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Who Buys Crypto?

Research on Crypto Market Participators in Netherlands

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ABSTRACT

This is a study on cryptocurrency market participation. It is one of the first papers to study the relationship between investor behaviour and crypto market participation using survey data from the Netherlands. 1045 individuals were analysed according to their personal traits, of which 93 are crypto market participants. 3 personality traits were used for the analysis: risk-taking, optimism and economic expectations. A significant positive relationship is found between risk-taking tendency and crypto market participation. Cryptocurrency market participators tend to be more risk-taking than non-participants. A significant partial positive relationship is found between economic expectations and crypto market participation. As individuals expect better economic conditions for the future, they participate in the crypto market. Furthermore, it is observed that cryptocurrency market participation has an inverse relation with age. Results show implications of common characteristic traits of crypto market participators and open a new research area.

Keywords: Cryptocurrencies, behavioural finance, investment decisions.

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CHAPTER 1 Introduction

Cryptocurrencies increase in number and becoming more popular among investors day by day. The global cryptocurrency market cap today is $2.72 Trillion (Forbes 2024). The Federal Reserve Board of Governors found that more than 90 percent of cryptocurrency owners held it as an investment, less than 20 percent of owners used cryptocurrency as a form of payment, and less than 10 percent of owners used cryptocurrency to send money to friends or family (Federal Reserve, 2022). In this constantly evolving financial landscape, investor behaviour stands as a crucial predictor influencing individuals' participation in the cryptocurrency market. Along with risk attributes, investor behaviour includes optimism, saving habits, economic expectations for the future, and involvement in other investment opportunities. This research attempts to identify the underlying behavioural traits that influence participation in the cryptocurrency market through an extensive analysis of these traits. One of the important behaviour factors in this analysis is the degree of optimism that investors display. One study shows that optimistic individuals are more likely to make irrational investments because even when the market is volatile, they believe in a chance for profits (Barber&Odean, 2001). Another example case is retail investors who entered the cryptocurrency market during the 2017 bull run. People made large investments due to Fear of Missing Out, but they had no information about the market (Eyal & Sirer, 2018). This study aims to investigate the investor behaviours of cryptocurrency adopters and offer insights.

The connection between investor behaviour and participation in cryptocurrency markets is the subject of the literature, as in "Who Arrives Early and Late to the Crypto Market Party?" by Degryse et al. (2023). The researchers focus on when people enter the cryptocurrency market, what happens to them after, and how they behave. The relationship's analytical unit is the individual cryptocurrency market participants. Degryse et al. investigate how investors' behaviour and investment success are affected by entering the cryptocurrency market early or late. They find that early adopters show more risk-taking behaviour compared to late adopters. Also, early adopters have higher investment returns because they deal with more risk (Degryse et al, 2023). This connection implies that risk behaviour of individuals has an effect on timing of entrance to the market which influences the results of investments. In their study, Sudzina et al. (2023) focus primarily on early adopters of cryptocurrencies and attempt to investigate whether overconfidence and self-control could help explain cryptocurrency use among current early adopters. They find that cryptocurrency early adopters are mostly men, overconfident and have less self-control (Sudzina et al, 2023). In line with the effects of risk and confidence attributes, economic expectations of individuals also affect crypto market participation. Every individual has different expectations on future state of the economy they belong in, and this directly affect their investment behaviour. In their study, Aiello et al. (2023) search for the motives

behind household cryptocurrency investing by analysing U.S. households. They find that expecting higher inflation relates with higher crypto investments (Aiello et al, 2023).

Cryptocurrency market increased its trading volume and became popular especially among young people. This led to a rise in studies related with cryptocurrencies. Previous studies examined the behavioural traits of cryptocurrency market participators. Weber et al found that crypto market participants are young, male, and libertarian. According to their study most participators expect much higher rates of returns for crypto and perceive it as relatively safer than other households do (Weber et al. 2023). An alternative research can be to analyse the characteristics of individuals. The predictor of this study is the characteristics of cryptocurrency traders, with a focus on risk-taking, optimism and economic expectations. These factors affect how investors make decisions in the cryptocurrency market. Predictor's unit of analysis are individual investors of the crypto market. This research aims to provide insights into the common traits shared by individuals actively involved in the crypto market by asking the research question "What are the common traits of crypto market participators?".

