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Abstract

This study investigates the determinants of crypto-asset investment behavior using original survey and experimental data from Japan, the United States, Germany, and China. First, we find that crypto-asset holders tend to be younger, have higher incomes, and display greater financial sophistication. Substantial cross-country variation is evident: the probability of holding crypto asset is markedly lower in Japan than in the United States, Germany, and China. Second, perceived macroeconomic uncertainty is positively associated with both the likelihood of ownership and the portfolio share allocated to crypto asset. Third, providing information on historical returns significantly increases ownership intentions and desired allocations. Overall, the results highlight the roles of individual characteristics, economic beliefs, and information access in shaping household participation in crypto-asset markets, and underscore the importance of country-specific factors—such as demographics and financial sophistication—in determining adoption patterns across countries.

JEL Classification: D12; D14; D84; E21; G11; G41
Keywords: cross-country analysis; crypto-asset holding; digital assets; financial literacy; household finance; investment behavior

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1 Introduction

Previous research on cryptocurrency investment has primarily examined portfolio performance, investor characteristics, and behavioral biases. Yet the determinants of household-level crypto adoption—particularly in cross-country contexts—remain underexplored. While financial literacy, risk preferences, and macroeconomic expectations have each been studied as drivers of crypto-asset investment behavior, few papers consider these factors jointly, and causal evidence on the role of information provision is scarce.

This study examines the determinants of crypto-asset investment behavior using original survey data from Japan, the United States, Germany, and China. Our analysis proceeds in three parts. First, we identify who holds crypto assets by examining how demographic attributes and financial sophistication—defined as the combination of financial literacy and individual risk preferences—are associated with ownership status and portfolio composition. Second, we analyze how macroeconomic uncertainty, particularly regarding inflation and economic growth, is associated with crypto investment behavior. Third, we use a randomized controlled trial (RCT) to estimate the impact of providing information on past returns on both ownership and the intended portfolio share of crypto assets.

We document three main findings. First, individuals who hold crypto assets tend to be younger, have higher incomes, and exhibit greater financial sophistication, reflected in both higher financial literacy and a stronger willingness to take financial risks. These patterns are consistent across countries and hold for both the extensive margin (the decision to hold any crypto assets) and the intensive margin (the proportion of assets allocated to them). We also observe notable cross-country variation: the probability of holding crypto assets is 4.75% in Japan, 22.81% in the United States, 19.34% in Germany, and 19.15% in China. In terms of portfolio allocation, the average share of crypto assets in household portfolios is 0.56% for Japan, 3.95% for the United States, 3.21% for Germany, and 2.01% for China. These differences underscore the role of country-specific factors in shaping the determinants of crypto asset ownership.

Second, macroeconomic uncertainty plays a significant role in crypto investment behavior: individuals who perceive greater uncertainty about future inflation and economic growth are more likely to invest in crypto assets and to allocate a larger share of their portfolios to them, suggesting that crypto assets may be viewed as a hedge or response to economic instability.

Third, providing salient information on the historical returns of Bitcoin has a statistically significant and economically meaningful effect on crypto investment intentions: treated individuals are more likely to report a willingness to hold crypto assets and to increase their desired portfolio share. Taken together, these findings highlight the importance of individual characteristics, subjective beliefs, and information access in shaping household-level crypto-asset adoption, and underscore the need for analyses that integrate micro-level behavioral factors with cross-country variation.

We contribute to three main strands of the literature. The first examines crypto assets as investment

vehicles, focusing on their roles as portfolio diversifiers, return characteristics, and drivers of investor behavior (Liu and Tsyvinski, 2021; Weber et al., 2023; Xi et al., 2020; Bannier et al., 2019; Bouri et al., 2017; Hackethal et al., 2022; Auer and Tercero-Lucas, 2022). Related work analyzes market frictions (Makarov and Schoar, 2020), valuation frameworks (Pagnotta and Buraschi, 2022), and token-based fundraising mechanisms (Howell et al., 2020). Almeida and Gonçalves (2023) provide a comprehensive review of this fragmented field. Our contribution is to document individual-level investment behavior across four countries and to link these patterns to both demographic attributes and macroeconomic factors.

The second strand relates to financial sophistication—encompassing financial literacy and risk preferences—both central to crypto investment behavior. While greater financial literacy generally promotes prudent decision-making (van Rooij et al., 2011; Lusardi and Mitchell, 2014), findings in the crypto context are mixed (Fujiki, 2020; Zhao and Zhang, 2021). Related research emphasizes the roles of cognitive ability (Christelis et al., 2010), financial education (Kaiser et al., 2022; Grohmann et al., 2018), life-cycle dynamics (Lusardi et al., 2017), and information provision (Duflo and Saez, 2003). Risk preferences also matter, predicting both crypto ownership and portfolio share (Pelster et al., 2019; Aiello et al., 2023a), and are shaped by behavioral biases such as overconfidence (Iamin, 2024; Chhatwani and Parija, 2023). Other contributing factors include long-term motives (Bonaparte, 2022), the interaction between literacy and preferences (Hayashi and Routh, 2024), uncertainty perceptions (Stix, 2021), and "Fear of Missing Out" (FOMO) (Gerrans et al., 2023). We contribute by jointly analyzing financial literacy and risk preferences across countries and linking them to both the extensive margin (ownership) and the intensive margin (portfolio share) of crypto investment.

The third strand concerns the role of macroeconomic uncertainty. A growing body of research highlights how uncertainty—particularly about inflation and economic growth—shapes household expectations and behavior (Coibion et al., 2024; Georgarakos et al., 2024; Kumar et al., 2023). When individuals perceive greater uncertainty about future economic conditions, they may be more likely to seek alternative assets such as cryptocurrencies, which are often viewed either as inflation hedges or speculative vehicles (Weber et al., 2023). Stix (2021) provides survey evidence that heightened perceived uncertainty, along with portfolio threshold effects, increases the intention to purchase crypto assets. Building on this literature, we incorporate both point forecasts and subjective uncertainty measures for inflation and growth into our empirical analysis, enabling us to examine how perceived macroeconomic risks shape crypto adoption across countries.

The remainder of the paper is organized as follows. Section 2 describes the survey and experimental design. Section 3 presents the effects of demographic characteristics on crypto-asset ownership. Sections 4 and 5 analyze the roles of financial sophistication and information provision, respectively, in shaping crypto-asset ownership and portfolio allocation. Section 6 concludes.

2 Survey Design

We conducted a RCT to identify the determinants of crypto-asset ownership. The study assesses how demographic characteristics, financial sophistication, and subjective uncertainty influence individuals' decisions to hold crypto assets.

In what follows, we describe the RCT design and the procedures used to elicit respondents' financial sophistication and subjective uncertainty. Financial sophistication is defined as the combination of financial literacy and risk preferences, while subjective uncertainty refers to respondents' beliefs about key macroeconomic variables.

2.1 RCT Design

The survey was administered in October 2024 to approximately 10,000 Japanese households, with comparable instruments fielded to 4,000 households each in the United States, Germany, and China.[1] Respondents provided demographic information, reported on asset holdings, and answered questions measuring financial literacy, risk preferences, and macroeconomic expectations. Sampling in each country followed the population distribution by gender and age group. We focus on crypto assets—defined to include stablecoins, security tokens (STs), and non-fungible tokens (NFTs)—as the target investment class. The relevant survey questions are as follows.[2]

First Stage In the first stage, respondents reported the current allocation of their financial portfolios. This stage identified whether individuals already held crypto assets before any information treatment and, if so, the share of total financial assets allocated to them. Investment status was captured through a binary indicator, $D^{PriorProb}$, equal to one if the respondent currently held any crypto assets and zero otherwise. Portfolio shares were measured by $CryptoShare^{Prior}$, the proportion of total financial assets allocated to crypto assets. The investment status question (Q18) was shown only to respondents aware of digital financial instruments such as crypto assets, stablecoins, STs, and NFTs. Respondents were asked to classify their experience as: (1) never invested; (2) have invested but do not currently hold; or (3) currently hold. Portfolio shares were then elicited in Q20, which asked respondents to allocate 100% of their financial assets across eight categories: cash and deposits; domestic stocks; domestic bonds; foreign stocks; foreign bonds; gold; new digital financial instruments (crypto assets, stablecoins, STs, NFTs); and other.

