers: 7-point Likert scale from 'Extremely Unlikely' to 'Extremely Likely')

- Disagreeing with an authority figure on a major issue. (DOSPERT7_S)
- Betting a day’s income at a high-stake poker game. (DOSPERT8_FG)
- Having an affair with a married man/woman. (DOSPERT9_E)
- Passing off somebody else’s work as your own. (DOSPERT10_E)
- Going down a ski run that is beyond your ability. (DOSPERT11_R)
- Investing 5% of your annual income in a very speculative stock. (DOSPERT12_FI)

DOSPERT3: For each of the following statements, please indicate the **likelihood** that you would engage in the described activity or behavior if you were to find yourself in that situation. Provide a rating from 'Extremely Unlikely' to 'Extremely Likely', using the following scale: (Answers: 7-point Likert scale from 'Extremely Unlikely' to 'Extremely Likely')

- Going whitewater rafting at high water in the spring. (DOSPERT13_R)
Betting a day's income on the outcome of a sporting event. (DOSPERT14_FG)
- Engaging in unprotected sex. (DOSPERT15_HS)
- Revealing a friend's secret to someone else. (DOSPERT16_E)
- Driving a car without wearing a seatbelt. (DOSPERT17_HS)
- Investing 10% of your annual income in a new business venture. (DOSPERT18_FI)

DOSPERT4: For each of the following statements, please indicate the **likelihood** that you would engage in the described activity or behavior if you were to find yourself in that situation. Provide a rating from 'Extremely Unlikely' to 'Extremely Likely', using the following scale: (Answers: 7-point Likert scale from 'Extremely Unlikely' to 'Extremely Likely')

- Taking a skydiving class. (DOSPERT19_R)
- Riding a motorcycle without a helmet. (DOSPERT20_HS)
- Choosing a career that you truly enjoy over a more prestigious one. (DOSPERT21_S)
- Speaking your mind about an unpopular issue in a meeting at work. (DOSPERT22_S)
- Sunbathing without sunscreen. (DOSPERT23_HS)
- Bungee jumping off a tall bridge. (DOSPERT24_R)

DOSPERT5: For each of the following statements, please indicate the **likelihood** that you would engage in the described activity or behavior if you were to find yourself in that situation. Provide a rating from 'Extremely Unlikely' to 'Extremely Likely', using the following scale: (Answers: 7-point Likert scale from 'Extremely Unlikely' to 'Extremely Likely')

- Piloting a small plane. (DOSPERT25_R)
- Walking home alone at night in an unsafe area of town. (DOSPERT26_HS)
- Moving to a city far away from your extended family. (DOSPERT27_S)
- Starting a new career in your mid-thirties. (DOSPERT28_S)
- Leaving your young children alone at home while running an errand. (DOSPERT29_E)
- Not returning a wallet you found that contains \$200. (DOSPERT30_E)

HMSAM MODEL

Joy_Inv*: The next few questions will explore your experience investing in cryptocurrency.
(Answers: 7-point Likert scale from 'Strongly disagree' to 'Strongly agree')

- I found investing in cryptocurrency to be enjoyable. (Inv_Joy_1)
- I had fun investing in cryptocurrency. (Inv_Joy_2)
- Investing in cryptocurrency was boring. (Inv_Joy_3)
- Investing in cryptocurrency really annoyed me. (Inv_Joy_4)
- Investing in cryptocurrency was pleasurable. (Inv_Joy_5)
- Investing in cryptocurrency left me unsatisfied. (Inv_Joy_6)

Curiosity_Inv*: The next few questions will explore your experience investing in cryptocurrency. (Answers: 7-point Likert scale from 'Strongly disagree' to 'Strongly agree')

- Investing in cryptocurrency excited my curiosity. (Inv_Cur_1)
- Investing in cryptocurrency made me curious. (Inv_Cur_2)
- Investing in cryptocurrency aroused my imagination. (Inv_Cur_3)

PU_Inv*: The next few questions will explore your experience investing in cryptocurrency.
(Answers: 7-point Likert scale from 'Strongly disagree' to 'Strongly agree')

- Investing in cryptocurrency decreased my stress. (Inv_PU_1)
- Investing in cryptocurrency helped me better pass time. (Inv_PU_2)
- Investing in cryptocurrency provided a useful escape. (Inv_PU_3)
- Investing in cryptocurrency helped me think more clearly. (Inv_PU_4)
- Investing in cryptocurrency helped me feel rejuvenated. (Inv_PU_5)

BI_Inv*: The next few questions will explore your experience investing in cryptocurrency.
(Answers: 7-point Likert scale from 'Strongly disagree' to 'Strongly agree')

- I plan to invest in cryptocurrency in the future. (Inv_BI_1)
- I intend to invest in cryptocurrency in the future. (Inv_BI_2)
- I expect to invest in cryptocurrency in the future. (Inv_BI_3)

Joy_Non_Inv**: The next few questions will explore your experience investing in cryptocurrency. (Answers: 7-point Likert scale from 'Strongly disagree' to 'Strongly agree')

- I would find investing in cryptocurrency to be enjoyable. (NonInv_Joy_1)
- I would have fun investing in cryptocurrency. (NonInv_Joy_2)
- Investing in cryptocurrency would be boring. (NonInv_Joy_3)
- Investing in cryptocurrency would really annoy me. (NonInv_Joy_4)

- Investing in cryptocurrency would be pleasurable. (NonInv_Joy_5)
- Investing in cryptocurrency would leave me unsatisfied. (NonInv_Joy_6)

Curiosity_Non_Inv**: The next few questions will explore your experience investing in cryptocurrency. (Answers: 7-point Likert scale from 'Strongly disagree' to 'Strongly agree')

- Investing in cryptocurrency would excite my curiosity. (NonInv_Cur_1)
- Investing in cryptocurrency would make me curious. (NonInv_Cur_2)
- Investing in cryptocurrency would arouse my imagination. (NonInv_Cur_3)

PU_Non_Inv**: The next few questions will explore your experience investing in cryptocurrency. (Answers: 7-point Likert scale from 'Strongly disagree' to 'Strongly agree')

- Investing in cryptocurrency would decrease my stress. (NonInv_PU_1)
- Investing in cryptocurrency would help me better pass time. (NonInv_PU_2)
- Investing in cryptocurrency would provide a useful escape. (NonInv_PU_3)
- Investing in cryptocurrency would help me think more clearly. (NonInv_PU_4)
- Investing in cryptocurrency would help me feel rejuvenated. (NonInv_PU_5)

BI_Non_Inv**: The next few questions will explore your experience investing in cryptocurrency. (Answers: 7-point Likert scale from 'Strongly disagree' to 'Strongly agree')

- I plan to invest in cryptocurrency in the future. (NonInv_BI_1)
- I intend to invest in cryptocurrency in the future. (NonInv_BI_2)
- I expect to invest in cryptocurrency in the future. (NonInv_BI_3)

*Only answered by cryptocurrency investors (If = Responded "Yes" to "Have you invested in cryptocurrencies, either directly or through a fund that invests in cryptocurrencies?")

**Only answered by cryptocurrency non-investors (If = Responded "No", "Don't know", or "Prefer not to say" to "Have you invested in cryptocurrencies, either directly or through a fund that invests in cryptocurrencies?")

A.3. NFCS-Primary Survey Question Mapping

Appendix Table 3. Primary survey questions aligned with NFCS

Identifier	Question	Answers	Alignment with NFCS
Crypto1	Have you invested in cryptocurrencies, either directly or through a fund that invests in cryptocurrencies?	Yes, No, Don't know, Prefer not to say	B25 in NFCS Investor Survey
Crypto2	How well does each of the following describe why you invest [would invest] in cryptocurrency? (subcategories: To make money in the short term, To make money in the long term, For entertainment/excitement/fun/playing a game, My peers are doing it/social activity/connecting with others, To make a difference in the world/support values I care about/be socially responsible, To learn about investing	Does not describe at all, Describes somewhat, Describes very well, Don't know, Prefer not to say	G30 in NFCS Investor Survey
Crypto3	In your opinion, how risky are cryptocurrencies as an investment?	Not at all risky, Slightly risky, Moderately risky, Very risky, Extremely risky, Don't know, Prefer not to say	B24 in NFCS Investor Survey
Dem1	What is your age?	18-101 or older	A3a in NFCS State by State Survey
Dem2	Do you describe yourself as a man, a woman, or in some other way?	Man, Woman, Some other way	A3 (2018 and A50 (2021) in NFCS State by State survey

Dem3	What is your marital status?	Married, Single, Separated, Divorced, Widowed/widower, Prefer not to say	A6 in NFCS State by State Survey
Dem4	Which of the following describes your current living arrangements?	Answers: I am the only adult in the household, I live with my spouse/partner/significant other, I live in my parents' home, I live with other family, friends, or roommates, Prefer not to say	A7 in NFCS State by State Survey
Dem5	Which of the following best describes your race or ethnicity? (select all that apply)	White or Caucasian, Black or African-American, Hispanic or Latino/a, Native Hawaiian or other Pacific Islander, American Indian or Alaska Native, Other, Prefer not to say ⁴⁰	A4 in NFCS State by State Survey
Dem6	What was the highest level of education that you completed?	Did not complete high school, High school graduate – regular high school diploma, High school graduate – GED or alternative credential, Some college, no degree, Associate's degree, Bachelor's degree, Post graduate degree, Prefer not to say	A5 in NFCS State by State Survey

⁴⁰ In contrast to the survey codebook, the NFCS data files for 2018 and 2021 only show White and Non-White as ethnicity categories within the ethnicity variable due to restrictions.

Dem7	What is your [household's] approximate annual income/ IF Q.A7a = 1, 2 INSERT: your household's approximate annual income], including wages, tips, investment income, public assistance, income from retirement plans, etc.?	Less than \$15,000, At least \$15,000 but less than \$25,000, At least \$25,000 but less than \$35,000, At least \$35,000 but less than \$50,000, At least \$50,000 but less than \$75,000, At least \$75,000 but less than \$100,000, At least \$100,000 but less than \$150,000, At least \$150,000 but less than \$200,000, At least \$200,000 but less than \$300,000, \$300,000 or more, Don't know, Prefer not to say	A8 in NFCS State by State Survey
Dem8	How many children do you have who are financially dependent on you (and/or your spouse or partner)? Please include children not living at home, and step-children as well.	1, 2, 3, 4 or more, No financially dependent children, Do not have any children, Prefer not to say	A11 in NFCS State by State Survey
Dem9	Which of the following best describes your current employment or work status?	Self-employed, Work full-time for an employer or military, Work part-time for an employer or military, Homemaker, Full-time student, Permanently sick, disabled, or unable to work, Unemployed or temporarily laid off, Retired, Prefer not to say	A9 in NFCS State by State Survey
Risk1	[If invest = yes], When thinking of your financial investments, how willing are you to take risks?, [If invest = no/don't know/prefer not to say], If you did have financial investments, how willing would you be to take risks?	10-point scale, from 1 "Not At All Willing" to 10 "Very Willing"	J2 in NFCS State by State survey

A.4. Supplemental Analysis

Appendix Table 4. Independent samples t-test for NFCS

	Non-Investor (<i>n</i> =4,178)					Investor (<i>n</i> =649)					<i>t</i>	
	<i>M</i>	<i>SD</i>	<i>SE</i>	95% Conf. Inter.		<i>M</i>	<i>SD</i>	<i>SE</i>	95% Conf. Inter.			
Crypto risk perceptions	14.29	31.05	0.52	13.27	15.32	3.39	10.62	0.42	2.57	4.20	8.86	***
Risk tolerance	2.52	6.66	0.10	2.31	2.72	2.74	5.33	0.21	2.33	3.16	-0.84	
Age	4.89	1.33	0.02	4.85	4.93	3.28	1.44	0.06	3.17	3.39	28.37	***
Gender	1.43	0.50	0.01	1.42	1.45	1.27	0.45	0.02	1.24	1.31	7.70	***
Marital status	1.75	1.26	0.02	1.71	1.78	1.60	0.91	0.04	1.53	1.67	2.90	**
Living arrangements	1.87	0.66	0.01	1.85	1.89	1.87	0.74	0.03	1.81	1.93	0.17	
Ethnicity	1.17	0.38	0.01	1.16	1.18	1.29	0.45	0.02	1.26	1.33	-7.17	***
Education	5.31	1.57	0.02	5.26	5.35	5.14	1.54	0.06	5.02	5.26	2.50	*
Income	5.71	1.70	0.03	5.66	5.77	5.46	1.90	0.07	5.32	5.61	3.47	***
Dependent children	4.60	1.61	0.02	4.55	4.65	3.86	2.04	0.08	3.70	4.02	10.45	***
Employment	4.97	2.95	0.05	4.88	5.06	2.90	2.09	0.08	2.74	3.06	17.22	***

* Significant at $p < 0.05$; ** significant at $p < 0.01$; *** significant at $p < 0.001$

Appendix Table 5. Independent samples z-test for NFCS

	Cryptocurrency							<i>z</i>	
	Non-Investor (n=4,178)			Investor (n=649)					
	<i>M</i>	95% Conf. Inter.		<i>M</i>	95% Conf. Inter.				
Crypto risk perceptions	14.29	14.26	14.33	3.39	3.31	3.46	255.50	***	
Risk tolerance	2.52	2.48	2.55	2.74	2.67	2.82	-5.43	***	
Age	4.89	4.86	4.92	3.28	3.20	3.36	38.24	***	
Gender	1.43	1.40	1.46	1.27	1.20	1.35	3.76	***	
Marital status	1.75	1.72	1.78	1.60	1.52	1.67	3.54	***	
Living arrangements	1.87	1.84	1.90	1.87	1.79	1.95	0.11		
Ethnicity	1.17	1.14	1.20	1.29	1.21	1.37	-2.80	**	
Education	5.31	5.28	5.34	5.14	5.06	5.22	3.91	***	
Income	5.71	5.68	5.75	5.46	5.39	5.54	5.99	***	
Dependent children	4.60	4.57	4.63	3.86	3.78	3.94	17.52	***	
Employment	4.97	4.94	5.00	2.90	2.82	2.97	49.12	***	

* Significant at $p < 0.05$; ** significant at $p < 0.01$; *** significant at $p < 0.001$

Appendix Table 6. Independent samples t-test for primary data

	Cryptocurrency										<i>t</i>	
	Non-Investor (<i>n</i> =820)					Investor (<i>n</i> =828)						
	<i>M</i>	<i>SD</i>	<i>SE</i>	95% Conf. Inter.		<i>M</i>	<i>SD</i>	<i>SE</i>	95% Conf. Inter.			
Crypto risk perceptions	2.77	0.59	0.02	2.73	2.81	2.55	0.62	0.02	2.51	2.59	7.44	***
Risk tolerance	1.45	0.55	0.02	1.42	1.49	1.95	0.63	0.02	1.91	1.99	-16.94	***
Age	3.94	1.62	0.06	3.83	4.05	3.28	1.44	0.05	3.18	3.37	8.83	***
Gender	1.66	0.47	0.02	1.63	1.69	1.35	0.48	0.02	1.32	1.38	13.32	***