This study will examine the investor behaviour of cryptocurrency market participators. Investor behaviour divides into three variables namely risk-taking tendency, optimism level and economic expectations. The data set used for the analysis is DHS data wave 2023, a data collected by Centerdata via the DNB Household Survey in Netherlands. The data is collected through the Centerpanel, which collects data every week on various topics. The purpose of this survey is to study the economic and psychological determinants of the saving behaviour of households. The survey used for data includes questions representing each investor behaviour variable chosen. The examination will be done by regression analysis using data for the year 2023. The unit of analysis is individuals who participated in the questionnaire concerning wealth, 1045 individuals. In this data set, 93 out of 1045 individuals stated an ownership of at least one cryptocurrency. Dataset represents the Dutch population, and Netherlands is chosen as country of research because globally the country is in top five regarding cryptocurrency investments (Foley et al., 2022). The sample shows that 10% of the Dutch population have invested in crypto in 2023. The analysis will be done with regressing crypto market participation with risk-taking tendency, optimism level and economic expectations. Control variables will also be used to increase the internal validity of the analysis. Control variables chosen for this regression are age, gender, and income. These variables will be controlled because they can influence individuals' characteristics and investment behaviour. Regression equation for the study is as follows:

(Equation 1)

$$Crypto\ market\ participation_i = a + \beta_i Risk-taking_i + \beta_i Optimism_i + \beta_i Economic\ Expectations_i + \gamma_i Controls_i + \varepsilon_i$$

Where crypto market participation is a dummy variable that can get the value 1 if individual participates in the crypto market and 0 otherwise. Following Conlin et al. (2015), who studied personality traits and stock market participation, to regress the dummy variable a logistic regression will be used.

Based on real-life examples and the results of previous research, it can be hypothesized that cryptocurrency market participants have common character traits that influence their investment behaviour. Under the character traits that are chosen for this research, it can be hypothesized that crypto market participants tend to be risk-seeking, more optimist, and expect better economic conditions for the future. It is expected that after regressing each variable with participation in crypto market, a correlation will be observed between risk, optimism and expecting better economic conditions for the future. The results are expected to show valid and crucial insights on investor behaviour and show behavioural researchers how crypto investors behave. The insights that will be provided at the end of the research is open for development and further research, as human beings continue to change behaviourally in line with the rapid change in technology and the state of the world.

Participation in the cryptocurrency market was regressed against the three behaviour variables—risk-taking tendency, degree of optimism, and economic expectations—selected for the study. Control factors like income, gender, and age were also incorporated in the regression equation. The investigation concludes that there is a positive correlation between tendency for taking risks and involvement in the cryptocurrency market. A partial finding was that there was a favourable correlation between participation in the cryptocurrency market and individuals' expectations for the future state of the economy. Furthermore, research has shown that older people are less inclined to trade cryptocurrency.

This study's remaining content has been divided into multiple sections. A summary of the relevant prior research on this subject is provided first. For every personality feature, a hypothesis is built based on this literature. After that, the methodology, data, and variables used in the study are explained. The findings are presented with a table and an analysis, which is followed by a conclusion, a discussion, and suggestions for more research on this subject.

CHAPTER 2 Theoretical Framework

Through quantitative easing measures, all the major central banks considerably increased their monetary bases following the 2008 financial crisis (Board of Governors of the Federal Reserve System, US). Coincidentally, a whole new financial asset emerged at about the same time. The Bitcoin was the original cryptocurrency (S. Nakamoto, 2008). The fundamentally innovative concept was to create a decentralized, secure register blockchain by fusing two already-existing technologies: asymmetric cryptography and a distributed database with a novel "Proof of Work" consensus mechanism (R. Wattenhofer, 2016). During the Bitcoin mining process, new blocks are added to the "Blockchain," the database that holds the Bitcoin database. Compound computational puzzles are the center of the mining process. Miners are rewarded with Bitcoin incentives and transaction fees when they accomplish this (Kjaerland, Meland, Oust, and Øyen, 2018). Rather of storing transaction data on a single server, the Bitcoin database is dispersed over a network of participating computers (Böhme et al., 2015).