Summary statistics (Table 1) indicate that Japanese households allocate a smaller portfolio share to

[1] The survey was conducted by INTAGE Inc., a professional survey research firm.
[2] A complete list of survey items is provided in Appendix Appendix A.

crypto assets compared with households in the United States, Germany, and China. The probability of holding crypto assets is 4.75% in Japan, 22.81% in the United States, 19.34% in Germany, and 19.15% in China. The corresponding average portfolio shares are 0.56%, 3.95%, 3.21%, and 2.01%, respectively. These cross-country differences provide important context for the empirical analysis.

In Japan, gains from trading crypto assets are classified as "miscellaneous income" under the Income Tax Act, rather than as capital gains from financial securities. This means they are subject to progressive income tax rates that can reach up to 55% when combined with local inhabitant taxes, and cannot be offset against losses from other asset classes such as stocks or mutual funds. In contrast, many countries—including the United States and Germany—apply capital gains tax rules to crypto assets, often at lower rates and with preferential treatment for long-term holdings. The relatively high marginal tax rates in Japan, combined with the inability to net gains and losses across asset categories, may reduce the attractiveness of crypto assets as an investment vehicle for Japanese households. This tax treatment could therefore be one contributing factor to the lower participation and smaller portfolio shares observed in Japan relative to other major economies.

Second Stage In the second stage, respondents were randomly assigned to one control group (25%) and three treatment groups (25% each):

- **Control Group** (25%): No information.
- **Treatment Group 1** (25%): Information about the historical returns of Bitcoin over the past five and ten years.
- **Treatment Group 2** (25%): Information about the historical returns of major stock indices over the past five and ten years (e.g., Nikkei 225 for Japan; S&P 500 for the United States; DAX for Germany; and Shanghai Composite Index for China).
- **Treatment Group 3** (25%): Information about one-year-ahead inflation forecasts published by the International Monetary Fund (IMF) for each country.

For example, Treatment 1 respondents were told:

- *"The price of Bitcoin has increased by more than 6 times in the past five years and by more than 100 times in the past decade."*

Our analysis focuses on the Bitcoin-return information in Treatment 1.[3]

Third Stage In the third stage, respondents again reported their portfolio allocations—this time their ideal allocation at year-end, after the information treatment. This mirrors the format of Q20 (Q37 in

[3]The effects of Treatment 2 and Treatment 3 are analyzed in detail in Nakazono et al. (2025).

the post-treatment questionnaire) and allows us to measure changes in intended portfolio composition attributable to the treatment.

2.2 Financial Sophistication

We define financial sophistication as a combination of financial literacy and risk preferences. We focus on this measure for two reasons. First, prior research finds that financially literate individuals are more likely to hold risky assets such as stocks (Christelis et al., 2010; van Rooij et al., 2011). We measure financial literacy as the total number of correct answers to Q25–Q29 in Appendix Appendix A. These questions include the widely used "Big Three" items developed by Lusardi and Mitchell (2014)—covering interest rate calculations (numeracy), the effect of inflation on purchasing power, and the concept of risk diversification—which have become a standard benchmark in the measurement of financial literacy across countries. Specifically: Numeracy (Q25–Q26) — basic interest rate calculations for short and longer time horizons; Inflation (Q27) — understanding the impact of inflation on real returns; Risk diversification (Q28) — recognizing that holding a diversified mutual fund is generally less risky than holding a single company's stock.

Second, willingness to take financial risks also predicts risky asset ownership (Christelis et al., 2010; Lusardi and Mitchell, 2014). Following the literature, we measure risk preferences and test whether greater risk tolerance is associated with both the extensive and intensive margins of crypto-asset ownership.

2.3 Subjective Uncertainty

We define subjective uncertainty as the dispersion in respondents' own probability distributions for key macroeconomic variables—specifically, the economic growth rate and the inflation rate—over a one-year horizon. Unlike conventional uncertainty measures derived from expert forecasts or market data, our approach captures household-level beliefs directly, allowing us to incorporate heterogeneity in perceived macroeconomic risk.

To elicit these beliefs, we used a two-step procedure following Coibion et al. (2024). First, in Q34 (economic growth) and Q35 (inflation), respondents identified numerical thresholds for what they considered to be "high," "medium," and "low" outcomes for the respective variable. Second, in Q34.1 and Q35.1, they assigned probabilities to each of these scenarios such that the total equaled 100%. For example, a respondent might assign a 20% probability to high growth, 50% to medium growth, and 30% to low growth. This elicitation format yields a respondent-specific probability distribution for each macroeconomic variable.[4]

[4]While we collected uncertainty measures for growth, inflation, and exchange rates, our main analysis focuses on the first two

For each respondent and each variable, we measure uncertainty as the absolute difference between the "high" and "low" values provided in the scenario elicitation. A larger difference indicates greater perceived uncertainty about the variable's future value. The point forecast for each variable is calculated as the probability-weighted average of the three scenarios. For example, a respondent assigning a "high" inflation rate of 8%, a "medium" rate of 4%, and a "low" rate of 0%, with respective probabilities of 20%, 50%, and 30%, would have an inflation forecast of 3.6% and an uncertainty measure of 8 percentage points.

In addition to the uncertainty measures, we include respondents' point forecasts for inflation (elicited alongside the scenario probabilities) as a separate control variable. This distinction allows us to examine whether cryptocurrency investment is more strongly related to the expected level of macroeconomic changes or to the uncertainty surrounding them.

3 Who Holds Crypto Assets? Effects of Demographics and Financial Sophistication

3.1 Effects of Demographics on Crypto-Asset Holding

We begin by examining which households hold crypto assets, focusing on demographic characteristics and identifying those for whom crypto assets comprise a substantial share of total financial wealth.

To analyze the extensive margin decision—whether to own any crypto assets—we estimate:

$$\begin{aligned} D_i^{PriorProb} = \beta_0 &+ \beta_1 \, \textit{Male}_i + \beta_2 \, \textit{Age}_i + \beta_3 \, \textit{Income}_i + \beta_4 \, \textit{Education}_i + \beta_5 \, \textit{Time preference}_i \\ &+ \beta_6 \, \textit{Risk preference}_i + \beta_7 \, \textit{Inflation forecast}_i + \beta_8 \, \textit{Uncertainty of growth rate}i \\ &+ \beta_9 \, \textit{Uncertainty of inflation}_i + \gamma_1 D_i^{US} + \gamma_2 D_i^{GE} + \gamma_3 D_i^{CH} + \mathbf{X}\delta + \varepsilon_i, \end{aligned}$$

where $D_i^{PriorProb}$ equals one if respondent i currently holds any crypto assets and zero otherwise. Respondents who have previously invested in crypto assets but no longer hold them are excluded. $\textit{Male}_i$ is a dummy equal to one for male respondents; $\textit{Age}_i$ is age in years; $\textit{Income}_i$ is total annual pre-tax household income; and $\textit{Education}_i$ equals one if the respondent has a university degree or higher. $\textit{Time preference}_i$ is measured from responses to hypothetical intertemporal choice questions,[5] and $\textit{Risk preference}_i$ captures

variables. This choice reflects both their central role in household financial decisions (Coibion et al., 2024; Stix, 2021) and the more direct conceptual link to cryptocurrency demand: heightened inflation uncertainty or weak growth prospects may lead households to view cryptocurrencies as hedges against currency debasement or as alternative investments during economic downturns.

[5]Based on Q31 of the survey. Lower values indicate greater patience, while higher values reflect stronger present bias.

willingness to take financial risks.[6] D^{US}, D^{GE}, and D^{CH} are country fixed effects for the United States, Germany, and China, respectively. The vector $\mathbf{X}$ includes additional controls, such as marital status, forecasted economic growth, and financial literacy.