Marital status	2.10	1.24	0.04	2.02	2.19	1.86	0.98	0.03	1.79	1.93	4.47	***
Living arrangements	2.14	1.02	0.04	2.07	2.21	2.18	0.99	0.03	2.11	2.25	-0.68	
Ethnicity	0.80	0.40	0.01	0.78	0.83	0.70	0.46	0.02	0.67	0.74	4.72	***
Education	5.05	1.57	0.05	4.94	5.15	5.25	1.40	0.05	5.16	5.35	-2.84	**
Income	4.70	2.32	0.08	4.54	4.86	5.15	2.18	0.08	5.00	5.30	-4.09	***
Dependent children	4.67	1.79	0.06	4.55	4.79	4.28	2.02	0.07	4.14	4.42	4.16	***
Employment	3.74	2.59	0.09	3.56	3.91	3.00	2.14	0.07	2.86	3.15	6.25	***
DOSPERT average total score	2.73	0.67	0.02	2.68	2.77	3.21	0.84	0.03	3.16	3.27	-13.09	***
DOSPERT average ethical score	1.79	0.80	0.03	1.73	1.84	2.19	1.10	0.04	2.11	2.26	-8.44	***
DOSPERT average financial score	2.32	0.99	0.03	2.25	2.39	3.12	1.23	0.04	3.03	3.20	-14.53	***
DOSPERT average financial-investing score	3.17	1.39	0.05	3.08	3.27	4.09	1.45	0.05	3.99	4.19	-13.05	***
DOSPERT average financial-gambling score	1.47	1.02	0.04	1.40	1.54	2.15	1.53	0.05	2.05	2.25	-10.64	***
DOSPERT average health/safety score	2.31	1.04	0.04	2.24	2.38	2.86	1.28	0.04	2.77	2.95	-9.62	***
DOSPERT average recreation score	2.21	1.14	0.04	2.13	2.28	2.78	1.35	0.05	2.69	2.87	-9.29	***
DOSPERT average social score	5.01	1.05	0.04	4.94	5.08	5.13	0.99	0.03	5.06	5.19	-2.36	*
HMSAM average joy score	3.31	1.22	0.04	3.23	3.40	4.91	1.22	0.04	4.83	4.99	-26.63	***
HMSAM average curiosity score	3.29	1.67	0.06	3.17	3.40	5.08	1.26	0.04	4.99	5.17	-24.58	***
HMSAM average PU score	2.08	1.14	0.04	2.00	2.16	3.41	1.40	0.05	3.31	3.50	-21.09	***
HMSAM average BI score	2.46	1.51	0.05	2.35	2.56	5.08	1.53	0.05	4.98	5.19	-35.02	***

* Significant at $p < 0.05$; ** significant at $p < 0.01$; *** significant at $p < 0.001$

Appendix Table 7. Independent samples z-test for primary data

Cryptocurrency					<i>z</i>
Non-Investor (<i>n</i> =820)		Investor (<i>n</i> =828)			
<i>M</i>	95% Conf. Inter.	<i>M</i>	95% Conf. Inter.		

Crypto risk perceptions	2.77	2.70	2.84	2.55	2.48	2.62	4.51	***
Risk tolerance	1.45	1.39	1.52	1.95	1.88	2.02	-10.08	***
Age	3.94	3.87	4.01	3.28	3.21	3.34	13.55	***
Gender	1.66	1.59	1.73	1.35	1.28	1.42	6.33	***
Marital status	2.10	2.04	2.17	1.86	1.79	1.93	5.00	***
Living arrangements	2.14	2.08	2.21	2.18	2.11	2.25	-0.68	
Ethnicity	0.80	0.74	0.87	0.70	0.64	0.77	2.02	*
Education	5.05	4.98	5.11	5.25	5.19	5.32	-4.23	***
Income	4.70	4.63	4.77	5.15	5.08	5.22	-9.20	***
Dependent children	4.67	4.60	4.74	4.28	4.21	4.35	7.93	***
Employment	3.74	3.67	3.80	3.00	2.94	3.07	14.85	***
DOSPERT average total score	2.73	2.66	2.79	3.21	3.15	3.28	-9.91	***
DOSPERT average ethical score	1.79	1.72	1.86	2.19	2.12	2.26	-8.10	***
DOSPERT average financial score	2.32	2.25	2.39	3.12	3.05	3.19	-16.19	***
DOSPERT average financial-investing score	3.17	3.11	3.24	4.09	4.02	4.16	-18.55	***
DOSPERT average financial-gambling score	1.47	1.40	1.54	2.15	2.08	2.22	-13.82	***
DOSPERT average health/safety score	2.31	2.24	2.38	2.86	2.79	2.93	-11.25	***
DOSPERT average recreation score	2.21	2.14	2.27	2.78	2.71	2.85	-11.62	***
DOSPERT average social score	5.01	4.94	5.08	5.13	5.06	5.19	-2.41	*
HMSAM average joy score	3.31	3.25	3.38	4.91	4.84	4.98	-32.41	***
HMSAM average curiosity score	3.29	3.22	3.36	5.08	5.01	5.15	-36.39	***
HMSAM average PU score	2.08	2.01	2.15	3.41	3.34	3.47	-26.92	***
HMSAM average BI score	2.46	2.39	2.52	5.08	5.01	5.15	-53.29	***

* Significant at $p < 0.05$; ** significant at $p < 0.01$; *** significant at $p < 0.001$

Appendix B – Statistical Programming

Below is the Stata 17.0 code for this project.

B.1 Statistical Programming (Stata)

B.1.1. Merging NFCS datasets

```
/******  
*Project: Dissertation  
*Created by: Jason Anderson  
*Created on: 3/31/2024  
*Last modified on: 3/31/2024  
*Last modified by: Jason  
*Purpose: Merge NFCS datasets  
*Machine: Home computer  
*****/  
*Start log  
log using "C:\Users\ XXXXX \OneDrive - Kansas State University\Dissertation\Crypto\STATA  
Analysis\Do files\NFCS_mergeDO_log.smcl", replace  
  
*to see merge help function  
help merge  
  
****1. CLEAN UP INCOMPATIBLE VARIABLES****  
*Gender  
*A3 gender was used in 2018, A50 in 2021  
*Income  
*A8 income was used in 2018, A8_2021 in 2021  
  
**2018**  
*Create new compatible variables IN 2018 dataset  
*Load 2018 state by state dataset  
use "C:\Users\ XXXXX \OneDrive - Kansas State University\Dissertation\Crypto\STATA  
Analysis\NFCS Files\2018-SxS-Data-and-Data-Info\NFCS 2018 State Data 190603.dta"  
  
gen gender_merge = A3  
tab gender_merge  
  
gen income_merge = A8  
tab income_merge  
  
**2021**  
*Create new compatible variables IN 2021 dataset
```

```
*Load 2021 state by state dataset
use "C:\Users\ XXXXX \OneDrive - Kansas State University\Dissertation\Crypto\STATA
Analysis\NFCS Files\2021-SxS-Data-and-Data-Info\NFCS 2021 State Data 220627.dta"
```

```
gen gender_merge = A50A
tab gender_merge
```

```
tab A8_2021
gen income_merge = 0
replace income_merge = 1 if A8_2021 == 1
replace income_merge = 2 if A8_2021 == 2
replace income_merge = 3 if A8_2021 == 3
replace income_merge = 4 if A8_2021 == 4
replace income_merge = 5 if A8_2021 == 5
replace income_merge = 6 if A8_2021 == 6
replace income_merge = 7 if A8_2021 == 7
replace income_merge = 8 if A8_2021 == 8 | A8_2021 == 9 | A8_2021 == 10
tab income_merge
```

```
label define income_mergelabel 1 "<15K" 2 "15-25K" 3 "25-35K" 4 "35-50K" 5 "50-75K" 6
"75-100K" 7 "100-150K" 8 "150+"
label values income_merge income_mergelabel
tab income_merge
```

```
*Save new 2021 dataset
save "C:\Users\ XXXXX \OneDrive - Kansas State University\Dissertation\Crypto\STATA
Analysis\NFCS Files\2021-SxS-Data-and-Data-Info\NFCS 2021 State Data NEW.dta", replace
```

```
*clear dataset
clear
```

```
*****2. MERGE STATE BY STATE SURVEY FOR 2018 AND 2021*****
```

```
*Load 2018 state by state dataset
use "C:\Users\ XXXXX \OneDrive - Kansas State University\Dissertation\Crypto\STATA
Analysis\NFCS Files\2018-SxS-Data-and-Data-Info\NFCS 2018 State Data NEW.dta"
```

```
*Examine dataset - 27,091 observations
summarize
describe
```

```
*Sort by NFCS ID
sort nfcsid
```

```
*merge with 2021 state by state dataset 1:1 match on nfcsid
```

```
merge 1:1 nfcsid using "C:\Users\ XXXXX \OneDrive - Kansas State
University\Dissertation\Crypto\STATA Analysis\NFCS Files\2021-SxS-Data-and-Data-
Info\NFCS 2021 State Data NEW.dta", nogenerate
```

```
*Examine dataset - now 54,209 observations
summarize
describe
```

```
*save merged file as .dta
save "C:\Users\ XXXXX \OneDrive - Kansas State University\Dissertation\Crypto\STATA
Analysis\NFCS Files\Merged\NFCS SxS Merged 18-21.dta", replace
```

```
*clear dataset
clear
```

```
*****3. MERGE INVESTOR SURVEY FOR 2018 AND 2021*****
```

```
*Load 2021 investor dataset
use "C:\Users\ XXXXX \OneDrive - Kansas State University\Dissertation\Crypto\STATA
Analysis\NFCS Files\2021-Inv-Data-and-Data-Info\NFCS 2021 Investor Data 221121"
```

```
*Change NFCSID to nfcsid for merge
rename NFCSID nfcsid
```

```
*Examine dataset - 2,824 observations
summarize
describe
```

```
*Sort by NFCS ID
sort nfcsid
```

```
*merge with 2018 investor dataset 1:1 match on nfcsid
merge 1:1 nfcsid using "C:\Users\ XXXXX \OneDrive - Kansas State
University\Dissertation\Crypto\STATA Analysis\NFCS Files\2018-Inv-Data-and-Data-
Info\2018 Investor Full Data 190913.dta", nogenerate
```

```
*Examine dataset - now 4,827 observations
summarize
describe
```

```
*save merged file as .dta
save "C:\Users\ XXXXX \OneDrive - Kansas State University\Dissertation\Crypto\STATA
Analysis\NFCS Files\Merged\NFCS Inv Merged 18-21.dta", replace
```

```
*clear dataset
clear
```


****4. MERGE INVESTOR and STATE BY STATE SURVEY FOR 2018 AND 2021****

*Load Merged 2018-21 SxS dataset

use "C:\Users\ XXXXX \OneDrive - Kansas State University\Dissertation\Crypto\STATA Analysis\NFCS Files\Merged\NFCS SxS Merged 18-21"

*Examine dataset - 54,209 observations
summarize
describe

*Sort by NFCS ID
sort nfcsid

*merge with Merged 2018-21 Investor dataset on nfcsid
merge 1:1 nfcsid using "C:\Users\ XXXXX \OneDrive - Kansas State University\Dissertation\Crypto\STATA Analysis\NFCS Files\Merged\NFCS Inv Merged 18-21",
nogenrate

*Merge report is a success - 4,827 matched

*Examine dataset - still have 54,209 observations
summarize
describe

*To drop non-investor observations
keep if A1 != .

*Examine dataset - success - back down to 4,827 observations
summarize
describe

*save merged file as .dta
save "C:\Users\ XXXXX \OneDrive - Kansas State University\Dissertation\Crypto\STATA Analysis\NFCS Files\Merged\NFCS SI Merged 18-21.dta", replace

****4. MERGE INVESTOR and STATE BY STATE SURVEY FOR 2021 ONLY****

*Load 2021 investor dataset

use "C:\Users\ XXXXX \OneDrive - Kansas State University\Dissertation\Crypto\STATA Analysis\NFCS Files\2021-Inv-Data-and-Data-Info\NFCS 2021 Investor Data 221121"

*Examine dataset - 2,824 observations
summarize
describe

*Change NFCSID to nfcsid for merge
rename NFCSID nfcsid

*Sort by NFCS ID
sort nfcsid

*merge with 2021 State by State dataset on nfcsid
merge 1:1 nfcsid using "C:\Users\ XXXXX \OneDrive - Kansas State
University\Dissertation\Crypto\STATA Analysis\NFCS Files\2021-SxS-Data-and-Data-
Info\NFCS 2021 State Data 220627", nogenerate
*Merge report is a success - 2,824 matched

*Examine dataset - now have 27,118 observations
summarize
describe

*To drop non-investor observations
keep if A1 != .

*Examine dataset - success - back down to 2,824 observations
summarize
describe

*save merged file as .dta
save "C:\Users\ XXXXX \OneDrive - Kansas State University\Dissertation\Crypto\STATA
Analysis\NFCS Files\Merged\NFCS Merged 21.dta", replace

*clear dataset
clear

*Close log
log close

B.1.2. NFCS Variable Coding and Descriptive Statistics

/*****

*Project: Dissertation
*Created by: Jason Anderson
*Created on: 3/31/2024
*Last modified on: 3/19/2025
*Last modified by: Jason
*Purpose: Code variables and generate descriptive statistics
*Machine: Home computer / work computer
*****/

*Start log - personal computer

```
*log using "C:\Users\ XXXXX \OneDrive - Kansas State
University\Dissertation\Crypto\STATA Analysis\Do
files\NFCS_variable_coding_descriptives_log.smcl", replace
```

```
*Start log - work computer
log using "C:\Users\ XXXXX \OneDrive - Kansas State University\Dissertation\Crypto\STATA
Analysis\Do files\NFCS_variable_coding_descriptives_log.smcl", replace
```

```
*load merged NFCS dataset - personal computer
```

```
*use "C:\Users\ XXXXX \OneDrive - Kansas State University\Dissertation\Crypto\STATA
Analysis\NFCS Files\Merged\NFCS SI Merged 18-21.dta"
```

```
*load merged NFCS dataset - work computer
```

```
use "C:\Users\ XXXXX \OneDrive - Kansas State University\Dissertation\Crypto\STATA
Analysis\NFCS Files\Merged\NFCS SI Merged 18-21.dta"
```

```
*Look at missing data across entire dataset
misstable summarize
```

```
****Variable coding - DEMOGRAPHIC****
```

```
*Age
```

```
/*
```

```
A3a)5 What is your age?
```

```
[DROP DOWN MENU; PUNCH SHOULD MATCH AGE]
```

```
[13 ..... 13
14 ..... 14
15 ..... 15
16 ..... 16
17 ..... 17
18 ..... 18
19 ..... 19
20 ..... 20
...etc. ...etc.
97 ..... 97
98 ..... 98
99 ..... 99
100 ..... 100
101 or older ..... 101
Prefer not to say ..... 999]
[IF Q.A3a = 13-17, 999 (REF), TERMINATE]
```

```
*/
```

```
tab A3Ar_w
gen age = A3Ar_w
tab age
```

```
label define agelabel 1 "18-24" 2 "25-34" 3 "35-44" 4 "45-54" 5 "55-64" 6 "65+"
label values age agelabel
tab age
```

*Gender

*A3 gender was used in 2018, A50 in 2021

*Delt with this in merge by creating a new variable called gender_merge

/*

What is your gender?

Male 1

Female 2

*/

tab A3

tab A50A

tab gender_merge

gen gender = gender_merge

tab gender

```
label define genderlabel 1 "Male" 2 "Female"
```

```
label values gender genderlabel
```

```
tab gender
```

*Marital Status

/*

A6) What is your marital status?