Today, Bitcoin is the most valuable coin in the market, and more than 20,000 different cryptocurrencies have been created after Bitcoin. As of 2024, the value of all existing cryptocurrency is around $2.33 trillion (CoinMarketCap.com, 2024). Cryptocurrencies have grown quickly and gained popularity as assets in the global financial markets (Białkowski, 2020). They have also drawn media attention, interest from institutional and individual investors as well as regulators, and are now a significant and active topic in several academic research fields (Angerer et al., 2020). According to traditional financial theory, the actions of investors have little influence on asset prices. The demand from investors, which the arbitrageurs' transaction and the trades will counteract, determines the reasoning for that. Investors think they act sensibly and logically while making decisions about their investments (Almansour, 2017). People don't always act rationally, though. To understand how people behave in real life rather than how they would behave in a perfect world, behavioural economics integrates psychology and economics (Thorgeirsson & Kawachi, 2013). There have been two parts to the behavioural economics research program: 1. Recognizing the ways in which a behaviour deviates from the norm. 2. Illustrating the relevance of this conduct in economic settings (Mullainathan, S., & Thaler, R. H., 2000).

Since the emergence of behavioural economics, research on human beings have been done to understand the effect of behaviour on economic decisions. It has been proved that individuals are highly affected by behavioural biases. One field that is highly affected by behaviour is finance and investments. Individuals' financial decisions are influenced by behavioural biases. For example, some investors have overconfidence. When someone is overconfident, they believe they can make wise investments based on the information they have and are highly optimistic about the trade outcomes

(Zahere&Bansal, 2018). However, according to the behavioural finance theory, the actions of investors also have a big impact on asset prices. This suggests that behavioural finance factors have a big impact on the choices that investors make when making cryptocurrency investments.

Even though equities have a significant premium over risk-free investments, many people do not own stocks. Most households in many countries do not own stocks, not even indirectly through retirement accounts or mutual funds (Breuer et al., 2014). This is explained by behavioural economics. The field of behavioural economics acknowledges that financial actors are human and susceptible to cognitive and psychological biases, in contrast to the classical theory which presumes that they are rational (Teng Yuan Cheng et al., 2020). One of the biases that influence investment decisions is risk-taking tendency. Four groups of investors were identified by Wood and Zaichkowsky (2004) based on their trading habits and attitudes: risk-intolerant, young and less risk-averse, confident, and conservative long-term investors. Participation in the stock market was also explained by risk attitudes, which included the following: disclosure of corporate extortion in the community, investors' propensity for betting, investors' uncertainty dispersion, the presence of a significant negative wealth shock, and huge hedging potential (Bonaparte et al., 2014). When making investing decisions, an individual's risk attitudes are crucial (Barsky et al., 1997; Dimmock and Kouwenberg, 2010; Kumar et al., 2011).

Another bias that affects investment decisions is optimism. Generally expecting positive results is the definition of optimism (Scheier and Carver, 1987, Scheier et al., 1994). Thus, biased attitudes in risky circumstances may have a significant impact on decisions about saving. On the one side, optimism causes people to underestimate the likelihood of unfavourable income shocks, which results in under saving out of caution. Conversely, optimism causes people to overestimate their chances of surviving, which causes them to over save for life-cycle preservation reasons. Optimism generally has a less unclear impact on portfolio selection decisions. When optimism is directed toward mitigating uncertainty by placing greater emphasis on favourable outcomes, it encourages investment in riskier assets like stocks (Nils Grevenbrock, 2020).

According to the Capital Asset Pricing Model, all investors use the same theoretical economic model to determine their expectations of risk and market return. Hong and Stein (2007) states that whereas investors apply same publicly accessible data, their diverse economic models lead to differences in how they understand the data. That is why every individual have different economic expectations. These expectations influence their behaviour and investment strategy. Some individuals don't participate in the stock market because they believe the future economy will be worse off than present and therefore they choose to save, instead of investing (Lee et al., 2015). According to Hurd et al. (2011), Dutch households' stock ownership is significantly impacted by the great variation in their expectations for the stock market. They say that families that anticipate greater future returns are more

inclined to own stocks, whereas the ones that anticipate higher return volatility are less likely to own stocks.

Many academics have offered differing views of whether the market for digital currencies is efficient or inefficient in accordance with the efficient market theory due to the market's volatile nature. Numerous writers claim that there are a variety of reasons why the cryptocurrency market is inefficient. For example, attention-driven trading (Subramaniam & Chakraborty, 2019), asymmetry of data amongst investors in the market (Park, 2020), and herding behaviour by individual investors (Youssef, 2020). Prior research has generally indicated that social influence has the most impact on the primary motivations driving cryptocurrency investments (Gupta et al., 2020). Apart from social influence, there are additional elements that impact investors' choice to invest in the cryptocurrency market, including financial literacy, return expectations, and perceived utility (Gupta et al., 2020). Investors seek out cryptocurrencies that show big payoffs, not caring about crash risk as much as stock investors do (Grobys and Junttila, 2021). These findings shows that cryptocurrency investors are motivated by risk-taking behaviour (Pelster et al., 2019).