For the intensive margin—the share of total financial assets allocated to crypto assets—we estimate:

$$\begin{aligned} CryptoShare_i^{Prior} = \beta_0 &+ \beta_1 \textit{ Male}_i + \beta_2 \textit{ Age}_i + \beta_3 \textit{ Income}_i + \beta_4 \textit{ Education}_i + \beta_5 \textit{ Time preference}_i \\ &+ \beta_6 \textit{ Risk preference}_i + \beta_7 \textit{ Inflation forecast}_i + \beta_8 \textit{ Uncertainty of growth ratei} \\ &+ \beta_9 \textit{ Uncertainty of inflation}_i + \gamma_1 D_i^{US} + \gamma_2 D_i^{GE} + \gamma_3 D_i^{CH} + \mathbf{X}\delta + \varepsilon_i, \end{aligned}$$

where $CryptoShare_i^{Prior}$ denotes the percentage of total financial assets invested in crypto assets.

Column (1) of Table 2 reports estimates for the extensive margin. Younger, higher-income, less-educated, and male respondents are significantly more likely to hold crypto assets. Column (2) presents results for the intensive margin, showing that these same demographic groups allocate a larger proportion of their portfolios to crypto assets.

Cross-country differences are substantial. Relative to Japan, respondents in the United States and Germany are about 11.5–11.7 percentage points more likely to own crypto assets and hold approximately 2.1–2.5 percentage points more of their portfolios in them. In contrast, the estimated differences for China are small and statistically insignificant. These patterns indicate that Japan lags behind other major economies in crypto adoption on both the extensive and intensive margins.

3.2 Effects of Financial Sophistication on Holding Crypto Assets

The previous subsection documented correlations between demographic characteristics and crypto-asset ownership. These correlations, however, do not necessarily imply causality. We now focus on financial sophistication—measured as a combination of financial literacy and risk preferences—which prior research identifies as an important determinant of investment behavior and portfolio allocation.

[6] Calculated as the average of responses to Q29 and Q30, where higher values indicate greater willingness to pay for risky assets. The most risk-averse option is coded as 0, with progressively higher integers assigned to more risk-tolerant responses.

3.2.1 Financial Literacy

We begin by examining whether financially literate individuals are more likely to own crypto assets and, if so, whether they allocate a larger portfolio share to them. The following specifications are estimated:

$$D_i^{PriorProb} = \beta_0 + \beta_1 \textit{ Financial literacy}_i + \varepsilon_i, \tag{1}$$
$$CryptoShare_i^{Prior} = \beta_0 + \beta_1 \textit{ Financial literacy}_i + \varepsilon_i,$$

where *Financial literacy*$_i$ is the total number of correct answers to financial knowledge questions,[7] and the dependent variables are as defined in Section 3.

To address potential endogeneity—arising, for example, if financial literacy correlates with unobserved cognitive ability—we estimate Equation (1) using two instrumental variables: (i) whether the respondent's parents or siblings have investment experience, and (ii) whether the respondent has received financial education.[8]

The results in Table 3 indicate that financial literacy has a statistically significant and positive effect on the probability of owning crypto assets across all four countries. Table 4 shows similar patterns for the intensive margin: higher financial literacy is associated with a greater share of household portfolios allocated to crypto assets. The effect is particularly pronounced in Germany, where a clear regulatory framework allows retail investors to access crypto assets through regulated financial institutions.[9] Taken together, these findings suggest that financially literate individuals are more likely to participate in crypto markets and commit a larger proportion of their assets to them.[10]

3.2.2 Risk Preference

We next consider individual risk preferences, which capture willingness to take on financial risk and have been shown to influence asset allocation decisions. Figure 1 provides visual evidence that higher risk tolerance is associated with both the decision to own crypto assets (extensive margin) and the share of the portfolio allocated to them (intensive margin). Respondents with higher risk preference scores are substantially more likely to hold any crypto assets and to assign a larger share of their portfolios to them.

Regression results in Table 2 confirm these patterns: risk preferences are positively and significantly associated with both margins of crypto ownership. Individuals with lower risk tolerance are less likely to

[7] Standardized by country to account for differences in absolute literacy levels. Based on Q25–Q29 in the survey.

[8] See Lusardi and Mitchell (2014) for a discussion of these instruments.

[9] See Hackethal et al. (2022) and Bannier et al. (2019).

[10] Complementary evidence from Aiello et al. (2023b) shows that gains in crypto wealth can lead to increased household consumption, suggesting that crypto adoption may have aggregate demand implications.

enter the crypto market and tend to hold smaller positions when they do invest. These findings are consistent with the speculative and volatile nature of cryptocurrencies, which may deter risk-averse investors.

4 Effects of Macroeconomic Uncertainty on Crypto-Asset Holding

We now examine whether macroeconomic uncertainty influences households' decisions to hold crypto assets. A growing body of research highlights that perceived uncertainty about key macroeconomic variables can shape expectations and financial behavior (Coibion et al., 2024; Georgarakos et al., 2024; Kumar et al., 2023). When households are uncertain about future inflation or economic growth, they may seek alternative assets such as cryptocurrencies, which are often regarded either as hedges against inflation or as speculative investments (Weber et al., 2023).

Our measures of uncertainty are derived from respondents' subjective probability distributions over "high," "medium," and "low" scenarios for economic growth and inflation, as elicited in Q34–Q35.1. For each respondent and each variable, we measure uncertainty as the absolute difference between the "high" and "low" values reported for that variable's scenarios. The corresponding point forecast is calculated as the probability-weighted average of the three scenarios.[11]

Table 2 presents regression results for both the extensive margin—whether a household owns any crypto assets—and the intensive margin—the share of the portfolio allocated to crypto assets. Greater uncertainty about inflation and economic growth is positively and significantly associated with both ownership probability and portfolio share, even after controlling for demographic characteristics, financial literacy, and risk preferences.

The point forecast for inflation also exhibits a positive and statistically significant association with crypto ownership and allocation. This suggests that both the expected level of inflation and the uncertainty surrounding it contribute to crypto adoption, consistent with the view that cryptocurrencies are perceived as a hedge or store of value when macroeconomic stability is in doubt.

5 Effects of Information Provision on Crypto-Asset Holding

We next examine whether providing salient information about the historical performance of Bitcoin influences households' willingness to hold crypto assets and the share of their portfolios allocated to them.

[11] While not used in our main analysis, we also elicited subjective uncertainty for the domestic currency's exchange rate against the U.S. dollar in Q36. Respondents assigned probabilities to seven possible percentage changes in the exchange rate, ranging from an appreciation of 25% or more to a depreciation of 25% or more.

If low adoption rates are partly due to limited information, then an informational intervention could shift both ownership intentions and allocation preferences.

Our analysis focuses on Treatment Group 1 of the RCT, in which respondents were informed that "The price of Bitcoin has increased by more than six times in the past five years and by more than 100 times in the past decade." We assess treatment effects on two outcomes:

1. Ownership intention: whether a respondent who did not previously own crypto assets reports an intention to own them after receiving the information.
2. Portfolio share intention: the desired percentage of the portfolio allocated to crypto assets immediately after the information treatment.

For the ownership intention outcome, we estimate:

$$D_i^{PosteriorProb} = \beta_0 + \beta_1 \textit{Treatment}_i + \gamma_1 D_i^{US} + \gamma_2 D_i^{GE} + \gamma_3 D_i^{CH} + \varepsilon_i,$$

where $D_i^{PosteriorProb}$ equals one if respondent i did not own crypto assets prior to the information provision and subsequently reported a desired portfolio share of more than 1% in 2025, and zero if the respondent reported a 0% share both before and after treatment. $\textit{Treatment}_i$ is a dummy equal to one for respondents in Treatment Group 1, and D^{US}, D^{GE}, and D^{CH} are country fixed effects for the United States, Germany, and China.

Table 5 shows that providing historical return information significantly increases the probability of intending to purchase crypto assets. The average treatment effect is 3.8 percentage points across all countries, with substantial heterogeneity: 9.6 percentage points in Germany, 3.5 in Japan, and statistically insignificant effects in the United States (2.5, insignificant) and China (0.3). These differences suggest that national context—including baseline adoption rates, familiarity with crypto assets, and attitudes toward financial innovation—conditions responsiveness to information. For example, The absence of a statistically significant effect in the United States may be related to higher baseline familiarity with cryptocurrency markets, reducing the marginal impact of the treatment information.

For the portfolio share outcome, we estimate:

$$CryptoShare_i^{Posterior} = \beta_0 + \beta_1 \textit{Treatment}_i + \beta_2 \, CryptoShare_i^{Prior} + \gamma X + \varepsilon_i,$$

where $CryptoShare_i^{Posterior}$ is the respondent's desired crypto-asset portfolio share after treatment, $CryptoShare_i^{Prior}$ is the pre-treatment share, and X includes country dummies.