Married..... 1

Single 2

Separated 3

Divorced..... 4

Widowed/widower 5

Prefer not to say 99

*/

tab A6

gen marital = A6

tab marital

```
label define maritallabel 1 "Married" 2 "Single" 3 "Separated" 4 "Divorced" 5
```

```
"Widowed/widower"
```

```
label values marital maritallabel
```

```
tab marital
```

*Living arrangements

/*

A7) Which of the following describes your current living arrangements?

I am the only adult in the household 1

I live with my spouse/partner/significant other..... 2
 I live in my parents' home 3
 I live with other family, friends, or roommates 4
 Prefer not to say 99

*/

tab A7

gen livingarrangements = A7

tab livingarrangements

label define livingarrangementslabel 1 "I am the only adult in the household" 2 "I live with my spouse/partner/significa" 3 "I live in my parents' home" 4 "I live with other family, friends, or r"
 label values livingarrangements livingarrangementslabel
 tab livingarrangements

*Ethnicity

*only A4A_new_w or S_Ethnicity is available, only has white and non-white options

/*

A4)3 Which of the following best describes your race or ethnicity?

Select all that apply.

[M]

White or Caucasian 1
 Black or African-American 2
 Hispanic or Latino/a 3
 Asian 4
 Native Hawaiian or other Pacific Islander 7
 American Indian or Alaska Native 5
 Other 6
 Prefer not to say 99

[IF Q.A4 = 99 (REF), TERMINATE & SKIP TO QTERM][CODE 99 EXCLUSIVE]

*/

tab A4A_new_w

gen ethnicity = A4A_new_w

label define ethnicitylabel 1 "White" 2 "Non-White"

label values ethnicity ethnicitylabel

tab ethnicity

*Education

/*

A5

What was the highest level of education that you completed?

Did not complete high school 1
 High school graduate – regular high school diploma 2
 High school graduate – GED or alternative credential 3
 Some college, no degree 4

Associate's degree	5
Bachelor's degree.....	6
Post graduate degree	7
Prefer not to say	99

*/

```

tabulate A5_2015
gen    education = A5_2015
tabulate education

```

```

label define educationlabel 1 "No High School" 2 "High School Diploma" 3 "High school
graduate - GED or alt" 4 "Some college" 5 "Associate's" 6 "Bachelor's" 7 "Post-graduate"
label values education educationlabel
tab education

```

*Income

*A8 income was used in 2018, A8_2021 in 2021

*A8_2021 adds additional higher income brackets

*Delt with this in merge by creating a new variable called income_merge and changing the income brackets for 2021 in the merge do file

/*

A8)15 What is [IF Q.A7a = 3 INSERT: your approximate annual income/ IF Q.A7a = 1, 2
INSERT: your
household's approximate annual income], including wages, tips, investment income, public
assistance, income from retirement plans, etc.?
Would you say it is...

Less than \$15,000	1
At least \$15,000 but less than \$25,000	2
At least \$25,000 but less than \$35,000	3
At least \$35,000 but less than \$50,000	4
At least \$50,000 but less than \$75,000	5
At least \$75,000 but less than \$100,000	6
At least \$100,000 but less than \$150,000	7
At least \$150,000 but less than \$200,000	8
At least \$200,000 but less than \$300,000	9
\$300,000 or more.....	10
Don't know	98
Prefer not to say	99

*/

```

tab A8
tab A8_2021
tabulate income_merge

```

```

gen    income = income_merge
tabulate income

```

```
label define income_label 1 "<15K" 2 "15-25K" 3 "25-35K" 4 "35-50K" 5 "50-75K" 6 "75-100K" 7 "100-150K" 8 "150+"
label values income income_label
tab income
```

*Dependent children

/*

A11)7 How many children do you have who are financially dependent on you [IF Q.A7a = 1 OR 2 INSERT: or your [spouse/partner]]? Please include children not living at home, and step-children as well.

1	1
2	2
3	3
4 or more	4
No financially dependent children	5
Do not have any children	6
Prefer not to say	99

[IF Q.A11 = 99, TERMINATE & SKIP TO QTERM]

*/

tab A11

gen dependentchildren = A11

tabulate dependentchildren

```
label define dependentchildrenlabel 1 "1" 2 "2" 3 "3" 4 "4 or more" 5 "No financially dependent children" 6 "Do not have any children"
```

```
label values dependentchildren dependentchildrenlabel
```

```
tab dependentchildren
```

*Employment status

/*

A9) Which of the following best describes your current employment or work status?

Self-employed	1
Work full-time for an employer [IF Q.AM21 = 1 INSERT: or the military]	2
Work part-time for an employer [IF Q.AM21 = 1 INSERT: or the military]	3
Homemaker	4
Full-time student	5
Permanently sick, disabled, or unable to work	6
Unemployed or temporarily laid off	7
Retired	8
Prefer not to say	99

*/

tab A9

gen employment = A9

tabulate employment

```
label define employmentlabel 1 "Self-employed" 2 "Work full-time for an employer" 3 "Work
part-time for an employer" 4 "Homemaker" 5 "Full-time student" 6 "Permanently sick, disabled,
or unable to work" 7 "Unemployed or temporarily laid off" 8 "Retired"
```

```
label values employment employmentlabel
tab employment
```

```
****Variable coding - CRYPTO****
```

```
/*
# B24)11 In your opinion, how risky are cryptocurrencies as an investment?
Not at all risky 1
Slightly risky 2
Moderately risky 3
Very risky 4
Extremely risky 5
Don't know 98
Prefer not to say 99
*/
```

```
tab B24
generate howriskycrypto = B24
tab howriskycrypto
```

```
label define howriskycryptolabels 1 "Not at all risky" 2 "Slightly risky" 3 "Moderately risky" 4
"Very risky" 5 "Extremely risky" 98 "Don't Know" 99 "Prefer not to say"
label values howriskycrypto howriskycryptolabels
tab howriskycrypto
```

```
*Code a second howriskycrypto to match Qualtrics analysis
*Recode how_risky_crypto to combine not at all risky and slightly risky into one base category
tab howriskycrypto
recode howriskycrypto (1 = 1) (2 = 1) (3 = 2) (4 = 3) (5 = 3)(98 = 98)(99 = 99),
generate(recoded_how_risky_crypto)
tab recoded_how_risky_crypto
```

```
label define recoded_how_risky_cryptolabel 1 "Slight" 2 "Moderate" 3 "High" 98 "DK" 99
"PNS"
label values recoded_how_risky_crypto recoded_how_risky_cryptolabel
tab recoded_how_risky_crypto
```

```
/*
# B25)12 Have you invested in cryptocurrencies, either directly or through a fund that invests in
cryptocurrencies?
Yes 1
```



```
No 2
Don't know 98
Prefer not to say 99
*/
```

```
tab B25
generate crypto = B25
tab crypto
```

```
*Crypto2 - with 0/1 outcome, drop 98, 99
generate crypto2 = 0
replace crypto2=1 if B25==1
tab crypto2
```

```
label define crypto2labels 0 "No Crypto Holding" 1 "Crypto Holding"
label values crypto2 crypto2labels
tab crypto2
```

```
*****Variable coding - RISK TOLERANCE*****
```

```
*RISK TOLERANCE Generate variable for risk tolerance
/*
```

```
When thinking of your financial investments, how willing are you to take risks?
Please use a 10-point scale, where 1 means "Not At All Willing" and 10 means "Very Willing."
Not At All Willing
```

```
1
2
3
4
5
6
7
8
9
Very Willing
10
Don't know
98
Prefer not to say
99
*/
```

```
tabulate J2
generate risktol = J2
tabulate risktol
```

```
label define risktollabels 1 "Not at all willing" 10 "Very willing" 98 "Don't Know" 99 "Prefer not to say"
label values risktol risktollabels
tab risktol
```

```
*Split into low/medium/high
generate risktol2 = 0
replace risktol2 = 1 if J2 == 1 | J2 == 2 | J2 == 3
replace risktol2 = 2 if J2 == 4 | J2 == 5 | J2 == 6 | J2 == 7
replace risktol2 = 3 if J2 == 8 | J2 == 9 | J2 == 10
replace risktol2 = 98 if J2 == 98
replace risktol2 = 99 if J2 == 99
tab risktol2
```

```
label define risktol2labels 1 "Low" 2 "Medium" 3 "High" 98 "Don't Know" 99 "Prefer not to say"
label values risktol2 risktol2labels
tab risktol2
```

```
*Look at missing values again
misstable summarize
```

```
*****DESCRIPTIVE STATISTICS*****
```

```
*Descriptive Statistics - General Investors
```

```
*Descriptive
```

```
*Mean is what we call it for continuous variables and proportions for categorical variables
sum i.crypto2 i.recoded_how_risky_crypto i.risktol2 i.age i.gender i.marital i.livingarrangements
i.ethnicity i.education i.income i.dependentchildren i.employment
```

```
*Descriptive Statistics - Crypto Investors
```

```
sum i.recoded_how_risky_crypto i.risktol2 i.age i.gender i.marital i.livingarrangements
i.ethnicity i.education i.income i.dependentchildren i.employment if crypto2 == 1
```

```
*Wilcoxon-Mann-Whitney test crypto and non-crypto
```

```
ranksum recoded_how_risky_crypto, by(crypto2)
ranksum risktol2, by(crypto2)
ranksum age, by(crypto2)
ranksum gender, by(crypto2)
ranksum marital, by(crypto2)
ranksum livingarrangements, by(crypto2)
ranksum ethnicity, by(crypto2)
ranksum education, by(crypto2)
ranksum income, by(crypto2)
ranksum dependentchildren, by(crypto2)
ranksum employment, by(crypto2)
```

*Supplemental t-test for crypto and non-crypto

ttest recoded_how_risky_crypto, by(crypto2)

ttest risktol2, by(crypto2)

ttest age, by(crypto2)

ttest gender, by(crypto2)

ttest marital, by(crypto2)

ttest livingarrangements, by(crypto2)

ttest ethnicity, by(crypto2)

ttest education, by(crypto2)

ttest income, by(crypto2)

ttest dependentchildren, by(crypto2)

ttest employment, by(crypto2)

*Supplemental Z-score test for crypto and non-crypto

ztest recoded_how_risky_crypto, by(crypto2)

ztest risktol2, by(crypto2)

ztest age, by(crypto2)

ztest gender, by(crypto2)

ztest marital, by(crypto2)

ztest livingarrangements, by(crypto2)

ztest ethnicity, by(crypto2)

ztest education, by(crypto2)

ztest income, by(crypto2)

ztest dependentchildren, by(crypto2)

ztest employment, by(crypto2)

*Save modified dataset - personal computer

*save "C:\Users\ XXXXX \OneDrive - Kansas State University\Dissertation\Crypto\STATA
Analysis\NFCS Files\Merged\NFCS Merged 18-21 VARS.dta", replace

*Save modified dataset - work computer

save "C:\Users\ XXXXX \OneDrive - Kansas State University\Dissertation\Crypto\STATA
Analysis\NFCS Files\Merged\NFCS Merged 18-21 VARS.dta", replace

*clear dataset

clear

*****Tabulate 2021 Only Variables for Investor Motivation Question *****

*Load merged investor survey 2021 - personal computer

*use "C:\Users\ XXXXX \OneDrive - Kansas State University\Dissertation\Crypto\STATA
Analysis\NFCS Files\Merged\NFCS Merged 21.dta"

*Load merged investor survey 2021 - work computer

use "C:\Users\ XXXXX \OneDrive - Kansas State University\Dissertation\Crypto\STATA
Analysis\NFCS Files\Merged\NFCS Merged 21.dta"

*Investor Motivation

*THIS IS A NEW QUESTION AS OF 2021

/*

G30) How well does each of the following describe why you invest?

Answers:

Does not describe at all

Describes somewhat

Describes very well

Don't know

Prefer not to say

G30_1)

To make money in the short term

G30_2)

To make money in the long term

G30_3)

For entertainment/excitement/fun/playing a game

G30_4)

My peers are doing it/social activity/connecting with others

G30_5)

To make a difference in the world/support values I care about/be socially responsible

G30_6)

To learn about investing

*/

tab G30_1

generate investshort = G30_1

tab investshort

label define investshortlabels 1 "Does not describe at all" 2 "Describes somewhat" 3 "Describes very well" 4 "Don't know" 5 "Prefer not to say"

label values investshort investshortlabels

tab investshort

tab G30_2

generate investlong = G30_2

tab investlong

label define investlonglabels 1 "Does not describe at all" 2 "Describes somewhat" 3 "Describes very well" 4 "Don't know" 5 "Prefer not to say"

label values investlong investlonglabels

tab investlong

tab G30_3

generate investhedonic = G30_3

tab investhedonic

```
label define investhedoniclabels 1 "Does not describe at all" 2 "Describes somewhat" 3
"Describes very well" 4 "Don't know" 5 "Prefer not to say"
label values investhedonic investhedoniclabels
tab investhedonic
```

```
tab G30_4
generate investsocial = G30_4
tab investsocial
```

```
label define investsociallabels 1 "Does not describe at all" 2 "Describes somewhat" 3 "Describes
very well" 4 "Don't know" 5 "Prefer not to say"
label values investsocial investsociallabels
tab investsocial
```

```
tab G30_5
generate investvalues = G30_5
tab investvalues
```

```
label define investvalueslabels 1 "Does not describe at all" 2 "Describes somewhat" 3 "Describes
very well" 4 "Don't know" 5 "Prefer not to say"
label values investvalues investvalueslabels
tab investvalues
```

```
tab G30_6
generate investlearn = G30_6
tab investlearn
```

```
label define investlearnlabels 1 "Does not describe at all" 2 "Describes somewhat" 3 "Describes
very well" 4 "Don't know" 5 "Prefer not to say"
label values investlearn investlearnlabels
tab investlearn
```

****DESCRIPTIVE STATISTICS FOR INVESTING MOTIVATION****

```
*Descriptive Statistics for Investor Motivation Question
sum i.investshort i.investlong i.investhedonic i.investsocial i.investvalues i.investlearn
*When reporting, note that 636 observations missing for crypto risk variable (13.18% missing)
*Will fix with MI during regression stage
```

****SET UP ADDITIONAL VARIABLES FOR REGRESSION****

****Variable coding - DEMOGRAPHIC****

```
*Age
tab A3Ar_w
gen age = A3Ar_w
```

tab age

label define agelabel 1 "18-24" 2 "25-34" 3 "35-44" 4 "45-54" 5 "55-64" 6 "65+"

label values age agelabel

tab age

*Gender

tab A50A

gen gender = A50A

tab gender

label define genderlabel 1 "Male" 2 "Female"

label values gender genderlabel

tab gender

*Marital Status

tab A6

gen marital = A6

tab marital

label define maritallabel 1 "Married" 2 "Single" 3 "Separated" 4 "Divorced" 5

"Widowed/widower"

label values marital maritallabel

tab marital

*Living arrangements

tab A7

gen livingarrangements = A7

tab livingarrangements

label define livingarrangementslabel 1 "I am the only adult in the household" 2 "I live with my spouse/partner/significa" 3 "I live in my parents' home" 4 "I live with other family, friends, or r"

label values livingarrangements livingarrangementslabel

tab livingarrangements

*Ethnicity

tab A4A_new_w

gen ethnicity = A4A_new_w

label define ethnicitylabel 1 "White" 2 "Non-White"

label values ethnicity ethnicitylabel

tab ethnicity

*Education

tabulate A5_2015

gen education = A5_2015

tabulate education

label define educationlabel 1 "No High School" 2 "High School Diploma" 3 "High school graduate - GED or alt" 4 "Some college" 5 "Associate's" 6 "Bachelor's" 7 "Post-graduate"
label values education educationlabel
tab education