The relationship between risk behaviour and crypto market participation has been examined in several studies before. In their research, Degryse et al. (2023) survey a representative sample of the Dutch population to investigate the characteristics distinguishing adopters of cryptocurrencies. They found that adopters tend to be more risk-loving and male. Another research by Rens Heinen (2022) studies the relationship between personality traits and crypto market participation using survey data from the Netherlands. Heinen found that the level of risk tolerance has a significant positive relationship with crypto market participation. A literature review by Almedia and Gonçalves (2023) aimed to analyse and synthesize the literature produced so far on investor behaviour in the cryptocurrency market. After their review they concluded that investors are driven by high profits and risk-seeking behaviours.

The relationship between optimism level of individuals and crypto market participation was a subject of the previous literature. Caferra (2020) analyzed the link between news-driven feelings and behaviour convergence in the cryptocurrency market. The research showed that the peaks and falls of optimism determine returns variability. Gurdgiev and O'Loughlin (2020) investigated how price dynamics of cryptocurrencies are influenced by the interaction between behavioural factors behind investor decisions and publicly accessible data flows. They found that since optimism leads to rising prices and convergence of expectations, investors' sentiments have an important link with price formation and beliefs.

Previous literature also examined the relationship between economic expectations of individuals and crypto market participation. Rens Heinen (2022) studied the relationship between personality traits

and crypto market participation using survey data from the Netherlands. The survey included an economic expectation question for the future, and respondents who invested in cryptocurrencies have more positive expectations than people who have not invested. Benetton and Compiani (2020) explored the impact of investors' beliefs on cryptocurrency demand and prices using three individual-level surveys. They found that expectations play a significant role for crypto market participation. Their analysis result was that investors who believe that the value of cryptocurrencies will increase in the next year are more likely to demand cryptocurrencies.

Control variables chosen for this research are age, gender, and income. The basis of the reasoning behind the chosen control variables is under the light of previous research. According to Gardini and Magi; age, wealth, education, and other household characteristics such as marital status are the key determinants of participating in the stock market (Gardini & Magi, 2007). Previous research also showed that the level of risk aversion, which is one of the variables chosen for this research, increases with age (Banks et al., 2020; Blanchett et al., 2018; Palsson, 1996). According to Van Rooij et al., gender, income, and education are significant predictors of stock market participation, with men being more likely than women to participate (Van Rooij et al., 2011). Similar findings were obtained by Almenberg and Dreber, showing that women are less likely than men to trade stocks (Almenberg&Dreber, 2015). In their research into whether stockholders' consumption varies from that of non-stockholders, Mankiw and Zeldes (1991) discovered a positive correlation between holding stocks and income and educational level (Mankiw & Zeldes, 1991).

In line with the previous research on cryptocurrency market participants and their behavioural attitudes, it can be stated that investor behaviour has an impact on crypto market participation. Specifically, under the characteristics chosen for this research, it can be said that risk-taking and highly optimist individuals participate in the crypto market. Also, individuals who expect better economic conditions for the future adopt cryptocurrencies more than the individuals who expect worse conditions. To formally state out the expectations of this research, 3 hypotheses can be formed:

H1: Risk taking characteristic has a positive impact on cryptocurrency ownership.

H2: High levels of optimism has a positive impact on cryptocurrency ownership.

H3: Positive economic expectations have a positive impact on cryptocurrency ownership.

CHAPTER 3 Data

The data set used for the analysis is DHS data wave 2023, a data collected by Centerdata via the DNB Household Survey in Netherlands. Since 1993, Centerdata has used a panel of about 2,000 households to gather economic data every year. This DNB Household Survey aims to investigate the psychological and economic factors that influence households' saving habits. The Centerdata Internetpanel (also known as the CentERpanel) is used to collect the data. The 2023 wave of the DNB Household Survey was made between March 2023 - September 2023. The DNB Household Survey consists of six questionnaires. All questionnaires were presented to the Centerpanel, of which 2,332 households have participated. Within each household, all persons aged 16 or over were interviewed. Total number of individuals interviewed is 5,068. The data from the questionnaires are organized into six data sets. For this research, the data set concerning wealth data will be used. This part of the questionnaire concerns assets and liabilities. Among other things, questions are asked about financial decisions and inheritances. In total 2,669 individuals answered this questionnaire.