Results in Table 6 indicate that information provision increases desired portfolio shares by an average of 0.58 percentage points. Again, responses vary by country: the United States shows the largest increase

(1.08 percentage points), followed by Germany (0.76) and Japan (0.64), while the estimated effect for China is negative and statistically insignificant. In China, regulatory restrictions on cryptocurrency trading and exchange operations have been much stricter, with outright bans on certain activities since 2021, which may limit both the perceived feasibility and attractiveness of holding crypto assets, regardless of return information. These country-specific institutional and regulatory contexts—alongside differences in market infrastructure, access to trading platforms, and public attitudes toward digital assets—likely contribute to the heterogeneous treatment effects observed across countries.

Taken together, these results suggest that salient historical performance information can shift both participation intentions and allocation preferences toward crypto assets, though the magnitude of the effect depends strongly on country context. This pattern is consistent with prior evidence that informational interventions influence household financial decisions most when baseline knowledge or experience is limited (Duflo and Saez, 2003; Lusardi and Mitchell, 2014). In our setting, the stronger responses in Germany and Japan may reflect lower prior exposure to crypto-asset return histories, greater salience of the provided information, or differences in regulatory and market environments.

6 Conclusion

This study examines household cryptocurrency investment behavior using original survey and experimental data from four countries: Japan, the United States, Germany, and China. We address three questions: (i) which types of individuals invest in crypto assets, (ii) how macroeconomic uncertainty influences adoption, and (iii) whether providing salient return information can shift investment intentions.

We document three main findings. First, crypto-asset holders tend to be younger, have higher incomes, and exhibit greater financial sophistication, measured through both financial literacy and willingness to take financial risk. These patterns are consistent across countries, though Japan shows particularly low rates of ownership and portfolio allocation, suggesting demographic and sophistication-related barriers to adoption.

Second, both the expected level and perceived uncertainty of macroeconomic conditions—especially inflation and economic growth—are positively associated with crypto-asset ownership and portfolio share. This supports the interpretation of cryptocurrencies as either hedges against currency debasement or speculative responses to macroeconomic instability.

Third, providing salient information on Bitcoin's historical returns significantly increases stated ownership intentions and desired portfolio shares in several countries, though the magnitude of the effect varies widely. Germany and Japan show the largest responses in terms of participation (ownership intention), while effects in the United States and China are statistically insignificant for this outcome. By

contrast, in the portfolio share regressions, the United States exhibits the largest and statistically significant increase, followed by Germany and Japan, whereas the effect for China remains insignificant. These heterogeneous responses suggest that the impact of information provision depends on prior knowledge, baseline adoption rates, and the broader regulatory and market environment, in line with prior evidence that informational interventions are most effective when initial awareness is low (Duflo and Saez, 2003; Lusardi and Mitchell, 2014).

Overall, our findings highlight the importance of demographic characteristics, subjective beliefs, and information access in shaping household participation in crypto-asset markets. They also underscore the need for context-specific analysis: the same policy or market intervention may have markedly different effects across countries. For regulators, these results suggest that consumer education initiatives could influence crypto adoption patterns, particularly in markets where awareness remains low. For researchers, they point to the value of integrating survey-based measures of expectations and uncertainty with experimental interventions to better understand household financial decision-making in emerging asset classes.

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Table 1: Summary Statistics

	Japan	United States	Germany	China
Age	51.45	47.55	49.41	46.69
Male (%)	49.67	49.45	49.90	50.62
High education (%)	42.74	35.88	17.30	59.03
Forecast of inflation rates (%)	11.72	12.21	9.63	15.41
Forecast of economic growth (%)	4.65	9.05	4.89	14.13
Uncertainty of inflation rates (%)	30.02	44.91	36.68	27.21
Uncertainty of GDP growth rates (%)	27.75	43.78	35.68	25.93
Financial literacy	1.19	1.36	1.27	1.10
Probability of crypto-asset holding ($D^{PriorProb}$; %)	4.75	22.81	19.34	19.15
Crypto assets in portfolio ($CryptoShare^{Prior}$; %)	0.56	3.95	3.21	2.01
Observations	10,000	4,000	4,000	4,000

Notes: High education is a dummy variable that takes 1 if the respondent has a university degree or higher and 0 otherwise. Forecasts of inflation and GDP growth rates represent expected values, calculated as the probability-weighted averages of the "high," "medium," and "low" scenario values provided in Q34–Q35.1. Uncertainty of inflation and GDP growth rates is measured as the absolute difference between the "high" and "low" scenario values reported for each variable. "Financial literacy" is the total number of correct answers to the questions measuring financial literacy. Probability of crypto-asset holding is defined as 1 if the respondent currently holds crypto assets and 0 otherwise. "Crypto assets in portfolio" represents the proportion (%) of crypto assets in the portfolio.

Table 2: Who Holds Crypto Assets?

	(1) $D^{PriorProb}$ (%)	(2) $CryptoShare^{Prior}$ (%)
Male (dummy)	5.736***	0.943***
	(0.511)	(0.125)
Age	−3.582***	−0.518***
	(0.225)	(0.039)
Income	1.347***	0.146***
	(0.019)	(0.021)
High education	−1.629***	−0.332***
	(0.501)	(0.108)
Risk preference	1.914***	0.248***
	(0.266)	(0.057)
Forecast of inflation rates	5.173***	1.128**
	(1.818)	(0.576)
Uncertainty of economic growth	0.125***	0.009**
	(0.017)	(0.004)
Uncertainty of inflation rates	4.368***	0.798**
	(1.423)	(0.348)
Country dummies		
United States	11.457***	2.458***
	(0.761)	(0.207)
Germany	11.748***	2.067***
	(0.705)	(0.180)
China	2.491**	−0.054
	(1.109)	(0.054)
Control variables	✓	✓
Observations	16,428	19,004

Notes: The dependent variables are $D_i^{PriorProb}$ and $CryptoShare_i^{Prior}$. $D_i^{PriorProb}$ is a dummy variable that takes one if the respondent i currently holds crypto assets, and zero if they have never done so. Respondents who previously invested but no longer hold crypto assets are excluded from the analysis. $CryptoShare_i^{Prior}$ represents the proportion (%) of crypto assets in the portfolio of each respondent i. *High education* is a dummy variable that takes 1 if the respondent has a university degree or higher and otherwise 0. *Forecast of inflation rates* represents expected inflation rates, calculated as the probability-weighted average of the "high," "medium," and "low" scenario values for inflation. *Uncertainty of inflation* and *economic growth rates* is measured as the absolute difference between the high and low scenario values for each variable. The other control variables are omitted to conserve space. Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 3: Does Financial Literacy Matter for Holding Crypto Assets? Results from an Instrumental Variables Approach

	(1) Japan	(2) United States	(3) Germany	(4) China
Financial literacy	0.219***	0.708***	1.177***	0.874***
	(0.019)	(0.096)	(0.161)	(0.108)
Constant	0.049***	0.241***	0.229***	0.248***
	(0.003)	(0.013)	(0.021)	(0.017)
Observations	9,696	3,305	3,294	2,981

Notes: We regress $D_i^{PriorProb}$ on financial literacy. $D_i^{PriorProb}$ is a dummy variable that takes one if the respondent i currently holds crypto assets, and zero if they have never done so. Respondents who previously invested but no longer hold crypto assets are excluded from the analysis. "Financial literacy" is the total numbers of correct answers to the questions measuring financial literacy. To address the endogeneity, we use the two instruments: (1) whether parents or siblings have investment experience; (2) whether respondents have received financial education. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 4: Robustness Check: IV Estimates of the Effect of Financial Literacy on the Share of Crypto Assets in the Portfolio

	(5) Japan (%)	(6) United States (%)	(7) Germany (%)	(8) China (%)
Financial literacy	2.665***	9.267***	13.765***	7.146***
	(0.349)	(0.999)	(1.893)	(0.997)
Constant	0.558***	3.954***	3.205***	2.006***
	(0.051)	(0.229)	(0.269)	(0.145)
Observations	10,000	4,000	4,000	4,000

Notes: We regress $CryptoShare_i^{Prior}$ on financial literacy. $CryptoShare_i^{Prior}$ represents the current proportion (%) of crypto assets in the portfolio of each respondent i. "Financial literacy" is the total numbers of correct answers to the questions measuring financial literacy. To address the endogeneity, we use the two instruments: (1) whether parents or siblings have investment experience; (2) whether respondents have received financial education. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 5: Does the Provision of Information Lead to the Purchase of Crypto Assets?