*Income
tab A8_2021

gen income = A8_2021
tabulate income

label define income_label 1 "<15K" 2 "15-25K" 3 "25-35K" 4 "35-50K" 5 "50-75K" 6 "75-100K" 7 "100-150K" 8 "150-200K" 9 "200-300K" 10 "300k+"
label values income income_label
tab income

*Dependent children
tab A11
gen dependentchildren = A11
tabulate dependentchildren

label define dependentchildrenlabel 1 "1" 2 "2" 3 "3" 4 "4 or more" 5 "No financially dependent children" 6 "Do not have any children"
label values dependentchildren dependentchildrenlabel
tab dependentchildren

*Employment status
tab A9
gen employment = A9
tabulate employment

label define employmentlabel 1 "Self-employed" 2 "Work full-time for an employer" 3 "Work part-time for an employer" 4 "Homemaker" 5 "Full-time student" 6 "Permanently sick, disabled, or unable to work" 7 "Unemployed or temporarily laid off" 8 "Retired"
label values employment employmentlabel
tab employment

****Variable coding - CRYPTO****

*Crypto risk
tab B24
generate howriskycrypto = B24
tab howriskycrypto

```
label define howriskycryptolabels 1 "Not at all risky" 2 "Slightly risky" 3 "Moderately risky" 4
"Very risky" 5 "Extremely risky" 98 "Don't Know" 99 "Prefer not to say"
label values howriskycrypto howriskycryptolabels
tab howriskycrypto
```

```
*Code a second howriskycrypto to match Qualtrics analysis
*Recode how_risky_crypto to combine not at all risky and slightly risky into one base category
tab howriskycrypto
recode howriskycrypto (1 = 1) (2 = 1) (3 = 2) (4 = 3) (5 = 3)(98 = 98)(99 = 99),
generate(recoded_how_risky_crypto)
tab recoded_how_risky_crypto
```

```
label define recoded_how_risky_cryptolabel 1 "Slight" 2 "Moderate" 3 "High" 98 "DK" 99
"PNS"
label values recoded_how_risky_crypto recoded_how_risky_cryptolabel
tab recoded_how_risky_crypto
```

```
*Crypto investing
tab B25
generate crypto = B25
tab crypto
```

```
*Crypto2 - with 0/1 outcome, drop 98, 99
generate crypto2 = 0
replace crypto2=1 if B25==1
tab crypto2
```

```
label define crypto2labels 0 "No Crypto Holding" 1 "Crypto Holding"
label values crypto2 crypto2labels
tab crypto2
```

****Variable coding - RISK TOLERANCE****

```
*Risk tolerance
tabulate J2
generate risktol = J2
tabulate risktol
```

```
label define risktollabels 1 "Not at all willing" 10 "Very willing" 98 "Don't Know" 99 "Prefer not
to say"
label values risktol risktollabels
tab risktol
```

```
*Split into low/medium/high
generate risktol2 = 0
```



```

replace risktol2 = 1 if J2 == 1 | J2 == 2 | J2 == 3
replace risktol2 = 2 if J2 == 4 | J2 == 5 | J2 == 6 | J2 == 7
replace risktol2 = 3 if J2 == 8 | J2 == 9 | J2 == 10
replace risktol2 = 98 if J2 == 98
replace risktol2 = 99 if J2 == 99
tab risktol2

```

```

label define risktol2labels 1 "Low" 2 "Medium" 3 "High" 98 "Don't Know" 99 "Prefer not to say"
label values risktol2 risktol2labels
tab risktol2

```

```

*Look at missing values again
misstable summarize

```

```

*Save modified dataset - personal computer
*save "C:\Users\ XXXXX \OneDrive - Kansas State University\Dissertation\Crypto\STATA Analysis\NFCS Files\Merged\NFCS Merged 21 VARS.dta", replace

```

```

*Save modified dataset - work computer
save "C:\Users\ XXXXX \OneDrive - Kansas State University\Dissertation\Crypto\STATA Analysis\NFCS Files\Merged\NFCS Merged 21 VARS.dta", replace

```

```

****DESCRIPTIVE STATISTICS****

```

```

*Descriptive Statistics - General Investors
sum i.crypto2 i.recoded_how_risky_crypto i.risktol2 i.age i.gender i.marital i.livingarrangements i.ethnicity i.education i.income i.dependentchildren i.employment

```

```

*Descriptive Statistics - Crypto Investors
sum i.recoded_how_risky_crypto i.risktol2 i.age i.gender i.marital i.livingarrangements i.ethnicity i.education i.income i.dependentchildren i.employment if crypto2 == 1

```

```

*Close log
log close

```

B.1.3. NFCS Logistic Regressions

```

/*****

```

```

*Project: Dissertation
*Created by: Jason Anderson
*Created on: 3/31/2024
*Last modified on: 1/29/2025
*Last modified by: Jason
*Purpose: NFCS Regressions
*Machine: Home computer / work computer

```

*****/

*Start log - work computer

log using "C:\Users\ XXXXX \OneDrive - Kansas State University\Dissertation\Crypto\STATA
Analysis\Do files\NFCS_regression_log.smcl", replace

*load merged NFCS dataset - work computer

use "C:\Users\ XXXXX \OneDrive - Kansas State University\Dissertation\Crypto\STATA
Analysis\NFCS Files\Merged\NFCS Merged 18-21 VARS.dta"

*Deal with missing values before regression

ssc install mdesc

mdesc crypto2 recoded_how_risky_crypto risktol age gender marital livingarrangements
ethnicity education income dependentchildren employment

*Need to deal with missing values as 636 observations missing for crypto risk variable (13.2%
missing)

*Listwise deletion

drop if missing(recoded_how_risky_crypto)

*636 missing observations deleted

*change from n = 4827 to n = 4,191

*Check binary crypto variable

tab crypto2

* 0 = noncrypto

* 1 = crypto

*Logistic regression on binary crypto holders

logit crypto2 i.recoded_how_risky_crypto i.risktol2 i.age i.gender i.marital i.livingarrangements
i.ethnicity i.education i.income i.dependentchildren i.employment

*To get odds ratio

logit crypto2 i.recoded_how_risky_crypto i.risktol2 i.age i.gender i.marital i.livingarrangements
i.ethnicity i.education i.income i.dependentchildren i.employment, or

*Clear dataset

clear

*****Logistic Regression for 2021 Merged Dataset*****

*Load saved variable dataset - work computer

use "C:\Users\ XXXXX \OneDrive - Kansas State University\Dissertation\Crypto\STATA
Analysis\NFCS Files\Merged\NFCS Merged 21 VARS.dta"

*Deal with missing values before regression

ssc install mdesc

mdesc crypto2 investshort investlong investhedonic investsocial investvalues investlearn
recoded_how_risky_crypto risktol age gender marital livingarrangements ethnicity education
income dependentchildren employment
*Need to deal with missing values as 349 observations missing for crypto risk variable (12.36%
missing)

*Listwise deletion
drop if missing(recoded_how_risky_crypto)
*349 missing observations deleted
*change from n = 2,824 to n = 2,475

*Check binary crypto variable
tab crypto2
* 0 = noncrypto
* 1 = crypto

*Logistic regression on binary crypto holders
logit crypto2 i.investshort i.investlong i.investhedonic i.investsocial i.investvalues i.investlearn
i.recoded_how_risky_crypto i.risktol2 i.age i.gender i.marital i.livingarrangements i.ethnicity
i.education i.income i.dependentchildren i.employment

*To get odds ratio
logit crypto2 i.investshort i.investlong i.investhedonic i.investsocial i.investvalues i.investlearn
i.recoded_how_risky_crypto i.risktol2 i.age i.gender i.marital i.livingarrangements i.ethnicity
i.education i.income i.dependentchildren i.employment, or

*Clear dataset
clear

*Close log
log close

B.1.4. Qualtrics-CloudResearch Data Merge

```
/******  
*Project: Dissertation  
*Created by: Jason Anderson  
*Created on: 1/13/2025  
*Last modified on: 1/14/2025  
*Last modified by: Jason  
*Purpose: Merge Qualtrics and CloudReserch datasets  
*Machine: Work computer  
*****/
```

*Start log

log using "C:\Users\ XXXXX \OneDrive - Kansas State University\Dissertation\Crypto\STATA Analysis\Do files", replace

****CREATE STATA DATASETS****

*Import Qualtrics data on work computer

import delimited "C:\Users\ XXXXX \OneDrive - Kansas State University\Dissertation\Crypto\STATA Analysis\Qualtrics Files\Qualtricsdata_combined_expanded_1.13.24.csv"

*Examine dataset

summarize
describe

*Save Qualtrics data as Stata dataset

save "C:\Users\ XXXXX \OneDrive - Kansas State University\Dissertation\Crypto\STATA Analysis\Qualtrics Files\Qualtrics_data.dta", replace

*Import CloudResearch data on work computer

import delimited "C:\Users\ XXXXX \OneDrive - Kansas State University\Dissertation\Crypto\STATA Analysis\Qualtrics Files\CloudResearchdata_clean_1.13.25.csv", clear

*Examine dataset

summarize
describe

*Change variable names

rename starttimeamericachicago cr_starttimeamericachicago
rename completiontimeamericachicago cr_completiontimeamericachicago
rename completiontype cr_completiontype
rename completioncode cr_completioncode
rename payment cr_payment
rename bonus cr_bonus
rename fees cr_fees
rename status cr_status
rename querystring cr_querystring
rename age cr_age
rename education cr_education
rename sex cr_sex
rename occupationfield cr_occupationfield
rename relationshipmaritalstatus cr_relationshipmaritalstatus
rename politicalparty cr_politicalparty
rename ethnicity cr_ethnicity
rename gender cr_gender
rename countryofresidence cr_countryofresidence

```
rename householdincome cr_householdincome
rename race cr_race
rename employmentstatus cr_employmentstatus
```

```
*Save CloudResearch data as Stata dataset
save "C:\Users\ XXXXX \OneDrive - Kansas State University\Dissertation\Crypto\STATA
Analysis\Qualtrics Files\CloudResearch_data.dta", replace
```

```
****MERGE CLOUDRESEARCH AND QUALTRICS SURVEY DATA****
```

```
*Open Qualtrics dataset
use "C:\Users\ XXXXX \OneDrive - Kansas State University\Dissertation\Crypto\STATA
Analysis\Qualtrics Files\Qualtrics_data.dta"
```

```
*Correct mismatch - drop CloudResearch in-process survey observation for Participant ID
509291EB3F194545B31144F4CE408D12 as he/she completed the survey in Qualtrics
drop in 1727
```

```
*Sort by CloudReserach Participant ID
. sort participantid
```

```
*Examine dataset
summarize
describe
```

```
*merge with CloudReserach dataset 1:1 match on participantid
merge 1:1 participantid using "C:\Users\ XXXXX \OneDrive - Kansas State
University\Dissertation\Crypto\STATA Analysis\Qualtrics Files\CloudResearch_data.dta",
generate(mergevar)
```

```
*Save merged dataset
save "C:\Users\ XXXXX \OneDrive - Kansas State University\Dissertation\Crypto\STATA
Analysis\Qualtrics Files\Qualtrics_merged_dataset.dta", replace
```

```
*clear dataset
clear
```

```
*Close log
log close
```

B.1.5. Qualtrics Variable Coding and Descriptive Statistics

```
/******
```

```
*Project: Dissertation
*Created by: Jason Anderson
*Created on: 1/13/2025
```

```

*Last modified on: 3/19/2025
*Last modified by: Jason
*Purpose: Clean up Qualtrics data, code variables, descriptive stats
*Machine: Work computer
*****/

***CLEAN UP DATA***
*Start log
log using "C:\Users\ XXXXX \OneDrive - Kansas State University\Dissertation\Crypto\STATA
Analysis\Do files\Qualtrics_variable_coding_descriptives_log.smcl", replace

*Open merged dataset
use "C:\Users\ XXXXX \OneDrive - Kansas State University\Dissertation\Crypto\STATA
Analysis\Qualtrics Files\Qualtrics_merged_dataset.dta"

*Correct observation from participant to messaged me on CloudResearch about erroneous input
replace dem8dependents = 6 if participantid == "[omitted for privacy]"

*Recode participants who completed survey but CloudResearch said either returned or timed out
replace cr_status = "Approved" if participantid == "[omitted for privacy]"
replace cr_status = "Approved" if participantid == "[omitted for privacy]"
replace cr_status = "Approved" if participantid == "[omitted for privacy]"
replace cr_status = "Approved" if participantid == "[omitted for privacy]"
replace cr_status = "Approved" if participantid == "[omitted for privacy]"
replace cr_status = "Approved" if participantid == "[omitted for privacy]"
replace cr_status = "Approved" if participantid == "[omitted for privacy]"
replace cr_status = "Approved" if participantid == "[omitted for privacy]"
replace cr_status = "Approved" if participantid == "[omitted for privacy]"
replace cr_status = "Approved" if participantid == "[omitted for privacy]"

*Sort by to confirm changes
. sort cr_status

*Mark Qualtrics Incompletes
replace qualtricsstatus = "Incomplete" if qualtricsstatus == ""
*21 changes made

*Sort by to confirm changes
. sort qualtricsstatus

*Drop In-progress, Incompletes, and no consent from dataset
drop if qualtricsstatus == "Incomplete"
*21 observations deleted
drop if qualtricsstatus == "In-Progress"
*26 observations deleted