The dependent variable is crypto market participation (CMP). This shows whether the person is trading cryptocurrencies at that time, or whether they are actively involved in the market. This is a binary variable; if the individual in question is holding any cryptocurrencies at the moment, the value is 1, and if not, the value is 0. In the data set, 137 individuals out of 2,669 indicated "yes" to the survey question "Did you, on 31st December 2022, have any bitcoin or other crypto coin?". 2,669 individuals are the number of observations in this research, since the analysis will be done both on individuals who participate in the crypto market and who do not.

Independent variables are 3 personality traits chosen for this research, namely risk-taking tendency, optimism level and economic expectations. For each personality trait 3 different survey questions were asked. The analysis will be done based on the answers.
Risk-taking tendency (Risk) is measured by the question "How would you describe the risks that you have taken with investments over the past few years?". 5 possible answers were given to the survey participants:

1- I have taken no risk at all
2- I have taken small risks every now and then
3- I have taken some risks
4- I have sometimes taken great risks
5- I have often taken great risks

Since there are 5 possible answers, the risk-taking tendency variable will be measured in 5 levels. The question measuring risk is under the questionnaire of economic and psychological concepts. This questionnaire is about 'how people deal with money'. Since the dependent variable CMP is under

another questionnaire, the answers given to surveys will be combined by detecting the individuals who participate in crypto market in other questionnaires.

Optimism level (Optimism) is measured by the statement "On the whole I expect more good things to happen to me than bad things.". Participants were given 5 possible options to state to what extent they agree the statement:

1- totally disagree
2- disagree
3- neutral
4- agree
5- totally agree

Just like the variable Risk, there are 5 possible answers therefore the optimism level variable will be measured in 5 levels. The question measuring optimism is under the questionnaire of economic and psychological concepts. Same application under the risk variable will be done for the optimism variable.

Economic expectations (Expectations) variable is measured by the question "How do you think the economic situation of your household will be in five years' time in comparison to the current situation?". 5 possible answers were given to the survey participants:

1- much worse
2- worse
3- (about) the same
4- better
5- much better

Following the same procedure applied to other variables, economic expectations variable will be measured in 5 levels. The question measuring economic expectations is under the questionnaire of economic and psychological concepts. Same application under other variables will be done for the expectations variable.

Control variables chosen for this research are age, gender, and income. These variables will be controlled because they can influence individuals' characteristics and investment behaviour, as elaborated in the literature overview.

Participants' age was asked as "year of birth of the respondent". Therefore, the age of each crypto market participant will be calculated, age values calculated will be used for the analysis. A separation will be made between males and females for the variable gender. Gender will be a dummy variable where males have the value 1 and females 0. As for the income control, the answers given to the survey question "which of the categories mentioned below did the total net income of your household go in the past 12 months?" were used. Categories for income are as follows:

-   less than € 10,000
1- between € 10,000 and € 14,000
2- between € 14,000 and € 22,000
3- between € 22,000 and € 40,000
4- between € 40,000 and € 75,000
6- € 75,000 or more

It is crucial to note that the sample chosen for this research doesn't include any income that is less than € 10,000, therefore income control was categorized into 5 dummies.

To clearly summarize and analyse the data, some variables were cleaned and regenerated as dummies. Since independent variables chosen for the analysis contains nonnumeric answers, some data included answers like "I don't know" or didn't include any data. All unknown data for each independent variable were cleared; 411 observations for economic expectations and 1213 observations for risk-taking were deleted, resulting in a sample size of 1045 participants. 93 out of 1045 participants indicated that they have participated in the crypto market. Independent variables were turned into 5 dummy variables each, with 1 being the lowest possible answer and 5 being the highest.