	(1) All countries (%)	(2) Japan (%)	(3) United States (%)	(4) Germany (%)	(5) China (%)
$D^{Treatment}$	3.787***	3.486***	2.471	9.560***	0.288
	(0.825)	(0.945)	(2.364)	(2.312)	(2.265)
Country dummies					
United States	22.074***				
	(1.273)				
Germany	22.265***				
	(1.249)				
China	21.679***				
	(1.227)				
Constant	10.350***	10.498***	33.085***	29.756***	33.744***
	(0.600)	(0.620)	(1.660)	(1.569)	(1.584)
Observations	9,858	4,815	1,614	1,679	1,750

Notes: All coefficients are multiplied by 100 and expressed in *percentage points*. We regress $D_i^{PosteriorProb}$ on the treatment and country dummies. where $D_i^{PosteriorProb}$ is a dummy variable that takes the value of one if the respondent i did not own digital assets before the information provision and stated a desired portfolio share of digital assets exceeding 1% in 2025 after the provision. It takes the value of zero if the household reported a 0% share of digital assets both before and after the information provision. $D^{Treatment}$ is a treatment dummy that takes one if respondents are provided with information about the historical returns of Bitcoin. The coefficient values of some control variables are not reported. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 6: Does the Provision of Information Lead to the Purchase of Crypto Assets?: Robustness Check

	(1) All countries (%)	(2) Japan (%)	(3) U.S. (%)	(4) Germany (%)	(5) China (%)
$D^{Treatment}$	0.577***	0.636***	1.081**	0.760*	-0.064
	(0.145)	(0.169)	(0.453)	(0.393)	(0.303)
$CryptoShare^{Prior}$	0.404***	0.575***	0.271***	0.457***	0.366***
	(0.010)	(0.092)	(0.040)	(0.062)	(0.043)
United States	2.674***				
	(0.204)				
Germany	2.603***				
	(0.203)				
China	2.038***				
	(0.201)				
Constant	1.254***	1.115***	4.147***	3.597***	3.684***
	(0.129)	(0.105)	(0.293)	(0.270)	(0.205)
Observations	11,074	5,064	1,977	1,999	2,034
R-squared	0.177	0.184	0.078	0.226	0.098

Notes: We regress $CryptoShare_i^{Posterior}$ on the treatment and country dummies. $CryptoShare_i^{Posterior}$ represents the desired shares (in %) of crypto assets in i's portfolio in 2025. $CryptoShare_i^{Prior}$ represents the shares (in %) of crypto assets in i's portfolio in 2024. $D^{Treatment}$ is a treatment dummy that takes one if respondents are provided with information about the historical returns of Bitcoin. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

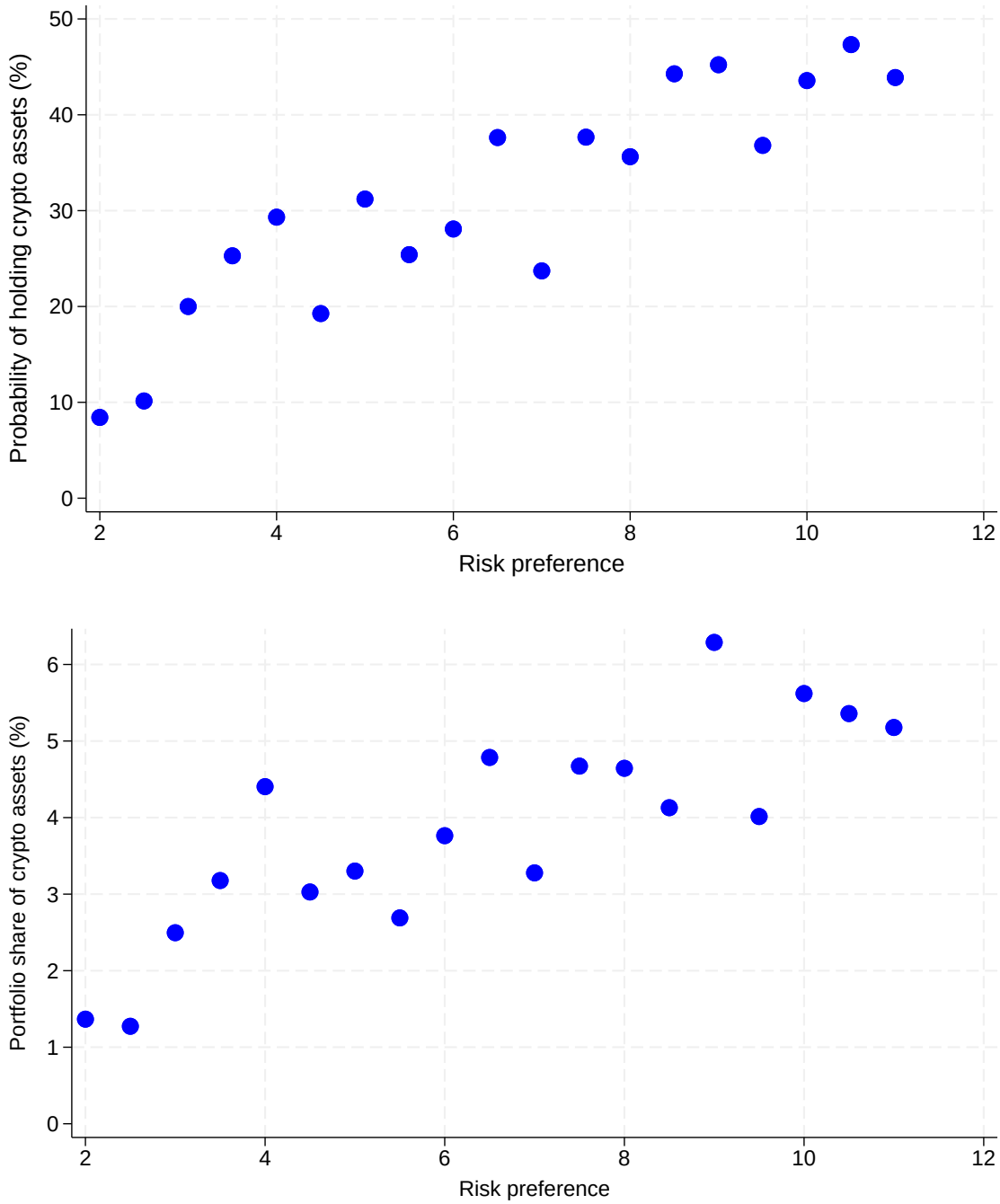

Figure 1: Relationship between individual risk preferences and cryptocurrency investment outcomes. The top panel plots the probability of holding any crypto assets, while the bottom panel shows the average portfolio share of crypto assets, both stratified by risk preference levels. Risk preference is measured as the average of responses to Q29 and Q30 in the survey, where higher values indicate greater willingness to pay for risky financial products. Specifically, response options are coded in ascending order, with the most risk-averse response ("I wouldn't buy it") assigned a score of 0, and each progressively more risk-tolerant choice assigned a higher integer.

Appendix A Questionnaire

Q1. Please select your gender (select only one).

(1) Male

(2) Female

Q2. Please choose your current age (select only one).

(1) 20 – 29 years old

(2) 30 – 39 years old

(3) 40 – 49 years old

(4) 50 – 59 years old

(5) 60 – 69 years old

(6) 70 – 79 years old

(7) 80 years old and over

Q3. Please choose your educational background. If you are still in school, please choose the school you last attended (select only one).

(1) Junior High School Graduate

(2) High School Graduate

(3) Vocational school graduate

(4) Junior college graduate

(5) University graduate

(6) Graduate degree

(7) Other

Q4. Please indicate your current marital status.