```

drop if informedconsent2 == 2

*1 observation deleted

*Drop fraud counts >30

drop if q_relevantidfraudscore > 30

*62 observations deleted

*Check change

tab q_relevantidfraudscore

*Examine dataset

summarize

describe

*Drop unnecessary variables

drop qualtricsstatus startdate enddate status progress durationinseconds finished recordeddate
distributionchannel

drop userlanguage q_recaptchascore q_relevantidduplicate q_relevantidduplicatescore

q_relevantidfraudscore q_relevantidlaststartdate informedconsent2

drop responseid assignmentid projectid q_ambiguoustextpresent q_ambiguoustextquestions

q_straightliningcount q_straightliningpercentage q_straightliningquestions

q_unansweredpercentage q_unansweredquestions

drop cr_starttimeamericachicago cr_completiontimeamericachicago cr_completiontype

cr_completioncode cr_payment cr_bonus cr_fees cr_status cr_querystring cr_age cr_education
cr_sex

drop cr_occupationfield cr_relationshipmaritalstatus cr_ethnicity cr_gender

cr_countryofresidence cr_householdincome cr_race cr_employmentstatus mergevar

CREATE VARIABLES AND LABELS

*Install mrtab package

ssc install mrtab, replace

*Crypto variables

label define crypto1label 1 "Yes" 2 "No" 3 "DK" 4 "PNS"

label values crypto1 crypto1label

tab crypto1

rename crypto1 invest_crypto

tab invest_crypto

label define crypto2_1label 1 "Does not describe at all" 2 "Describes somewhat" 3 "Describes
very well" 4 "DK" 5 "PNS"

label values crypto2_1 crypto2_1label

tab crypto2_1

```
rename crypto2_1 crypto2_short_term
tab crypto2_short_term
```

```
label define crypto2_2label 1 "Does not describe at all" 2 "Describes somewhat" 3 "Describes
very well" 4 "DK" 5 "PNS"
label values crypto2_2 crypto2_2label
tab crypto2_2
```

```
rename crypto2_2 crypto2_long_term
tab crypto2_long_term
```

```
label define crypto2_3label 1 "Does not describe at all" 2 "Describes somewhat" 3 "Describes
very well" 4 "DK" 5 "PNS"
label values crypto2_3 crypto2_3label
tab crypto2_3
```

```
rename crypto2_3 crypto2_hedonism
tab crypto2_hedonism
```

```
label define crypto2_4label 1 "Does not describe at all" 2 "Describes somewhat" 3 "Describes
very well" 4 "DK" 5 "PNS"
label values crypto2_4 crypto2_4label
tab crypto2_4
```

```
rename crypto2_4 crypto2_social
tab crypto2_social
```

```
label define crypto2_5label 1 "Does not describe at all" 2 "Describes somewhat" 3 "Describes
very well" 4 "DK" 5 "PNS"
label values crypto2_5 crypto2_5label
tab crypto2_5
```

```
rename crypto2_5 crypto2_values
tab crypto2_values
```

```
label define crypto2_6label 1 "Does not describe at all" 2 "Describes somewhat" 3 "Describes
very well" 4 "DK" 5 "PNS"
label values crypto2_6 crypto2_6label
tab crypto2_6
```

```
rename crypto2_6 crypto2_learning
tab crypto2_learning
```

```
label define crypto3label 1 "Not at all risky" 2 "Slightly risky" 3 "Moderately risky" 4 "Very
risky" 5 "Extremely risky" 6 "DK" 7 "PNS"
label values crypto3 crypto3label
```



```
tab crypto3
```

```
rename crypto3 how_risky_crypto  
tab how_risky_crypto
```

```
label define crypto4label 1 "Rarely" 2 "Sometimes" 3 "Often"  
label values crypto4 crypto4label  
tab crypto4
```

```
rename crypto4 crypto_frequency  
tab crypto_frequency
```

```
label define crypto5label 1 "<1 year" 2 "1-3 years" 3 "3-5 years" 4 ">5 years"  
label values crypto5 crypto5label  
tab crypto5
```

```
rename crypto5 crypto_investment_duration  
tab crypto_investment_duration
```

```
rename crypto6 crypto_name  
tab crypto_name
```

```
label define crypto6_1label 1 "Invested" 0 "Didn't Invest"  
label values crypto6_1 crypto6_1label  
tab crypto6_1
```

```
label define crypto6_2label 1 "Invested" 0 "Didn't Invest"  
label values crypto6_2 crypto6_2label  
tab crypto6_2
```

```
label define crypto6_3label 1 "Invested" 0 "Didn't Invest"  
label values crypto6_3 crypto6_3label  
tab crypto6_3
```

```
label define crypto6_4label 1 "Invested" 0 "Didn't Invest"  
label values crypto6_4 crypto6_4label  
tab crypto6_4
```

```
label define crypto6_5label 1 "Invested" 0 "Didn't Invest"  
label values crypto6_5 crypto6_5label  
tab crypto6_5
```

```
label define crypto6_6label 1 "Invested" 0 "Didn't Invest"  
label values crypto6_6 crypto6_6label  
tab crypto6_6
```

```
label define crypto6_7label 1 "Invested" 0 "Didn't Invest"
label values crypto6_7 crypto6_7label
tab crypto6_7
```

```
label define crypto6_8label 1 "Invested" 0 "Didn't Invest"
label values crypto6_8 crypto6_8label
tab crypto6_8
```

```
label define crypto6_9label 1 "Invested" 0 "Didn't Invest"
label values crypto6_9 crypto6_9label
tab crypto6_9
```

```
label define crypto6_10label 1 "Invested" 0 "Didn't Invest"
label values crypto6_10 crypto6_10label
tab crypto6_10
```

```
label define crypto6_11label 1 "Invested" 0 "Didn't Invest"
label values crypto6_11 crypto6_11label
tab crypto6_11
```

```
label define crypto6_12label 1 "Invested" 0 "Didn't Invest"
label values crypto6_12 crypto6_12label
tab crypto6_12
```

```
label define crypto6_13label 1 "Invested" 0 "Didn't Invest"
label values crypto6_13 crypto6_13label
tab crypto6_13
```

```
label define crypto6_14label 1 "Invested" 0 "Didn't Invest"
label values crypto6_14 crypto6_14label
tab crypto6_14
```

```
rename crypto6_1 crypto_btc
rename crypto6_2 crypto_eth
rename crypto6_3 crypto_usdt
rename crypto6_4 crypto_usdc
rename crypto6_5 crypto_bnb
rename crypto6_6 crypto_ripple
rename crypto6_7 crypto_ada
rename crypto6_8 crypto_busd
rename crypto6_9 crypto_sol
rename crypto6_10 crypto_trx
rename crypto6_11 crypto_dot
rename crypto6_12 crypto_doge
rename crypto6_13 crypto_xrp
rename crypto6_14 crypto_other
```

*Combine crypto_xrp and crypto_ripple into one variable

```
tabulate crypto_ripple crypto_xrp
gen crypto_xrp_ripple = max(crypto_ripple, crypto_xrp)
tabulate crypto_xrp
tabulate crypto_ripple
tabulate crypto_xrp_ripple
```

```
label define crypto_xrp_ripplelabel 1 "Invested" 0 "Didn't Invest"
label values crypto_xrp_ripple crypto_xrp_ripplelabel
tab crypto_xrp_ripple
```

```
drop crypto_ripple
drop crypto_xrp
```

*check multiple response results

```
mrtab crypto_btc crypto_eth crypto_usdt crypto_usdc crypto_bnb crypto_ada crypto_busd
crypto_sol crypto_trx crypto_dot crypto_doge crypto_xrp_ripple crypto_other
```

*Risk and demographic variables

```
rename risk1 financial_risk_tol
tab financial_risk_tol
```

*Age

```
rename dem1 age
tab age
```

*Gender

```
label define dem2genderlabel 1 "Man" 2 "Woman" 3 "Some other way"
label values dem2gender dem2genderlabel
tab dem2gender
```

```
rename dem2gender gender
tab gender
```

*Marital Status

```
label define dem3maritalstatlabel 1 "Married" 2 "Single" 3 "Separated" 4 "Divorced" 5
"Widowed/widower" 6 "PNS"
label values dem3maritalstat dem3maritalstatlabel
tab dem3maritalstat
```

```
rename dem3maritalstat marital_status
tab marital_status
```

*Living Arrangements

```
label define dim4livingarrangmlabel 1 "Only adult" 2 "Live with spouse/significant other" 3  
"Live in parent's home" 4 "Live with amily/friends/roommates" 5 "PNS"  
label values dim4livingarrangm dim4livingarrangmlabel  
tab dim4livingarrangm
```

```
rename dim4livingarrangm living  
tab living
```

```
*Ethnicity  
rename dem5ethnicity ethnicity  
tab ethnicity
```

```
label define dem5_1label 1 "Yes" 0 "No"  
label values dem5_1 dem5_1label  
tab dem5_1
```

```
label define dem5_2label 1 "Yes" 0 "No"  
label values dem5_2 dem5_2label  
tab dem5_2
```

```
label define dem5_3label 1 "Yes" 0 "No"  
label values dem5_3 dem5_3label  
tab dem5_3
```

```
label define dem5_4label 1 "Yes" 0 "No"  
label values dem5_4 dem5_4label  
tab dem5_4
```

```
label define dem5_5label 1 "Yes" 0 "No"  
label values dem5_5 dem5_5label  
tab dem5_5
```

```
label define dem5_6label 1 "Yes" 0 "No"  
label values dem5_6 dem5_6label  
tab dem5_6
```

```
label define dem5_7label 1 "Yes" 0 "No"  
label values dem5_7 dem5_7label  
tab dem5_7
```

```
label define dem5_8label 1 "Yes" 0 "No"  
label values dem5_8 dem5_8label  
tab dem5_8
```

```
rename dem5_1 eth_white  
rename dem5_2 eth_black
```

```
rename dem5_3 eth_hispanic
rename dem5_4 eth_asian
rename dem5_5 eth_hawaiian_pi
rename dem5_6 eth_indian_alaska_native
rename dem5_7 eth_other
rename dem5_8 eth_pns
```

*check multiple response results

```
mrtab eth_white eth_black eth_hispanic eth_asian eth_hawaiian_pi eth_indian_alaska_native
eth_other eth_pns
```

*Education

```
label define dem6educationlabel 1 "No High School" 2 "High School Diploma" 3 "High school
graduate - GED or alt" 4 "Some college" 5 "Associate's" 6 "Bachelor's" 7 "Post-graduate" 8
"PNS"
```

```
label values dem6education dem6educationlabel
tab dem6education
```

```
rename dem6education education
tab education
```

*Income

```
label define dem7_mergedlabel 1 "<$15,000" 2 "$15,000 but less than $25,000" 3 "$25,000 but
less than $35,000" 4 "$35,000 but less than $50,000" 5 "$50,000 but less than $75,000" 6
"$75,000 but less than $100,000" 7 "$100,000 but less than $150,000" 8 "$150,000 but less than
$200,000" 9 "$200,000 but less than $300,000" 10 ">$300,000" 11 "DK" 12 "PNS"
label values dem7_merged dem7_mergedlabel
tab dem7_merged
```

```
rename dem7_merged income
```

*Drop other income variables

```
drop dem7income
drop dem7incomehh
```

*Dependents

```
label define dem8dependentslabel 1 "1" 2 "2" 3 "3" 4 "4 or more" 5 "No financially dependent
children" 6 "Do not have any children" 7 "PNS"
label values dem8dependents dem8dependentslabel
tab dem8dependents
```

```
rename dem8dependents dependents
```

*Employment

```
label define dem9employmentlabel 1 "Self-employed" 2 "Full-time for an employer or mil" 3
"Part-time for an employer or mil" 4 "Homemaker" 5 "Full-time student" 6 "Permanently sick,
disabled, or unable to work" 7 "Unemployed or temporarily laid off" 8 "Retired" 9 "PNS"
label values dem9employment dem9employmentlabel
tab dem9employment
```

```
rename dem9employment employment
tab employment
```

*GRP

```
label define grp_1label 1 "Not At All Willing to Take Risks" 10 "Very Willing to Take Risks"
label values grp_1 grp_1label
tab grp_1
```

```
rename grp_1 grp
tab grp
```

*Code variables to match NFCS analysis

*Recode how_risky_crypto to combine not at all risky and slightly risky into one base category
(not at all risky is only 3 respondents)

```
tab how_risky_crypto
recode how_risky_crypto (1 = 1) (2 = 1) (3 = 2) (4 = 3) (5 = 3) (6 = 4),
generate(recoded_how_risky_crypto)
tab recoded_how_risky_crypto
```

```
label define recoded_how_risky_cryptolabel 1 "Slight" 2 "Moderate" 3 "High" 4 "DK"
label values recoded_how_risky_crypto recoded_how_risky_cryptolabel
tab recoded_how_risky_crypto
```

*Ethnicity

```
gen ethnicity_binary = eth_white
tab ethnicity_binary
```

```
label define ethnicity_binarylabel 1 "White" 0 "Non-White"
label values ethnicity_binary ethnicity_binarylabel
tab ethnicity_binary
```

*Age

```
recode age (min/24 = 1 "<=24")(24/34 = 2 "25-34")(34/44 = 3 "35-44")(44/54 = 4 "45-
54")(54/64 = 5 "55-64")(64/max = 6 ">65"), gen(age_category)
tab age_category
```

*Three category risktol

*My scale has 0, NFCS does not (starts at 1)
generate financial_risk_tol2 = 0

```

replace financial_risk_tol2 = 1 if financial_risk_tol == 0 | financial_risk_tol == 1 |
financial_risk_tol == 2 | financial_risk_tol == 3
replace financial_risk_tol2 = 2 if financial_risk_tol == 4 | financial_risk_tol == 5 |
financial_risk_tol == 6 | financial_risk_tol == 7
replace financial_risk_tol2 = 3 if financial_risk_tol == 8 | financial_risk_tol == 9 |
financial_risk_tol == 10

```

```

label define financial_risk_tol2labels 1 "Low" 2 "Medium" 3 "High"
label values financial_risk_tol2 financial_risk_tol2labels
tab financial_risk_tol2

```

```

*income
recode income (1 = 1 "<$15K")(2 = 2 "15-25K")(3 = 3 "25-35K")(4 = 4 "35-50K")(5 = 5 "50-
75K")(6 = 6 "75-100K") (7 = 7 "100-150K") (8 = 8 "150K+") (9 = 8) (10 = 8) (11=11 "DK") (12 =
12 "PNS"), gen(income_category)
tab income_category

```

```

***DOSPERT***
label define dospertlabel 1 "Extremely unlikely" 2 "Moderately unlikely " 3 "Somewhat unlikely
" 4 "Not sure" 5 "Somewhat likely" 6 "Moderately likely" 7 "Extremely likely"