Table 1. Descriptive Statistics

Variables	Observations	Mean	Std. Dev.	Min.	Max.
CMP	1045	.0889952	.2848732	0	1
Econ. Exp. 1	1045	.0200957	.1403949	0	1
Econ. Exp. 2	1045	.2066986	.4051313	0	1
Econ. Exp. 3	1045	.5799043	.4938103	0	1
Econ. Exp. 4	1045	.1636364	.3701224	0	1
Econ. Exp. 5	1045	.0296651	.1697428	0	1
Risk-taking 1	1045	.3799043	.4855952	0	1
Risk-taking 2	1045	.2411483	.4279849	0	1
Risk-taking 3	1045	.3090909	.46234	0	1
Risk-taking 4	1045	.0583732	.2345601	0	1
Risk-taking 5	1045	.0114833	.1065939	0	1
Optimism 1	1045	.0038278	.0617799	0	1
Optimism 2	1045	.0315789	.17496	0	1
Optimism 3	1045	.24689	.4314086	0	1

Optimism 4	1045	.5291866	.4993864	0	1
Optimism 5	1045	.1885167	.3913115	0	1
Age	1045	56.73301	15.63026	19	95
Gender	1045	.615311	.4867547	0	1
Income 1	1045	.0267943	.161559	0	1
Income 2	1045	.076555	.2660114	0	1
Income 3	1045	.3320574	.471177	0	1
Income 4	1045	.4296651	.4952653	0	1
Income 5	1045	.1349282	.3418105	0	1

Table 1 provides the descriptive statistics for the variables used in the study, including crypto market participation (CMP), economic expectations, risk-taking behaviours, optimism levels and control variables used for the study.

The variable CMP has a mean of approximately 0.089 with a standard deviation of 0.285, indicating a relatively low average value and moderate variability. The economic expectation variables (Econ. Exp. 1 through Econ. Exp. 5) show varying means, with expecting the same economic outcome (Econ. Exp. 3) having the highest mean at around 0.579. For Risk-taking behaviours (Risk-taking 1 through Risk-taking 5), taking no risk at all (Risk-taking 1) has the highest mean at 0.380 and taking great risks (Risk-taking 5) the lowest at 0.011. 4th level optimists (Optimism 4) have the highest mean at 0.530 among Optimism level variables. The control variable age has a mean of 56.73 and a standard deviation of 15.63, which shows that ages differ from 19 to 95 years. Gender is a binary variable with a mean of 0.615, meaning that around 61.5% of the sample is male.

CHAPTER 4 Methodology

STATA is the program used to analyse the data. Potential connections between personality traits and cryptocurrency investing will be investigated through regression analysis. A dummy variable is used to measure the dependent variable, which is whether or not they participate in the crypto market. In line with the research conducted by Conlin et al. (2015) on personality traits and stock market participation, a logistic regression will be employed to regress the dummy variable. Logistic regression calculates the probability of an occurrence by utilizing a specified set of independent variables as input. Predictive analytics and classification are two common applications for this kind of statistical model. Because the result is a probability, the dependent variable has a range of 0 to 1. This leads to the following equation:

(Equation 1)

$$Crypto\ market\ participation_i \\ = a + \beta_i Risk - taking_i + \beta_i Optimism_i + \beta_i Economic\ Expectations_i \\ + \gamma_i Controls_i + \varepsilon_i$$

Where crypto market participation will be regressed against the 3 behaviour variables chosen for the research. Control variables are also included in the regression equation, namely age, gender, and income.

CHAPTER 5 Results & Discussion

The probability of an individual engaging in the cryptocurrency market was investigated by logistic regression approach, considering three primary independent variables: economic expectations, optimism, and risk-taking. These independent factors were all represented as dummy variables and divided into five levels. CMP dependent variable has a binary outcome: value 1 indicates participation and value 0 non-participation. Coefficients for each dummy variable in the regression results shows the log-odds of CMP in relation to reference category for each independent variable. A positive coefficient denotes higher possibility of CMP, and a negative coefficient denotes lower possibility of CMP, when compared to the reference category. Odds ratios explain how the likelihood of CMP changes with each category of independent variable. An odds ratio larger than 1 means higher probability, smaller than 1 means lower odds of CMP. The statistical significance of these coefficients is evaluated to determine if the relationships observed happened by chance.

Table 2. Logistic regression with investor behaviours as independent variables and crypto market participation as dependent variable, with and without control variables.