(1) Unmarried

(2) Married

Q5. Do you own a residence (including apartments, etc.) for you and your family to live in? Please do not include residences owned for investment purposes that are not used by you or your family.

*Please include cases where the property has not been registered or where the mortgage or other payments have not been completed.

(1) I own a home

(2) I purchased it myself

(3) I acquired it through inheritance, etc.

(4) I don't own a home

(5) I don't own a home (e.g., rent)

Q6. Please indicate your total annual income (before taxes) for the last year.

(1) No income

(2) $1 – $9,999

(3) $10,000 – $19,999

(4) $20,000 – $29,999

(5) $30,000 – $39,999

(6) $40,000 – $49,999

(7) $50,000 – $59,999

(8) $60,000 – $69,999

(9) $70,000 – $79,999

(10) $80,000 – $89,999

(11) $90,000 – $99,999

(12) $100,000 – $119,999

(13) $120,000 – $139,999

(14) $140,000 – $159,999

(15) $160,000 – $179,999

(16) $180,000 – $199,999

(17) $200,000 or more

(18) I don't know

(19) Prefer not to say

Q7. How much in financial assets do you own? Please select the amount that you believe is closest.

*Including crypto-assets and other digital financial products. However, please exclude life insurance and physical assets such as real estate and cars.

*Even if you have any loans, you do not have to subtract the amount of those loans.

(1) $0 – $9,999

(2) $10,000 – $29,999

(3) $30,000 – $49,999

(4) $50,000 – $99,999

(5) $100,000 – $149,999

(6) $150,000 – $199,999

(7) $200,000 – $249,999

(8) $250,000 – $299,999

(9) $300,000 – $399,999

(10) $400,000 – $499,999

(11) $500,000 – $599,999

(12) $600,000 – $699,999

(13) $700,000 – $799,999

(14) $800,000 – $899,999

(15) $900,000 – $999,999

(16) $1,000,000 or more

(17) I don't know

(18) Prefer not to say

Q8. If you don't mind answering this question, what is the balance of loans/debt you have? Please select the amount that you believe is closest.

(1) $0 – $9,999

(2) $10,000 – $29,999

(3) $30,000 – $49,999

(4) $50,000 – $99,999

(5) $100,000 – $149,999

(6) $150,000 – $199,999

(7) $200,000 – $249,999

(8) $250,000 – $299,999

(9) $300,000 – $399,999

(10) $400,000 – $499,999

(11) $500,000 – $599,999

(12) $600,000 – $699,999

(13) $700,000 – $799,999

(14) $800,000 – $899,999

(15) $900,000 – $999,999

(16) $1,000,000 or more

(17) I don't know

(18) Prefer not to say

Q9. How familiar are you with each of the following financial products?

(1) Domestic stocks (Stocks issued by domestic companies)

(2) Domestic bonds (U.S. government bonds, municipal bonds, bonds issued by domestic companies, etc.)

(3) Foreign stocks (Stocks issued by foreign companies)

(4) Foreign bonds (Bonds issued by foreign governments, companies, etc.)

(5) Foreign exchange futures/options such as FX (Derivatives related to foreign exchange [Financial derivatives])

(6) Don't know/Have never heard of them

(7) Have heard of them, but don't know much about them

(8) Not enough to teach others, but have some knowledge

(9) I know enough about it to teach others

Q10. Please indicate your investment experience in the following financial products (Select only one of each)

(1) Domestic stocks (Stocks issued by domestic companies)

(2) Domestic bonds (U.S. government bonds, municipal bonds, bonds issued by domestic companies, etc.)

(3) Foreign stocks (Stocks issued by foreign companies)

(4) Foreign bonds (Bonds issued by foreign governments, companies, etc.)

(5) Foreign exchange futures/options such as FX (Derivatives related to foreign exchange [Financial derivatives])

(6) Never invested

(7) Have invested but do not currently hold

(8) Currently hold

Q11. Do your parents or siblings have experience investing in stocks, bonds, etc.?

(1) Yes

(2) No

(3) I don't know

Q12. Have you ever received financial education at home, school, or work?

*Financial education is an educational program that teaches students about the overall workings of money, including economic policy, asset management, and financial troubles.

(1) Yes

(2) No

(3) I don't remember

Q13. What are your thoughts on domestic stocks and investment trusts that invest mainly in domestic stocks (all denominated in domestic currency)? (Multiple selections)

(1) I would expect profits

(2) Diversifying investments across financial products with different price fluctuations reduces investment risk

(3) Convenience

(4) Interest in the product

(5) I am concerned about large price fluctuations

(6) I am concerned about losses caused by conflicts of interest of brokers

(7) I am concerned about losses resulting from fraudulent accounting practices of the issuer (e.g., window dressing)

(8) I am concerned about losses caused by unfair trading by investors (e.g., insider trading)

(9) I don't understand the system, risks, etc., of the product

(10) Worry about the investment method/utilization method is difficult and cannot be mastered

(11) There is a risk that investor/consumer protection may not be sufficient

(12) I do not trust the issuer or intermediary

(13) Worry about leakage of personal information

(14) Worry about misuse of identity authentication, identity theft fraud, etc.

(15) Disadvantageous tax treatment

(16) Difficult to use due to strict regulations

(17) Other

(18) No particular impressions

Q14. What are your thoughts on foreign stocks, and investment trusts that invest mainly in foreign stocks (all denominated in foreign currencies)? (Multiple selections)

(1) I would expect profits
(2) Diversifying investments across financial products with different price fluctuations reduces investment risk
(3) Convenience
(4) Interest in the product
(5) I am concerned about large price fluctuations
(6) I am concerned about losses caused by conflicts of interest of brokers
(7) I am concerned about losses resulting from fraudulent accounting practices of the issuer (e.g., window dressing)
(8) I am concerned about losses caused by unfair trading by investors (e.g., insider trading)
(9) I don't understand the system, risks, etc., of the product
(10) Worry about the investment method/utilization method is difficult and cannot be mastered
(11) There is a risk that investor/consumer protection may not be sufficient
(12) I do not trust the issuer or intermediary
(13) Worry about leakage of personal information
(14) Worry about misuse of identity authentication, identity theft fraud, etc.
(15) Disadvantageous tax treatment
(16) Difficult to use due to strict regulations
(17) Other
(18) No particular impressions

Q15. What are your thoughts on foreign exchange futures/options such as FX? (Multiple selections)

(1) I would expect profits
(2) Diversifying investments across financial products with different price fluctuations reduces investment risk
(3) Convenience
(4) Interest in the product
(5) I am concerned about large price fluctuations
(6) I am concerned about losses caused by conflicts of interest of brokers

(7) I am concerned about losses resulting from fraudulent accounting practices of the issuer (e.g., window dressing)

(8) I am concerned about losses caused by unfair trading by investors (e.g., insider trading)

(9) I don't understand the system, risks, etc., of the product

(10) Worry about the investment method/utilization method is difficult and cannot be mastered

(11) There is a risk that investor/consumer protection may not be sufficient

(12) I do not trust the issuer or intermediary

(13) Worry about leakage of personal information

(14) Worry about misuse of identity authentication, identity theft fraud, etc.

(15) Disadvantageous tax treatment

(16) Difficult to use due to strict regulations

(17) Other

(18) No particular impressions

Q16. For each of the following financial products, select the response that best describes your investment gains/losses (yield) since you started investing.

*For instance, if your initial investment of $10,000 has now grown to $15,000, respond "+50%."

- Domestic stocks and investment trusts that invest mainly in domestic stocks (all denominated in domestic currency)
- Foreign stocks, and investment trusts that invest mainly in foreign stocks (all denominated in foreign currencies)
- Foreign exchange futures/options such as FX

(1) $+100\%$ or more of the investment principal

(2) $+50\%$ or more of the investment principal

(3) $+30\%$ or more of the investment principal

(4) $+10\%$ or more of the investment principal

(5) $+1\%$ or more of the investment principal

(6) Virtually no gain/loss

(7) -1% or less of the investment principal

(8) -10% or less of the investment principal

(9) -30% or less of the investment principal

(10) -50% or less of the investment principal

Q17. How familiar are you with each of the following (crypto assets, etc.)?