```

```

label values dospert1_s dospertlabel
tab dospert1_s

```

```

label values dospert2_r dospertlabel
tab dospert2_r

```

```

label values dospert3_fg dospertlabel
tab dospert3_fg

```

```

label values dospert4_fi dospertlabel
tab dospert4_fi

```

```

label values dospert5_hs dospertlabel
tab dospert5_hs

```

```

label values dospert6_e dospertlabel
tab dospert6_e

```

```

label values dospert7_s dospertlabel
tab dospert7_s

```

```

label values dospert8_fg dospertlabel
tab dospert8_fg

```

```

label values dospert9_e dospertlabel

```

tab dospert9_e

label values dospert10_e dospertlabel
tab dospert10_e

label values dospert11_r dospertlabel
tab dospert11_r

label values dospert12_fi dospertlabel
tab dospert12_fi

label values dospert13_r dospertlabel
tab dospert13_r

label values dospert14_fg dospertlabel
tab dospert14_fg

label values dospert15_hs dospertlabel
tab dospert15_hs

label values dospert16_e dospertlabel
tab dospert16_e

label values dospert17_hs dospertlabel
tab dospert17_hs

label values dospert18_fi dospertlabel
tab dospert18_fi

label values dospert19_r dospertlabel
tab dospert19_r

label values dospert20_hs dospertlabel
tab dospert20_hs

label values dospert21_s dospertlabel
tab dospert21_s

label values dospert22_s dospertlabel
tab dospert22_s

label values dospert23_hs dospertlabel
tab dospert23_hs

label values dospert24_r dospertlabel
tab dospert24_r

label values dospert25_r dospertlabel
tab dospert25_r

label values dospert26_hs dospertlabel
tab dospert26_hs

label values dospert27_s dospertlabel
tab dospert27_s

label values dospert28_s dospertlabel
tab dospert28_s

label values dospert29_e dospertlabel
tab dospert29_e

label values dospert30_e dospertlabel
tab dospert30_e

HMSAM Investor

label define hmsamlabel 1 "Strongly disagree" 2 "Disagree" 3 "Somewhat disagree" 4 "Neither
agree nor disagree" 5 "Somewhat agree" 6 "Agree" 7 "Strongly agree"

label values inv_joy_1 hmsamlabel
tab inv_joy_1

label values inv_joy_2 hmsamlabel
tab inv_joy_2

label values inv_joy_3 hmsamlabel
tab inv_joy_3

label values inv_joy_4 hmsamlabel
tab inv_joy_4

label values inv_joy_5 hmsamlabel
tab inv_joy_5

label values inv_joy_6 hmsamlabel
tab inv_joy_6

label values inv_cur_1 hmsamlabel
tab inv_cur_1

label values inv_cur_2 hmsamlabel
tab inv_cur_2

label values inv_cur_3 hmsamlabel
tab inv_cur_3

label values inv_pu_1 hmsamlabel
tab inv_pu_1

label values inv_pu_2 hmsamlabel
tab inv_pu_2

label values inv_pu_3 hmsamlabel
tab inv_pu_3

label values inv_pu_4 hmsamlabel
tab inv_pu_4

label values inv_pu_5 hmsamlabel
tab inv_pu_5

label values inv_bi_1 hmsamlabel
tab inv_bi_1

label values inv_bi_2 hmsamlabel
tab inv_bi_2

label values inv_bi_3 hmsamlabel
tab inv_bi_3

HMSAM Non-Investor

label values noninv_joy_1 hmsamlabel
tab noninv_joy_1

label values noninv_joy_2 hmsamlabel
tab noninv_joy_2

label values noninv_joy_3 hmsamlabel
tab noninv_joy_3

label values noninv_joy_4 hmsamlabel
tab noninv_joy_4

label values noninv_joy_5 hmsamlabel
tab noninv_joy_5

label values noninv_joy_6 hmsamlabel

tab noninv_joy_6

label values noninv_cur_1 hmsamlabel
tab noninv_cur_1

label values noninv_cur_2 hmsamlabel
tab noninv_cur_2

label values noninv_cur_3 hmsamlabel
tab noninv_cur_3

label values noninv_pu_1 hmsamlabel
tab noninv_pu_1

label values noninv_pu_2 hmsamlabel
tab noninv_pu_2

label values noninv_pu_3 hmsamlabel
tab noninv_pu_3

label values noninv_pu_4 hmsamlabel
tab noninv_pu_4

label values noninv_pu_5 hmsamlabel
tab noninv_pu_5

label values noninv_bi_1 hmsamlabel
tab noninv_bi_1

label values noninv_bi_2 hmsamlabel
tab noninv_bi_2

label values noninv_bi_3 hmsamlabel
tab noninv_bi_3

*Create combined variables for HMSAM

*Joy

gen joy_1 = max(inv_joy_1, noninv_joy_1)

gen joy_2 = max(inv_joy_2, noninv_joy_2)

gen joy_3 = max(inv_joy_3, noninv_joy_3)

gen joy_4 = max(inv_joy_4, noninv_joy_4)

gen joy_5 = max(inv_joy_5, noninv_joy_5)

gen joy_6 = max(inv_joy_6, noninv_joy_6)

*Curiosity

```

gen cur_1 = max(inv_cur_1, noninv_cur_1)
gen cur_2 = max(inv_cur_2, noninv_cur_2)
gen cur_3 = max(inv_cur_3, noninv_cur_3)

```

*PU

```

gen pu_1 = max(inv_pu_1, noninv_pu_1)
gen pu_2 = max(inv_pu_2, noninv_pu_2)
gen pu_3 = max(inv_pu_3, noninv_pu_3)
gen pu_4 = max(inv_pu_4, noninv_pu_4)
gen pu_5 = max(inv_pu_5, noninv_pu_5)

```

*BI

```

gen bi_1 = max(inv_bi_1, noninv_bi_1)
gen bi_2 = max(inv_bi_2, noninv_bi_2)
gen bi_3 = max(inv_bi_3, noninv_bi_3)

```

****Create DOSPERT Scores

*Total score

```

gen dospert_total = (dospert1_s + dospert2_r + dospert3_fg + dospert4_fi + dospert5_hs +
dospert6_e + dospert7_s + dospert8_fg + dospert9_e + dospert10_e + dospert11_r +
dospert12_fi + dospert13_r + dospert14_fg + dospert15_hs + dospert16_e + dospert17_hs +
dospert18_fi + dospert19_r + dospert20_hs + dospert21_s + dospert22_s + dospert23_hs +
dospert24_r + dospert25_r + dospert26_hs + dospert27_s + dospert28_s + dospert29_e +
dospert30_e)
tab dospert_total

```

```

gen dospert_total_avg = (dospert1_s + dospert2_r + dospert3_fg + dospert4_fi + dospert5_hs +
dospert6_e + dospert7_s + dospert8_fg + dospert9_e + dospert10_e + dospert11_r +
dospert12_fi + dospert13_r + dospert14_fg + dospert15_hs + dospert16_e + dospert17_hs +
dospert18_fi + dospert19_r + dospert20_hs + dospert21_s + dospert22_s + dospert23_hs +
dospert24_r + dospert25_r + dospert26_hs + dospert27_s + dospert28_s + dospert29_e +
dospert30_e) / 30
tab dospert_total_avg

```

*Total score for ethics

```

gen dospert_ethics_total = (dospert6_e + dospert9_e + dospert10_e + dospert16_e + dospert29_e
+ dospert30_e)
tab dospert_ethics_total

```

```

gen dospert_ethics_avg = (dospert6_e + dospert9_e + dospert10_e + dospert16_e + dospert29_e
+ dospert30_e) / 6
tab dospert_ethics_avg

```

*Total score for financial

```

gen dospert_fin_total = (dospert3_fg + dospert4_fi + dospert8_fg + dospert12_fi + dospert14_fg
+ dospert18_fi)

```

```

tab dospert_fin_total
gen dospert_fin_avg = (dospert3_fg + dospert4_fi + dospert8_fg + dospert12_fi + dospert14_fg
+ dospert18_fi) / 6
tab dospert_fin_avg

```

```

*Total score for financial/investment
gen dospert_finfi_total = (dospert4_fi + dospert12_fi + dospert18_fi)
tab dospert_finfi_total
gen dospert_finfi_avg = (dospert4_fi + dospert12_fi + dospert18_fi) / 3
tab dospert_finfi_avg

```

```

*Total score for financial/gambling
gen dospert_fing_total = (dospert3_fg + dospert8_fg + dospert14_fg)
tab dospert_fing_total
gen dospert_fing_avg = (dospert3_fg + dospert8_fg + dospert14_fg) / 3
tab dospert_fing_avg

```

```

*Total score for health/safety
gen dospert_hs_total = (dospert5_hs + dospert15_hs + dospert17_hs + dospert20_hs +
dospert23_hs + dospert26_hs)
tab dospert_hs_total

gen dospert_hs_avg = (dospert5_hs + dospert15_hs + dospert17_hs + dospert20_hs +
dospert23_hs + dospert26_hs) / 6
tab dospert_hs_avg

```

```

*Total score for recreational
gen dospert_rec_total = (dospert2_r + dospert11_r + dospert13_r + dospert19_r + dospert24_r +
dospert25_r)
tab dospert_rec_total

gen dospert_rec_avg = (dospert2_r + dospert11_r + dospert13_r + dospert19_r + dospert24_r
+ dospert25_r) / 6
tab dospert_rec_avg

```

```

*Total score for social
gen dospert_s_total = (dospert1_s + dospert7_s + dospert21_s + dospert22_s + dospert27_s +
dospert28_s)
tab dospert_s_total

gen dospert_s_avg = (dospert1_s + dospert7_s + dospert21_s + dospert22_s + dospert27_s +
dospert28_s) / 6
tab dospert_s_avg

```

```

****Create HMSAM Scores
*Reverse coding for joy_3, joy_4, and joy_6

```

```

recode joy_3 (1 = 7) (2 = 6) (3 = 5) (4 = 4) (5 = 3) (6 = 2) (7 = 1), generate(true_joy_3)
recode joy_4 (1 = 7) (2 = 6) (3 = 5) (4 = 4) (5 = 3) (6 = 2) (7 = 1), generate(true_joy_4)
recode joy_6 (1 = 7) (2 = 6) (3 = 5) (4 = 4) (5 = 3) (6 = 2) (7 = 1), generate(true_joy_6)
recode inv_joy_3 (1 = 7) (2 = 6) (3 = 5) (4 = 4) (5 = 3) (6 = 2) (7 = 1), generate(true_inv_joy_3)
recode inv_joy_4 (1 = 7) (2 = 6) (3 = 5) (4 = 4) (5 = 3) (6 = 2) (7 = 1), generate(true_inv_joy_4)
recode inv_joy_6 (1 = 7) (2 = 6) (3 = 5) (4 = 4) (5 = 3) (6 = 2) (7 = 1), generate(true_inv_joy_6)
recode noninv_joy_3 (1 = 7) (2 = 6) (3 = 5) (4 = 4) (5 = 3) (6 = 2) (7 = 1),
generate(true_noninv_joy_3)
recode noninv_joy_4 (1 = 7) (2 = 6) (3 = 5) (4 = 4) (5 = 3) (6 = 2) (7 = 1),
generate(true_noninv_joy_4)
recode noninv_joy_6 (1 = 7) (2 = 6) (3 = 5) (4 = 4) (5 = 3) (6 = 2) (7 = 1),
generate(true_noninv_joy_6)

```

```

label values true_joy_3 hmsamlabel
tab true_joy_3
label values true_joy_4 hmsamlabel
tab true_joy_4
label values true_joy_6 hmsamlabel
tab true_joy_6
label values true_inv_joy_3 hmsamlabel
tab true_inv_joy_3
label values true_inv_joy_4 hmsamlabel
tab true_inv_joy_4
label values true_inv_joy_6 hmsamlabel
tab true_inv_joy_6
label values true_noninv_joy_3 hmsamlabel
tab true_noninv_joy_3
label values true_noninv_joy_4 hmsamlabel
tab true_noninv_joy_4
label values true_noninv_joy_6 hmsamlabel
tab true_noninv_joy_6

```

*Joy

**Total

```

gen hmsam_joy_total = (joy_1 + joy_2 + true_joy_3 + true_joy_4 + joy_5 + true_joy_6)
tab hmsam_joy_total

```

```

gen hmsam_joy_avg = (joy_1 + joy_2 + true_joy_3 + true_joy_4 + joy_5 + true_joy_6) / 6
tab hmsam_joy_avg

```

*Curiosity

**Total

```

gen hmsam_cur_total = (cur_1 + cur_2 + cur_3)
tab hmsam_cur_total

```

```

gen hmsam_cur_avg = (cur_1 + cur_2 + cur_3) / 3

```

```
tab hmsam_cur_avg
```

```
*PU
```

```
**Total
```

```
gen hmsam_pu_total = (pu_1 + pu_2 + pu_3 + pu_4 + pu_5)
```

```
tab hmsam_pu_total
```

```
gen hmsam_pu_avg = (pu_1 + pu_2 + pu_3 + pu_4 + pu_5) / 5
```

```
tab hmsam_pu_avg
```

```
*BI
```

```
**Total
```

```
gen hmsam_bi_total = (bi_1 + bi_2 + bi_3)
```

```
tab hmsam_bi_total
```

```
gen hmsam_bi_avg = (bi_1 + bi_2 + bi_3) / 3
```

```
tab hmsam_bi_avg
```

```
*Recode invest_crypto to binary
```

```
recode invest_crypto (1 = 1) (2 = 0) (3 = 0) (4 = 0), generate(binary_invest_crypto)
```

```
tab binary_invest_crypto
```

```
*Save Dataset
```

```
save "C:\Users\ XXXXX \OneDrive - Kansas State University\Dissertation\Crypto\STATA  
Analysis\Qualtrics Files\Qualtrics_data_cleaned.dta", replace
```

```
***DESCRIPTIVE STATISTICS***
```

```
*Descriptives for both
```

```
summarize i.invest_crypto i.recoded_how_risky_crypto i.financial_risk_tol2 i.age_category  
i.gender i.marital_status i.living i.ethnicity_binary i.education i.income_category i.dependents  
i.employment dospert_total_avg dospert_ethics_avg dospert_fin_avg dospert_finfi_avg  
dospert_fing_avg dospert_hs_avg dospert_rec_avg dospert_s_avg hmsam_joy_avg  
hmsam_cur_avg hmsam_pu_avg hmsam_bi_avg
```

```
*Descriptives for investors
```

```
summarize i.invest_crypto i.crypto2_short_term i.crypto2_long_term i.crypto2_hedonism  
i.crypto2_social i.crypto2_values i.crypto2_learning i.recoded_how_risky_crypto  
i.financial_risk_tol2 i.age_category i.gender i.marital_status i.living i.ethnicity_binary  
i.education i.income_category i.dependents i.employment dospert_total_avg dospert_ethics_avg  
dospert_fin_avg dospert_finfi_avg dospert_fing_avg dospert_hs_avg dospert_rec_avg  
dospert_s_avg hmsam_joy_avg hmsam_cur_avg hmsam_pu_avg hmsam_bi_avg if invest_crypto  
== 1
```

```
*Descriptives for noninvestors
```

```
summarize i.invest_crypto i.recoded_how_risky_crypto i.financial_risk_tol2 i.age_category  
i.gender i.marital_status i.living i.ethnicity_binary i.education i.income_category i.dependents
```

i.employment dospert_total_avg dospert_ethics_avg dospert_fin_avg dospert_finfi_avg
dospert_fing_avg dospert_hs_avg dospert_rec_avg dospert_s_avg hmsam_joy_avg
hmsam_cur_avg hmsam_pu_avg hmsam_bi_avg if invest_crypto == 2

*Wilcoxon-Mann-Whitney test crypto and non-crypto
ranksum recoded_how_risky_crypto, by(binary_invest_crypto)
ranksum financial_risk_tol2, by(binary_invest_crypto)
ranksum age_category, by(binary_invest_crypto)
ranksum gender, by(binary_invest_crypto)
ranksum marital_status, by(binary_invest_crypto)
ranksum living, by(binary_invest_crypto)
ranksum ethnicity_binary, by(binary_invest_crypto)
ranksum education, by(binary_invest_crypto)
ranksum income_category, by(binary_invest_crypto)
ranksum dependents, by(binary_invest_crypto)
ranksum employment, by(binary_invest_crypto)
ranksum dospert_total_avg, by(binary_invest_crypto)
ranksum dospert_ethics_avg, by(binary_invest_crypto)
ranksum dospert_fin_avg, by(binary_invest_crypto)
ranksum dospert_finfi_avg, by(binary_invest_crypto)
ranksum dospert_fing_avg, by(binary_invest_crypto)
ranksum dospert_hs_avg, by(binary_invest_crypto)
ranksum dospert_rec_avg, by(binary_invest_crypto)
ranksum dospert_s_avg, by(binary_invest_crypto)
ranksum hmsam_joy_avg, by(binary_invest_crypto)
ranksum hmsam_cur_avg, by(binary_invest_crypto)
ranksum hmsam_pu_avg, by(binary_invest_crypto)
ranksum hmsam_bi_avg, by(binary_invest_crypto)