	(1)	(2)
	CMP	CMP
Econ. Exp. 1	-0.135	-0.393
	(-0.12)	(-0.35)
Econ. Exp. 2	0	0
	(.)	(.)
Econ. Exp. 3	0.0502	-0.0757
	(0.15)	(-0.22)
Econ. Exp. 4	0.768*	-0.0610
	(2.11)	(-0.15)
Econ. Exp. 5	0.554	-0.821
	(0.91)	(-1.24)
Risk-taking 1	-2.447***	-2.514***
	(-4.58)	(-4.60)
Risk-taking 2	0.126	0.117
	(0.48)	(0.43)
Risk-taking 3	0	0
	(.)	(.)
Risk-taking 4	0.942**	0.825*
	(2.66)	(2.23)
Risk-taking 5	1.320*	1.646*
	(1.96)	(2.28)

Optimism 1	0	0
	(.)	(.)
Optimism 2	0.858	0.653
	(1.63)	(1.21)
Optimism 3	-0.583	-0.655
	(-1.38)	(-1.49)
Optimism 4	0.211	0.191
	(0.72)	(0.63)
Optimism 5	0	0
	(.)	(.)
Age		-0.0516***
		(-5.58)
Gender		0.355
		(1.32)
Income 1		0.690
		(0.80)
Income 2		0.571
		(1.09)
Income 3		0.286
		(1.00)
Income 4		0
		(.)
Income 5		-0.319
		(-0.90)
Constant	-2.331***	0.391
	(-5.82)	(0.58)
N	1041	1041

t statistics in parentheses: * p<0.05, ** p<0.01, *** p<0.001

Note: optimism 5!= 0 predicts failure perfectly; optimism 5 omitted and 4 observations not used. Economic expectation 5 omitted because of collinearity. Risk-taking 5 omitted because of collinearity. Optimism 4 omitted because of collinearity.

The Pseudo R-squared measures the goodness of fit for logistic regression models. Model 1 has chi-square value of 93.4, p-value of 0.0000 and Pseudo R-squared of 0.1492. Based on these statistics, it can be said that Model 1 fits the data and is statistically significant. The independent variables together account for approximately 14.92% of the variation in CMP. The p-value and the significant chi-square statistic demonstrates the significance of the predictors in explaining the likelihood of CMP.

Model 2 has chi-square value of 129.29, p-value of 0.0000 and Pseudo R-squared of 0.2063. In comparison to Model 1, Model 2's summary statistics show that it is a statistically significant and

better-fitting model. Model 2, which has a higher Pseudo R-squared value and chi-square statistic, accounts for about 20.63% of the variation in market participation in cryptocurrencies. The significance of the control variables in explaining the likelihood of engaging in the cryptocurrency market is demonstrated by the improvement in the Pseudo R-squared value and the significant chi-square test. This shows that Model 2's control variables offer a more thorough knowledge of the variables impacting CMP.

The results of the analysis excluding and including control variables are depicted in Table 2. These findings emphasize the significance of age and risk-taking behaviour in determining one's involvement in the crypto market. Economic expectations showed contradictory outcomes, and optimism and income levels had no noticeable effect.

For the model without control variables, Econ. Exp. 4 has a positive and significant coefficient (0.768, $p < 0.05$), suggesting that individuals with better economic expectations for the future are more likely to participate in the crypto market compared to the reference category (Econ. Exp. 2). The odds ratio can be interpreted as $\exp(0.768) \approx 2.16$, meaning the odds of participation are approximately 2.16 times higher for this group. Other categories of economic expectations are not statistically significant. Risk-taking 1 coefficient is significantly negative (-2.447, $p < 0.001$), meaning that compared to the reference category (Risk-taking 3), individuals who do not take risks at all are less likely to participate in the crypto market. The odds ratio of $\exp(-2.447) \approx 0.087$ means that the odds of participation are about 8.7% of the odds for the reference group. Risk-taking 4 has a positive and significant coefficient (0.942, $p < 0.01$), implying that individuals who take great risks sometimes have a higher likelihood of participation with an odds ratio of $\exp(0.942) \approx 2.57$. Risk-taking 5 also shows a positive coefficient (1.320, $p < 0.05$), suggesting significantly higher participation odds, with $\exp(1.320) \approx 3.74$. This means that individuals who often take great risks are the most likely group of investors who will participate in the crypto market. It is also important to mention that risk-taking categories' coefficients are monotonically increasing. In other words, as the level of risk-taking increases, the likelihood of participation in the crypto market also increases. Optimism categories didn't show statistically significant results, the constant term is significant and negative (-2.331, $p < 0.001$).