- **Crypto assets**
  Property value that can be exchanged over the Internet using distributed ledger technology called blockchain and know-how of tokens (coins), virtual currencies: e.g. Bitcoin, Ethereum, Litecoin, Ripple, Stellar
- **Stablecoin**
  Virtual currencies designed to be linked (pegged) to a stable asset such as the US dollar or gold: e.g. USDT, USDC, BUSD
- **ST**
  Security token is a digital security that applies distributed ledger technology called blockchain and know-how of tokens (coins) to securities
- **NFTs**
  Non-fungible token, digital tokens without substitutability issued using distributed ledger technology called blockchain or know-how of tokens (coins): e.g. Cryptokitties (games), CryptoPunks (digital art)
- **CBDC**
  Digital currency issued by a central bank

(1) Don't know/Have never heard of it

(2) Have heard of them, but don't know much about them

(3) Not enough to teach others, but have some knowledge

(4) I know enough about it to teach others. I know a lot about it

Q18. We would like to ask those who are aware of [new digital financial instruments (crypto-assets, stable coins, STs, NFTs)]. Please tell us about your experience investing in and using [new digital financial instruments (crypto-assets, stable coins, STs, NFTs)].

- **Crypto assets**
  Property value that can be exchanged over the Internet using distributed ledger technology called blockchain and know-how of tokens (coins), virtual currencies: e.g. Bitcoin, Ethereum, Litecoin, Ripple, Stellar
- **Stablecoin**
  Virtual currencies designed to be linked (pegged) to a stable asset such as the US dollar or gold: e.g. USDT, USDC, BUSD
- **ST**

Security token is a digital security that applies distributed ledger technology called blockchain and know-how of tokens (coins) to securities

- **NFTs**
  Non-fungible token, digital tokens without substitutability issued using distributed ledger technology called blockchain or know-how of tokens (coins): e.g. Cryptokitties (games), CryptoPunks (digital art)

(1) Never invested
(2) Have invested but do not currently hold
(3) Currently hold

Q19. We would like to ask this question to those who currently own [new digital financial instruments (crypto-assets, stable coins, STs, NFTs)]. How much of each of the following [new digital financial instruments (crypto-assets, stable coins, STs, NFTs)] do you own? Please base your answer on the current appraised value, not the amount at the time of purchase.

- Crypto assets
- Stablecoin
- ST
- NFTs

(1) Less than $100
(2) $100 – $499
(3) $500 – $999
(4) $1,000 – $4,999
(5) $5,000 – $9,999
(6) $10,000 – $49,999
(7) $50,000 – $99,999
(8) $100,000 – $499,999
(9) $500,000 – $999,999
(10) $1,000,000 or more

Q20. Please indicate the percentage of financial assets you own.

*Please exclude life insurance and physical assets such as real estate and cars.

*Please answer the percentage of each so that the total is 100%.

*Please enter "0" for those that you do not own.

(1) Cash and deposits

(2) Domestic stocks and mutual funds managed primarily in domestic stocks (all denominated in the local currency)

(3) Domestic bonds

(4) Foreign stocks and mutual funds managed primarily in foreign stocks (all denominated in foreign currencies)

(5) Foreign bonds

(6) Gold

(7) New digital financial instruments (crypto-assets, stable coins, STs, NFTs)

(8) Other

Q21. We would like to ask this question to those who currently own [new digital financial instruments (crypto-assets, stable coins, STs, NFTs)]. How has your investment in the following new digital financial instruments (crypto-assets, stable coins, STs, NFTs) changed over the past year? Please answer about changes in your investments without considering changes in market prices.

- Crypto assets
- Stablecoin
- ST
- NFTs

(1) I did not own this product a year ago

(2) Started investing in this product over the past year

(3) I owned this product a year ago and currently own it as well

(4) Increased the amount I invested

(5) Slightly increased the amount I invested

(6) Almost no change in the amount I invested

(7) Slightly decreased the amount I invested

(8) Decreased the amount I invested

Q22. You said you have owned crypto assets. What was your purpose in acquiring/owning crypto assets? (Multiple selections)

(1) Short-term (period of less than 1 year) investment purpose

(2) Long-term (period of more than 1 year) investment purpose

(3) To purchase other crypto assets, stablecoins, security tokens, or NFTs

(4) To use as a means of payment for the purchase of goods or services (except for the purchase of crypto assets or stablecoins)

(5) For remittance purposes

(6) Studying crypto assets, blockchain, etc.

(7) Received it as a gift/for free

(8) Participating in the crypto asset community (including for emotional support)

(9) Other

Q23. What do you think about [new digital financial instruments (crypto-assets, stable coins, STs, NFTs)]? (Multiple answers allowed)

(1) There is an expectation of profit and price appreciation

(2) Diversifying investments across financial products with different price fluctuations reduces investment risk

(3) Convenience

(4) Interest about new technology and products, and expectation of future potential

(5) I am concerned about large price fluctuations

(6) I am concerned about losses caused by conflicts of interest of brokers

(7) I am concerned about losses resulting from fraudulent accounting practices of the issuer (e.g., window dressing)

(8) I am concerned about losses caused by unfair trading by investors (e.g., insider trading)

(9) I do not understand the contents of the product

(10) Investment/utilization methods are difficult to understand and there is worry about not being able to use the products.

(11) Insufficient investor/consumer protection

(12) I do not trust the issuer or intermediary

(13) Expensive fees

(14) Worry about leakage of personal information

(15) Worry about misuse of identity authentication, identity theft fraud, etc.

(16) Disadvantageous tax treatment

(17) Difficult to use due to strict regulations

(18) Concern about whether crypto asset exchanges are engaged in segregated management (segregated management refers to a system in which the assets of the exchange and the assets of

investors are managed separately, meaning investor assets will be protected even if the exchange goes bankrupt)

(19) Few investment trusts, ETFs, etc., that invest in crypto assets makes investing in them inconvenient

(20) Other

(21) No particular impressions

Q24. Do you think the activities of your country's central bank help stabilize prices and the financial system?

(1) I think so

(2) If I had to choose, I'd say yes

(3) If I had to choose, I'd say no

(4) I don't think so

Q25. You will not be evaluated on whether you get this question right or wrong. Respond with what you personally think is correct. Suppose you deposited $10,000 into a savings account with an annual interest rate of 2%. How much do you think the balance for this account will be a year later, if there are no other deposits to or withdrawals from this account? Ignore any taxes on the interest.Select the response that is closest to your answer.

(1) $10,000

(2) $10,200

(3) $12,000

(4) I don't know

Q26. How much do you think the balance for the account will be five years later? Ignore any taxes on the interest.

(1) More than $11,000

(2) $11,000

(3) Less than $11,000

(4) I don't know

Q27. Which of the two options below do you think would have the higher actual yield?

(1) 2% interest rate on deposits, with a 0% future inflation rate

(2) 5% interest rate on deposits, with a 4% future inflation rate

(3) They would have the same actual yield

(4) I don't know

Q28. Please indicate how you feel about the following statement. "Buying shares of one company is usually a safer investment than buying mutual funds."

(1) I think this is correct

(2) I think this is incorrect

(3) I don't know

Q29. Suppose there is an investment product that offers a 50% chance of yielding a profit of $1,200, and a 50% chance of yielding a profit of $800. How much would you be willing to pay for this investment product? Select the maximum amount you would be willing to pay.

(1) I wouldn't buy it

(2) $800

(3) $820

(4) $840

(5) $860

(6) $880

(7) $900

(8) $920

(9) $940

(10) $960

(11) $980

(12) $1,000

(13) Buy even if it costs more than $1,000

Q30. Suppose there is an investment product that offers a 10% probability of yielding a profit of $10,000, and a 90% chance of yielding a profit of $1,000. How much would you be willing to pay for this investment product? Select the maximum amount you would be willing to pay.

(1) I wouldn't buy it

(2) $1,000

(3) $1,100

(4) $1,200

(5) $1,300

(6) $1,400

(7) $1,500

(8) $1,600

(9) $1,700

(10) $1,800

(11) $1,900

(12) $2,000

(13) $2,500

(14) Buy even if it costs more than $2,500

Q31. Imagine you were blessed with the opportunity to either receive $1,000 immediately, or receive more than $1,000 a year from now. How much money would you have to receive to want to choose the option to receive the money a year later?