*Supplemental t-test for crypto and non-crypto
ttest recoded_how_risky_crypto, by(binary_invest_crypto)
ttest financial_risk_tol2, by(binary_invest_crypto)
ttest age_category, by(binary_invest_crypto)
ttest gender, by(binary_invest_crypto)
ttest marital_status, by(binary_invest_crypto)
ttest living, by(binary_invest_crypto)
ttest ethnicity_binary, by(binary_invest_crypto)
ttest education, by(binary_invest_crypto)
ttest income_category, by(binary_invest_crypto)
ttest dependents, by(binary_invest_crypto)
ttest employment, by(binary_invest_crypto)
ttest dospert_total_avg, by(binary_invest_crypto)
ttest dospert_ethics_avg, by(binary_invest_crypto)
ttest dospert_fin_avg, by(binary_invest_crypto)
ttest dospert_finfi_avg, by(binary_invest_crypto)
ttest dospert_fing_avg, by(binary_invest_crypto)


```
ttest dospert_hs_avg, by(binary_invest_crypto)
ttest dospert_rec_avg, by(binary_invest_crypto)
ttest dospert_s_avg, by(binary_invest_crypto)
ttest hmsam_joy_avg, by(binary_invest_crypto)
ttest hmsam_cur_avg, by(binary_invest_crypto)
ttest hmsam_pu_avg, by(binary_invest_crypto)
ttest hmsam_bi_avg, by(binary_invest_crypto)
```

```
*Supplemental Z-score test for crypto and non-crypto
ztest recoded_how_risky_crypto, by(binary_invest_crypto)
ztest financial_risk_tol2, by(binary_invest_crypto)
ztest age_category, by(binary_invest_crypto)
ztest gender, by(binary_invest_crypto)
ztest marital_status, by(binary_invest_crypto)
ztest living, by(binary_invest_crypto)
ztest ethnicity_binary, by(binary_invest_crypto)
ztest education, by(binary_invest_crypto)
ztest income_category, by(binary_invest_crypto)
ztest dependents, by(binary_invest_crypto)
ztest employment, by(binary_invest_crypto)
ztest dospert_total_avg, by(binary_invest_crypto)
ztest dospert_ethics_avg, by(binary_invest_crypto)
ztest dospert_fin_avg, by(binary_invest_crypto)
ztest dospert_finfi_avg, by(binary_invest_crypto)
ztest dospert_fing_avg, by(binary_invest_crypto)
ztest dospert_hs_avg, by(binary_invest_crypto)
ztest dospert_rec_avg, by(binary_invest_crypto)
ztest dospert_s_avg, by(binary_invest_crypto)
ztest hmsam_joy_avg, by(binary_invest_crypto)
ztest hmsam_cur_avg, by(binary_invest_crypto)
ztest hmsam_pu_avg, by(binary_invest_crypto)
ztest hmsam_bi_avg, by(binary_invest_crypto)
```

```
*Close log
log close
```

B.1.6. Qualtrics Logistic Regression

```
/******
*Project: Dissertation
*Created by: Jason Anderson
*Created on: 1/13/2025
*Last modified on: 1/26/2025
*Last modified by: Jason
*Purpose: Qualtrics data alpha and logistic regression
*Machine: Work computer
```

*****/

*Start log

log using "C:\Users\ XXXXX \OneDrive - Kansas State University\Dissertation\Crypto\STATA
Analysis\Do files\Qualtrics_regression_log.smcl", replace

*Open cleaned dataset

use "C:\Users\ XXXXX \OneDrive - Kansas State University\Dissertation\Crypto\STATA
Analysis\Qualtrics Files\Qualtrics_data_cleaned.dta"

*Checking alpha for scales

*Alpha for DOSPERT

alpha dospert1_s dospert2_r dospert3_fg dospert4_fi dospert5_hs dospert6_e dospert7_s
dospert8_fg dospert9_e dospert10_e dospert11_r dospert12_fi dospert13_r dospert14_fg
dospert15_hs dospert16_e dospert17_hs dospert18_fi dospert19_r dospert20_hs dospert21_s
dospert22_s dospert23_hs dospert24_r dospert25_r dospert26_hs dospert27_s dospert28_s
dospert29_e dospert30_e

alpha dospert2_r dospert11_r dospert13_r dospert19_r dospert24_r dospert25_r

alpha dospert1_s dospert7_s dospert21_s dospert22_s dospert27_s dospert28_s

alpha dospert3_fg dospert8_fg dospert14_fg dospert4_fi dospert12_fi dospert18_fi

alpha dospert3_fg dospert8_fg dospert14_fg

alpha dospert4_fi dospert12_fi dospert18_fi

alpha dospert5_hs dospert15_hs dospert17_hs dospert20_hs dospert23_hs dospert26_hs

alpha dospert6_e dospert9_e dospert10_e dospert16_e dospert29_e dospert30_e

*Alpha for HMSAM

alpha joy_1 joy_2 true_joy_3 true_joy_4 joy_5 true_joy_6 cur_1 cur_2 cur_3 pu_1 pu_2 pu_3
pu_4 pu_5 bi_1 bi_2 bi_3

alpha joy_1 joy_2 true_joy_3 true_joy_4 joy_5 true_joy_6

alpha cur_1 cur_2 cur_3

alpha pu_1 pu_2 pu_3 pu_4 pu_5

alpha bi_1 bi_2 bi_3

*CURRENT MODEL ***Binary logistic regression - TOTAL score with fing and finfi broken
out

/*

Reference categories:

How risky crypto = slightly risky

Risktol = Low

Age = <=24

Gender = Man

Ethnicity = White

Marital status = Married

Living arrangements = only adult living in the house

Education = no high school education

Income= <15K

Dependents = 1 child

Employment = unemployed or temporarily laid off
*/

```
logit binary_invest_crypto i.recoded_how_risky_crypto i.financial_risk_tol2 i.age_category  
i.gender i.marital_status i.living ib(1).ethnicity_binary i.education i.income_category  
i.dependents i.employment dospert_ethics_total dospert_finfi_total dospert_fing_total  
dospert_hs_total dospert_rec_total dospert_s_total hmsam_joy_total hmsam_cur_total  
hmsam_pu_total
```

```
logit binary_invest_crypto i.recoded_how_risky_crypto i.financial_risk_tol2 i.age_category  
i.gender i.marital_status i.living ib(1).ethnicity_binary i.education i.income_category  
i.dependents i.employment dospert_ethics_total dospert_finfi_total dospert_fing_total  
dospert_hs_total dospert_rec_total dospert_s_total hmsam_joy_total hmsam_cur_total  
hmsam_pu_total, or
```

```
*Close log  
log close
```

B.1.7. Qualtrics Export to MPlus

```
/******
```

```
*Project: Dissertation  
*Created by: Jason Anderson  
*Created on: 1/14/2025  
*Last modified on: 1/26/2025  
*Last modified by: Jason  
*Purpose: Qualtrics data export for MPlus  
*Machine: Work computer  
*****/
```

```
*Start log  
log using "C:\Users\ XXXXX \OneDrive - Kansas State University\Dissertation\Crypto\STATA  
Analysis\Do files\Qualtrics_export_to_MPlus_log.smcl", replace
```

```
*Open dataset  
use "C:\Users\ XXXXX \OneDrive - Kansas State University\Dissertation\Crypto\STATA  
Analysis\Qualtrics Files\Qualtrics_data_cleaned.dta"
```

```
*Keep statement for variables  
keep binary_invest_crypto dospert1_s dospert2_r dospert3_fg dospert4_fi dospert5_hs  
dospert6_e dospert7_s dospert8_fg dospert9_e dospert10_e dospert11_r dospert12_fi  
dospert13_r dospert14_fg dospert15_hs dospert16_e dospert17_hs dospert18_fi dospert19_r  
dospert20_hs dospert21_s dospert22_s dospert23_hs dospert24_r dospert25_r dospert26_hs  
dospert27_s dospert28_s dospert29_e dospert30_e joy_1 joy_2 true_joy_3 true_joy_4 joy_5  
true_joy_6 cur_1 cur_2 cur_3 pu_1 pu_2 pu_3 pu_4 pu_5 bi_1 bi_2 bi_3
```

```
*Check Missing
inspect *
*no missing values
```

```
*****Save and Export*****
```

```
save "C:\Users\ XXXXX \OneDrive - Kansas State University\Dissertation\Crypto\STATA
Analysis\Qualtrics Files\Qualtrics_SEM_Export.dta", replace
export delimited using "C:\Users\ XXXXX \OneDrive - Kansas State
University\Dissertation\Crypto\STATA Analysis\Qualtrics Files\Qualtrics_SEM_Export.csv",
novarnames nolabel replace
```

```
*Create second spreadsheet with labels
export delimited using "C:\Users\ XXXXX \OneDrive - Kansas State
University\Dissertation\Crypto\STATA Analysis\Qualtrics
Files\Qualtrics_SEM_Export_labels.csv", nolabel replace
```

```
/*
```

Excel header reference:

```
Order of values in spreadsheet: dospert1_s dospert2_r dospert3_fg dospert4_fi dospert5_hs
dospert6_e dospert7_s dospert8_fg dospert9_e dospert10_e dospert11_r dospert12_fi
dospert13_r dospert14_fg dospert15_hs dospert16_e dospert17_hs dospert18_fi dospert19_r
dospert20_hs dospert21_s dospert22_s dospert23_hs dospert24_r dospert25_r dospert26_hs
dospert27_s dospert28_s dospert29_e dospert30_e joy_1 joy_2 joy_5 cur_1 cur_2 cur_3 pu_1
pu_2 pu_3 pu_4 pu_5 bi_1 bi_2 bi_3 true_joy_3 true_joy_4 true_joy_6 binary_invest_crypto
*/
```

```
*Close log
log close
```

B.2. Statistical Programming (MPlus)

Below is the MPlus 8.10 code for this project.

B.2.1. BI CFA

TITLE: This is a run to fit bi

DATA: FILE IS "C:\Users\ XXXXX \OneDrive - Kansas State University\Dissertation\Crypto\STATA Analysis\Qualtrics Files\Qualtrics_SEM_Export.csv";

VARIABLE:

NAMES ARE

dospert1_s
dospert2_r
dospert3_fg
dospert4_fi
dospert5_hs
dospert6_e
dospert7_s
dospert8_fg
dospert9_e
dospert10_e
dospert11_r
dospert12_fi
dospert13_r
dospert14_fg
dospert15_hs
dospert16_e
dospert17_hs
dospert18_fi
dospert19_r
dospert20_hs
dospert21_s
dospert22_s
dospert23_hs
dospert24_r
dospert25_r
dospert26_hs
dospert27_s
dospert28_s
dospert29_e
dospert30_e
joy_1

joy_2
joy_5
cur_1
cur_2
cur_3
pu_1
pu_2
pu_3
pu_4
pu_5
bi_1
bi_2
bi_3
true_joy_3
true_joy_4
true_joy_6
binary_invest_crypto;
MISSING ARE ALL (-99);
USEVARIABLES ARE bi_1
bi_2
bi_3;

ANALYSIS:

TYPE is General;

ESTIMATOR is ml;

ITERATIONS = 2000;

CONVERGENCE = 0.00005;

MODEL:

bi BY bi_1 bi_2 bi_3;

OUTPUT:

sampstat residual modindices(3.84) stdyx;

B.2.2. Joy CFA

TITLE: This is a run to fit joy

DATA: FILE IS "C:\Users\ XXXXX \OneDrive - Kansas State
University\Dissertation\Crypto\STATA Analysis\Qualtrics Files\Qualtrics_SEM_Export.csv";

VARIABLE:

NAMES ARE

dospert1_s
dospert2_r
dospert3_fg
dospert4_fi
dospert5_hs
dospert6_e
dospert7_s
dospert8_fg
dospert9_e
dospert10_e
dospert11_r
dospert12_fi
dospert13_r
dospert14_fg
dospert15_hs
dospert16_e
dospert17_hs
dospert18_fi
dospert19_r
dospert20_hs
dospert21_s
dospert22_s
dospert23_hs
dospert24_r
dospert25_r
dospert26_hs
dospert27_s
dospert28_s
dospert29_e
dospert30_e
joy_1
joy_2

```
joy_5
cur_1
cur_2
cur_3
pu_1
pu_2
pu_3
pu_4
pu_5
bi_1
bi_2
bi_3
tru_j_3
tru_j_4
tru_j_6
binary_invest_crypto;
MISSING ARE ALL (-99);
USEVARIABLES ARE joy_1
joy_2
tru_j_3
tru_j_4
joy_5
tru_j_6;
```

ANALYSIS:

```
TYPE is General;
ESTIMATOR is ml;
ITERATIONS = 2000;
CONVERGENCE = 0.00005;
```

MODEL:

```
joy BY joy_1 joy_2 tru_j_3 tru_j_4 joy_5 tru_j_6;
tru_j_6 WITH tru_j_4;
tru_j_6 WITH tru_j_3;
tru_j_4 WITH tru_j_3;
joy_2 WITH joy_1;
tru_j_6 WITH joy_5;
```

OUTPUT:

```
sampstat residual modindices(3.84) stdyx;
```

B.2.3. Curiosity CFA

TITLE: This is a run to fit curiosity

DATA: FILE IS "C:\Users\ XXXXX \OneDrive - Kansas State University\Dissertation\Crypto\
STATA Analysis\Qualtrics Files\Qualtrics_SEM_Export.csv";

VARIABLE:

NAMES ARE

dospert1_s
dospert2_r
dospert3_fg
dospert4_fi
dospert5_hs
dospert6_e
dospert7_s
dospert8_fg
dospert9_e
dospert10_e
dospert11_r
dospert12_fi
dospert13_r
dospert14_fg
dospert15_hs
dospert16_e
dospert17_hs
dospert18_fi
dospert19_r
dospert20_hs
dospert21_s
dospert22_s
dospert23_hs
dospert24_r
dospert25_r
dospert26_hs
dospert27_s
dospert28_s
dospert29_e
dospert30_e
joy_1
joy_2
joy_5
cur_1
cur_2
cur_3
pu_1
pu_2
pu_3

```
pu_4
pu_5
bi_1
bi_2
bi_3
true_joy_3
true_joy_4
true_joy_6
binary_invest_crypto;
MISSING ARE ALL (-99);
USEVARIABLES ARE cur_1
cur_2
cur_3;
```

```
ANALYSIS:
TYPE is General;
ESTIMATOR is ml;
ITERATIONS = 2000;
CONVERGENCE = 0.00005;
```

```
MODEL:
curiosity BY cur_1 cur_2 cur_3;
```

```
OUTPUT:
sampstat residual modindices(3.84) stdyx;
```

B.2.4. Ethical CFA

TITLE: This is a run to fit ethical

DATA: FILE IS "C:\Users\ XXXXX \OneDrive - Kansas State University\Dissertation\Crypto\
STATA Analysis\Qualtrics Files\Qualtrics_SEM_Export.csv";

VARIABLE:

NAMES ARE

```
dpert1_s
dpert2_r
dpert3_fg
dpert4_fi
dpert5_hs
dpert6_e
dpert7_s
dpert8_fg
dpert9_e
dpert10_e
```

dpert11_r
dpert12_fi
dpert13_r
dpert14_fg
dpert15_hs
dpert16_e
dpert17_hs
dpert18_fi
dpert19_r
dpert20_hs
dpert21_s
dpert22_s
dpert23_hs
dpert24_r
dpert25_r
dpert26_hs
dpert27_s
dpert28_s
dpert29_e
dpert30_e
joy_1
joy_2
joy_5
cur_1
cur_2
cur_3
pu_1
pu_2
pu_3
pu_4
pu_5
bi_1
bi_2
bi_3
true_joy_3
true_joy_4
true_joy_6
binary_invest_crypto;
MISSING ARE ALL (-99);
USEVARIABLES ARE
dpert6_e
dpert9_e
dpert10_e
dpert16_e
dpert29_e
dpert30_e;