For the model including control variables, none of the economic expectation categories are statistically significant. Risk-taking 1 is significantly negative (-2.514, $p < 0.001$), in line with model 1 finding that individuals who do not take risks at all are less likely to participate in the crypto market. Risk-taking 4 (0.825, $p < 0.05$) and Risk-taking 5 (1.646, $p < 0.05$) are positive and significant coefficients, indicating higher likelihood of participation. Risk-taking categories' coefficients are also monotonically increasing in model 2, which is identical with the finding of model 1 that as the level of risk-taking increases, the likelihood of participation in the crypto market increases. Just like model 1,

optimism categories didn't show statistically significant results. From the control variables added to the equation, only age variable showed significant results. The coefficient for age is negative (-0.0516, $p < 0.001$), suggesting that older individuals are less likely to participate in the crypto market. Gender and income were not statistically significant in predicting crypto market participation.

Results give partial support for hypothesis 3 which stated that positive economic expectations have a positive impact on cryptocurrency ownership. The simple model confirms this idea, although when control variables are added the effect disappears. Hypothesis 1, which stated that risk taking characteristic has a positive impact on cryptocurrency ownership, is fully supported by the findings. As individuals tend to be more risk-taking, they have a higher chance of participating in the crypto market. Hypothesis 2 couldn't be answered since results for optimism variable were not significant in both models.

Findings of this research are in line with the previous research that studied investor behaviour of cryptocurrency market participants, such as Degryse et al. (2023) and Rens Heinen (2022). They found that cryptocurrency adopters tend to be more risk-loving, and the level of risk tolerance has a significant positive relationship with crypto market participation. Previous research on economic expectations and CMP is also similar with the results of this study. In their study, Rens Heinen (2022) and Benetton and Compiani (2020) observed that investors who believe that the value of cryptocurrencies will increase in the next year are more likely to demand cryptocurrencies and have more positive expectations than people who have not invested. Lastly, the relationship between age control variable and CMP was mentioned in the previous literature such as Gardini & Magi (2007). In addition to them, this study observed a reverse relationship between age and CMP.

CHAPTER 6 Conclusion

This study investigated the investor behaviour of cryptocurrency market participators, specially emphasizing on risk-taking tendency, optimism level and economic expectations. There are a wide range of study topics in this field as a result of the rise in trade volume and the market's popularity, especially among young people. Prior research has been conducted to investigate the traits of people who trade cryptocurrency actively. This research offered and alternative perspective by deepening the analysis of characteristics of individuals. Therefore, the research question "What are the common traits of crypto market participators?" was asked to provide insights into the common traits shared by individuals actively involved in the crypto market.

To answer the research question, a logistic regression was employed to a Dutch population sample. Sample was obtained from DHS data wave 2023, an organization that aims to investigate the psychological and economic factors that influence households' saving habits. Using a sample of 1045 individuals, crypto market participation was regressed against the 3 behaviour variables chosen for the research, namely risk-taking tendency, optimism level and economic expectations. Control variables like age, gender, and income were also included in the regression equation. At the end of the analysis, a positive relationship between risk-taking tendency and crypto market participation has been found. A partial result was also found for economic expectations of individuals, a positive relationship between expecting good economic conditions for the future and crypto market participation. In addition, it was observed that older individuals are less likely to participate in the crypto market.

As with every academic research, there were limitations in this research. Human behaviour is a very broad subject with many aspects. Based on the available data and previous research, three human characteristics that were considered important were selected. Different character traits can be selected for future research, and more diverse and in-depth research can be conducted on human behaviour and its effects. In addition, while organizing and cleaning the selected data, it was noticed that some of the people the research institution surveyed every year did not answer the questions with the required care. For this reason, there were many missing points in the dataset that needed to be cleaned. Some of the data was lost during elimination. A recommendation for future research and for companies conducting surveys on human behaviour may be to pay more attention to ensuring that all the answers given are useful.

This study therefore concludes that cryptocurrency market participants have common traits that influence their participation in the market and differentiate them from non-participants. There is a psychological reason behind every decision people make. The fact that individuals who choose an investment option such as cryptocurrency, which has recently entered our lives, involves risks and

lacks knowledge, has common characteristics is an indicator of this situation. Although it is said that people who have been successful in the world of finance and investment always proceed within the framework of logic, purifying themselves from their emotions, personal characteristics can never be overcome, and our personal identity lies behind everything we do. For this reason, the fields of behavioural economics and behavioural finance and research on these fields are of great importance.

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