ANALYSIS:

TYPE is General;

ESTIMATOR is ml;

ITERATIONS = 2000;

CONVERGENCE = 0.00005;

MODEL:

ethical BY dpert6_e dpert9_e dpert10_e dpert16_e dpert29_e dpert30_e;

dpert29_e WITH dpert9_e;

OUTPUT:

sampstat residual modindices(3.84) stdyx;

B.2.5. Financial-Gambling CFA

TITLE: This is a run to fit financial gambling

DATA: FILE IS "C:\Users\ XXXXX \OneDrive - Kansas State University\Dissertation\Crypto\
STATA Analysis\Qualtrics Files\Qualtrics_SEM_Export.csv";

VARIABLE:

NAMES ARE

dpert1_s

dpert2_r

dpert3_fg

dpert4_fi

dpert5_hs

dpert6_e

dpert7_s

dpert8_fg

dpert9_e

dpert10_e

dpert11_r

dpert12_fi

dpert13_r

dpert14_fg

dpert15_hs

dpert16_e

dpert17_hs

dpert18_fi

dpert19_r

dpert20_hs

dpert21_s

dpert22_s

dpert23_hs

```
dpert24_r
dpert25_r
dpert26_hs
dpert27_s
dpert28_s
dpert29_e
dpert30_e
joy_1
joy_2
joy_5
cur_1
cur_2
cur_3
pu_1
pu_2
pu_3
pu_4
pu_5
bi_1
bi_2
bi_3
true_joy_3
true_joy_4
true_joy_6
binary_invest_crypto;
MISSING ARE ALL (-99);
USEVARIABLES ARE
dpert3_fg
dpert8_fg
dpert14_fg;
```

```
ANALYSIS:
TYPE is General;
ESTIMATOR is ml;
ITERATIONS = 2000;
CONVERGENCE = 0.00005;
```

```
MODEL:
financialgamb BY dpert3_fg dpert8_fg dpert14_fg;
```

```
OUTPUT:
sampstat residual modindices(3.84) stdyx;
```

B.2.6. Financial-Investing CFA

TITLE: This is a run to fit financial investing

DATA: FILE IS "C:\Users\ XXXXX \OneDrive - Kansas State University\Dissertation\Crypto\
STATA Analysis\Qualtrics Files\Qualtrics_SEM_Export.csv";

VARIABLE:
NAMES ARE

dpert1_s
dpert2_r
dpert3_fg
dpert4_fi
dpert5_hs
dpert6_e
dpert7_s
dpert8_fg
dpert9_e
dpert10_e
dpert11_r
dpert12_fi
dpert13_r
dpert14_fg
dpert15_hs
dpert16_e
dpert17_hs
dpert18_fi
dpert19_r
dpert20_hs
dpert21_s
dpert22_s
dpert23_hs
dpert24_r
dpert25_r
dpert26_hs
dpert27_s
dpert28_s
dpert29_e
dpert30_e
joy_1
joy_2
joy_5
cur_1
cur_2
cur_3
pu_1
pu_2
pu_3
pu_4
pu_5

bi_1
bi_2
bi_3
true_joy_3
true_joy_4
true_joy_6
binary_invest_crypto;
MISSING ARE ALL (-99);
USEVARIABLES ARE
dpert4_fi
dpert12_fi
dpert18_fi;

ANALYSIS:
TYPE is General;
ESTIMATOR is ml;
ITERATIONS = 2000;
CONVERGENCE = 0.00005;

MODEL:
financialinv BY dpert4_fi dpert12_fi dpert18_fi;

OUTPUT:
sampstat residual modindices(3.84) stdyx;

B.2.7. Health-Safety CFA

TITLE: This is a run to fit health/safety

DATA: FILE IS "C:\Users\ XXXXX \OneDrive - Kansas State University\Dissertation\Crypto\
STATA Analysis\Qualtrics Files\Qualtrics_SEM_Export.csv";

VARIABLE:
NAMES ARE
dpert1_s
dpert2_r
dpert3_fg
dpert4_fi
dpert5_hs
dpert6_e
dpert7_s
dpert8_fg
dpert9_e
dpert10_e
dpert11_r
dpert12_fi

```
dpert13_r
dpert14_fg
dpert15_hs
dpert16_e
dpert17_hs
dpert18_fi
dpert19_r
dpert20_hs
dpert21_s
dpert22_s
dpert23_hs
dpert24_r
dpert25_r
dpert26_hs
dpert27_s
dpert28_s
dpert29_e
dpert30_e
joy_1
joy_2
joy_5
cur_1
cur_2
cur_3
pu_1
pu_2
pu_3
pu_4
pu_5
bi_1
bi_2
bi_3
true_joy_3
true_joy_4
true_joy_6
binary_invest_crypto;
MISSING ARE ALL (-99);
USEVARIABLES ARE
dpert5_hs
dpert15_hs
dpert17_hs
dpert20_hs
dpert23_hs
dpert26_hs;
```

ANALYSIS:

TYPE is General;
ESTIMATOR is ml;
ITERATIONS = 2000;
CONVERGENCE = 0.00005;

MODEL:

healthsafety BY dpert5_hs dpert15_hs dpert17_hs dpert20_hs dpert23_hs
dpert26_hs;
dpert15_hs WITH dpert5_hs;
dpert20_hs WITH dpert17_hs;
dpert26_hs WITH dpert23_hs;
dpert23_hs WITH dpert5_hs;
dpert23_hs WITH dpert15_hs;

OUTPUT:

sampstat residual modindices(3.84) stdyx;

B.2.8. PU CFA

TITLE: This is a run to fit perceived usefulness

DATA: FILE IS "C:\Users\ XXXXX \OneDrive - Kansas State University\Dissertation\Crypto\
STATA Analysis\Qualtrics Files\Qualtrics_SEM_Export.csv";

VARIABLE:

NAMES ARE

dospert1_s
dospert2_r
dospert3_fg
dospert4_fi
dospert5_hs
dospert6_e
dospert7_s
dospert8_fg
dospert9_e
dospert10_e
dospert11_r
dospert12_fi
dospert13_r
dospert14_fg
dospert15_hs
dospert16_e
dospert17_hs
dospert18_fi
dospert19_r
dospert20_hs

```
dospert21_s
dospert22_s
dospert23_hs
dospert24_r
dospert25_r
dospert26_hs
dospert27_s
dospert28_s
dospert29_e
dospert30_e
joy_1
joy_2
joy_5
cur_1
cur_2
cur_3
pu_1
pu_2
pu_3
pu_4
pu_5
bi_1
bi_2
bi_3
true_joy_3
true_joy_4
true_joy_6
binary_invest_crypto;
MISSING ARE ALL (-99);
USEVARIABLES ARE pu_1
pu_2
pu_3
pu_4
pu_5;
```

ANALYSIS:

```
TYPE is General;
ESTIMATOR is ml;
ITERATIONS = 2000;
CONVERGENCE = 0.00005;
```

MODEL:

```
pu BY pu_1 pu_2 pu_3 pu_4 pu_5;
pu_3 WITH pu_2;
pu_5 WITH pu_3;
pu_4 WITH pu_2;
```

OUTPUT:
sampstat residual modindices(3.84) stdyx;

B.2.9. Recreational CFA

TITLE: This is a run to fit recreational

DATA: FILE IS "C:\Users\ XXXXX \OneDrive - Kansas State University\Dissertation\Crypto\
STATA Analysis\Qualtrics Files\Qualtrics_SEM_Export.csv";

VARIABLE:
NAMES ARE

dpert1_s
dpert2_r
dpert3_fg
dpert4_fi
dpert5_hs
dpert6_e
dpert7_s
dpert8_fg
dpert9_e
dpert10_e
dpert11_r
dpert12_fi
dpert13_r
dpert14_fg
dpert15_hs
dpert16_e
dpert17_hs
dpert18_fi
dpert19_r
dpert20_hs
dpert21_s
dpert22_s
dpert23_hs
dpert24_r
dpert25_r
dpert26_hs
dpert27_s
dpert28_s
dpert29_e
dpert30_e
joy_1
joy_2
joy_5

cur_1
cur_2
cur_3
pu_1
pu_2
pu_3
pu_4
pu_5
bi_1
bi_2
bi_3
true_joy_3
true_joy_4
true_joy_6
binary_invest_crypto;
MISSING ARE ALL (-99);
USEVARIABLES ARE
dpert2_r
dpert11_r
dpert13_r
dpert19_r
dpert24_r
dpert25_r;

ANALYSIS:

TYPE is General;
ESTIMATOR is ml;
ITERATIONS = 2000;
CONVERGENCE = 0.00005;

MODEL:

recreational BY dpert2_r dpert11_r dpert13_r dpert19_r dpert24_r dpert25_r;
dpert24_r WITH dpert19_r;
dpert25_r WITH dpert19_r;
dpert13_r WITH dpert2_R;
dpert25_r WITH dpert2_R;
dpert25_r WITH dpert24_r;

OUTPUT:

sampstat residual modindices(3.84) stdyx;

B.2.10. Social CFA

TITLE: This is a run to fit social

DATA: FILE IS "C:\Users\ XXXXX \OneDrive - Kansas State University\Dissertation\Crypto\

STATA Analysis\Qualtrics Files\Qualtrics_SEM_Export.csv";

VARIABLE:

NAMES ARE

dpert1_s
dpert2_r
dpert3_fg
dpert4_fi
dpert5_hs
dpert6_e
dpert7_s
dpert8_fg
dpert9_e
dpert10_e
dpert11_r
dpert12_fi
dpert13_r
dpert14_fg
dpert15_hs
dpert16_e
dpert17_hs
dpert18_fi
dpert19_r
dpert20_hs
dpert21_s
dpert22_s
dpert23_hs
dpert24_r
dpert25_r
dpert26_hs
dpert27_s
dpert28_s
dpert29_e
dpert30_e
joy_1
joy_2
joy_5
cur_1
cur_2
cur_3
pu_1
pu_2
pu_3
pu_4
pu_5
bi_1

```
bi_2
bi_3
true_joy_3
true_joy_4
true_joy_6
binary_invest_crypto;
MISSING ARE ALL (-99);
USEVARIABLES ARE
dpert1_s
dpert7_s
dpert21_s
dpert22_s
dpert27_s
dpert28_s;
```

```
ANALYSIS:
TYPE is General;
ESTIMATOR is ml;
ITERATIONS = 2000;
CONVERGENCE = 0.00005;
```

```
MODEL:
social BY dpert1_s dpert7_s dpert21_s dpert22_s dpert27_s dpert28_s;
dpert28_s WITH dpert27_s;
dpert28_s WITH dpert21_s;
dpert21_s WITH dpert7_S;
dpert28_s WITH dpert7_S;
```

```
OUTPUT:
sampstat residual modindices(3.84) stdyx;
```

B.2.11. BI SEM Model

TITLE: This is a full SEM run with crypto holding - splitting out financial (social still dropped) with controls and adding fin_risk_tol WITH fininv;

DATA: FILE IS "C:\Users\ XXXXX \OneDrive - Kansas State University\Dissertation\Crypto\ STATA Analysis\Qualtrics Files\Qualtrics_SEM_Export_controls.csv";

```
VARIABLE:
NAMES ARE
fin_risk_tol
age
gender
marital_status
living
```

education
income
dependents
employment
dpert1_s
dpert2_r
dpert3_fg
dpert4_fi
dpert5_hs
dpert6_e
dpert7_s
dpert8_fg
dpert9_e
dpert10_e
dpert11_r
dpert12_fi
dpert13_r
dpert14_fg
dpert15_hs
dpert16_e
dpert17_hs
dpert18_fi
dpert19_r
dpert20_hs
dpert21_s
dpert22_s
dpert23_hs
dpert24_r
dpert25_r
dpert26_hs
dpert27_s
dpert28_s
dpert29_e
dpert30_e
recoded_how_risky_crypto
ethnicity_binary
joy_1
joy_2
joy_5
cur_1
cur_2
cur_3
pu_1
pu_2
pu_3
pu_4

pu_5
bi_1
bi_2
bi_3
tru_j_3
tru_j_4
tru_j_6
binary_invest_crypto;
MISSING ARE ALL (-99);
USEVARIABLES ARE
dpert2_r
dpert3_fg
dpert4_fi
dpert5_hs
dpert6_e
dpert8_fg
dpert9_e
dpert10_e
dpert11_r
dpert12_fi
dpert13_r
dpert14_fg
dpert15_hs
dpert16_e
dpert17_hs
dpert18_fi
dpert19_r
dpert20_hs
dpert23_hs
dpert24_r
dpert25_r
dpert26_hs
dpert29_e
dpert30_e
joy_1
joy_2
joy_5
cur_1
cur_2
cur_3
pu_1
pu_2
pu_3
pu_4
pu_5
tru_j_3

tru_j_4
tru_j_6
bi_1
bi_2
bi_3
age
gender
marital_status
living
education
income
dependents
employment
ethnicity_binary
fin_risk_tol
recoded_how_risky_crypto;

ANALYSIS:

TYPE is General;

ESTIMATOR is ml;

ITERATIONS = 2000;

CONVERGENCE = 0.00005;

MODEL:

!CFA

fingamb BY dpert3_fg dpert8_fg dpert14_fg;

fininv BY dpert4_fi dpert12_fi dpert18_fi;

ethical BY dpert6_e dpert9_e dpert10_e dpert16_e dpert29_e dpert30_e;

dpert29_e WITH dpert9_e;

healthsafety BY dpert5_hs dpert15_hs dpert17_hs dpert20_hs

dpert23_hs dpert26_hs;

dpert15_hs WITH dpert5_hs;

dpert20_hs WITH dpert17_hs;

dpert26_hs WITH dpert23_hs;

dpert23_hs WITH dpert5_hs;

dpert23_hs WITH dpert15_hs;

recreational BY dpert2_r dpert11_r dpert13_r dpert19_r

dpert24_r dpert25_r;

dpert24_r WITH dpert19_r;

dpert25_r WITH dpert19_r;

dpert13_r WITH dpert2_r;

dpert25_r WITH dpert2_r;

dpert25_r WITH dpert24_r;

pu BY pu_1 pu_2 pu_3 pu_4 pu_5;

PU_3 WITH PU_2;

PU_5 WITH PU_3;

```

PU_4 WITH PU_2;
curiosity BY cur_1 cur_2 cur_3;
CUR_3 WITH CUR_1;
joy BY joy_1 joy_2 tru_j_3 tru_j_4 joy_5 tru_j_6;
tru_j_6 WITH tru_j_4;
tru_j_6 WITH tru_j_3;
tru_j_4 WITH tru_j_3;
joy_2 WITH joy_1;
tru_j_6 WITH joy_5;
!PATHS
bi BY bi_1 bi_2 bi_3;
bi on pu;
bi on curiosity;
bi on joy;
bi on fingamb;
bi on fininv;
bi on ethical;
bi on healthsafety;
bi on recreational;
!CORRELATION
fin_risk_tol WITH fininv;
!CONTROLS
bi on age gender marital_status
living education income dependents
employment ethnicity_binary
fin_risk_tol
recoded_how_risky_crypto;

OUTPUT:
sampstat residual modindices(3.84) stdyx;

```