(1) I would choose to receive the money immediately, regardless of how much I could have received a year later

(2) $1,005

(3) $1,010

(4) $1,020

(5) $1,030

(6) $1,040

(7) $1,050

(8) $1,060

(9) $1,070

(10) $1,080

(11) $1,090

(12) $1,100

(13) $1,150

(14) $1,200

(15) $1,300

(16) $1,500 or more

Q32. What do you think about the following statement? Please choose the one that best reflects your feelings. “Men should have paid jobs to keep their families financially stable.”

(1) I think so

(2) If I had to choose, I'd say yes

(3) If I had to choose, I'd say no

(4) I don't think so

(5) I prefer not to answer

Q33. What do you think about the following statement? Please choose the one that best reflects your feelings. "Men are better suited to be leaders of organizations."

(1) I think so

(2) If I had to choose, I'd say yes

(3) If I had to choose, I'd say no

(4) I don't think so

(5) I prefer not to answer

Computation of Forecasts and Uncertainty For each macroeconomic variable (economic growth and inflation), respondents first report the values they consider "high," "medium," and "low" for the variable over the next year (Q34, Q35). They then assign probabilities to each scenario so that the total equals 100% (Q34.1, Q35.1).

The forecast for each variable is calculated as the probability-weighted average of the three scenario values ("high," "medium," and "low"). The uncertainty measure is computed as the absolute difference between the "high" and "low" scenario values reported for that variable.

Q34 [Example for the U.S.'s case] We would like to ask you about U.S.'s economic growth rate over the next year. U.S.'s economic growth rate over the next year is the percentage change in the total value of new goods and services produced in the country over the next year compared to the total value over the past year. A positive growth rate means that the economy has grown, while a negative growth rate means that the economy has contracted.

What do you expect U.S.'s economic growth rate to be over the next year? Since there are many possibilities for the future, the economy may grow (with a positive growth rate) or shrink (with a negative growth rate).

What level of economic growth would you consider to be "high"?
What level of economic growth would you consider to be "medium"?
What level of economic growth would you consider to be "low"?

If you think the economy will grow, slide the bar to a positive number, and if you think the economy will shrink, slide the bar to a negative number. If you think the economy will remain the same (neither growing nor shrinking), leave the bar at "0".

*Drag the semi-transparent button and slide it to the position you think applies to the extent of your feelings. The first state with the button in the middle will be "the economy remains the same (neither growing nor shrinking)".

(1) I feel that the economic growth rate is "high" if: Economic growth rate $-$ 50% $\sim$ + 50%

(2) I feel that the economic growth rate is "medium" if: Economic growth rate $-$ 50% $\sim$ + 50%

(3) I feel that the economic growth rate is "low" if: Economic growth rate $-$ 50% $\sim$ + 50%

Q34.1. For each of the three cases you answered in the previous question, how likely do you think they are to occur in the future? Please enter so that the total of the three cases is "100%".

(1) The likelihood of achieving a "high" rate of economic growth

(2) The likelihood of achieving a "medium" rate of economic growth

(3) The likelihood of achieving a "low" rate of economic growth

Q35. How do you expect prices to change over the next year? Since there are many possibilities for the future, prices may rise or fall.

What level of price increase would you consider "high"?
What level of price increase would you consider "medium"?
What level of price increase would you consider to be "low"?

*If you think prices will rise, slide the bar to a positive number, and if you think prices will fall, slide the bar to a negative number. If you believe that prices will not change (neither rise nor fall), leave the value at "0".

*Drag the semi-transparent button and slide it to the position you think applies to the extent of your feelings. The first state with the button in the middle will be "the price remains the same (neither growing nor shrinking)".

(1) I feel that the rate of price increases is "high" if: Price increase rate $-$ 50% $\sim$ + 50%

(2) I feel that the rate of price increases is "medium" if: Price increase rate $-$ 50% $\sim$ + 50%

(3) I feel that the rate of price increases is "low" if: Price increase rate $-$ 50% $\sim$ + 50%

Q35.1. For each of the three cases you answered in the previous question, how likely do you think they are to occur in the future? Please enter so that the total of the three cases is "100%".

(1) The likelihood of a "high" price increase rate

(2) The likelihood of a "medium" price increase rate

(3) The likelihood of a "low" price increase rate

Q36. [Example for the U.S.'s case] We would like to know your outlook on the exchange rate of your country's currency. The exchange rate of a currency is the ratio of one currency to another. A rising currency means an increase in value against another currency, while a falling currency means a decrease in value against another currency. For example, if the exchange rate goes from 0.9 euro per dollar to 1.0 euro per dollar, the value of the dollar against the euro rises; if the exchange rate goes from 0.9 euro per dollar to 0.8 euro per dollar, the value of the dollar against the euro falls. For this question, you are asked to consider the probability that something will happen in the future. On a scale of 0 to 100, 0 means not likely at all and 100 means it will definitely happen.

For example, the following figures.

- 2-5% : "Almost unlikely"
- Around 18%: "Not very likely"
- 47-52%: "Very likely"
- Around 83%: "Extremely likely"
- 95-98%: "Almost certain"

How do you think the exchange rate of the U.S. dollar will change in the next year? There are various possibilities in the future, and the the U.S. dollar exchange rate may rise or fall. Please estimate the likelihood of each of the following 7 cases occurring. Make sure the total for all 7 cases adds up to 100%.

(1) Rise of 25% or more

(2) Rise of more than 15% but less than 25%

(3) Rise of more than 5% but less than 15%

(4) Fall of less than 5% or rise of less than 5%

(5) Fall of more than 5% but less than 15%

(6) Fall of more than 15% but less than 25%

(7) Fall of more than 25%

Q37. [For Control Group] Please indicate your ideal percentage of financial assets held in one year.
*Please exclude life insurance and physical assets such as real estate and cars.
*Please answer the percentage of each so that the total is 100%.

(1) Cash and deposits

(2) Domestic stocks and mutual funds managed primarily in domestic stocks (all denominated in the local currency)

(3) Domestic bonds

(4) Foreign stocks and mutual funds managed primarily in foreign stocks (all denominated in foreign currencies)

(5) Foreign bonds

(6) Gold

(7) New digital financial instruments (crypto-assets, stable coins, STs, NFTs)

(8) Other

Q37.1. [For Control Group 1] The price of Bitcoin has increased by more than 6 times in the past five years and by more than 100 times in the past decade. Please enter the number that best describes your ideal percentage of your personal financial holdings at the end of next year. Make sure that the numbers entered total 100.

*Please exclude life insurance and physical assets such as real estate and cars.

*Please answer the percentage of each so that the total is 100%.

(1) Cash and deposits

(2) Domestic stocks and mutual funds managed primarily in domestic stocks (all denominated in the local currency)

(3) Domestic bonds

(4) Foreign stocks and mutual funds managed primarily in foreign stocks (all denominated in foreign currencies)

(5) Foreign bonds

(6) Gold

(7) New digital financial instruments (crypto-assets, stable coins, STs, NFTs)

(8) Other

Q37.2. [For Treatment Group 2] Dow Jones Industrial Average has risen +57% over the past 5 years and +141% over the past 10 years. Please enter the number that best describes your ideal percentage of your personal financial holdings at the end of next year. Make sure that the numbers you enter add up to 100.

*Please exclude life insurance and physical assets such as real estate and cars.

*Please answer the percentage of each so that the total is 100%.

(1) Cash and deposits

(2) Domestic stocks and mutual funds managed primarily in domestic stocks (all denominated in the local currency)

(3) Domestic bonds

(4) Foreign stocks and mutual funds managed primarily in foreign stocks (all denominated in foreign currencies)

(5) Foreign bonds

(6) Gold

(7) New digital financial instruments (crypto-assets, stable coins, STs, NFTs)

(8) Other

Q37.3. [For Treatment Group 3] The International Monetary Fund (IMF) expects prices in the U.S. to rise 2.0% next year compared to last year. Please enter the number that best describes your ideal percentage of your personal financial holdings at the end of next year. Make sure that the numbers entered total 100.

*Please exclude life insurance and physical assets such as real estate and cars.

*Please answer the percentage of each so that the total is 100%.

(1) Cash and deposits

(2) Domestic stocks and mutual funds managed primarily in domestic stocks (all denominated in the local currency)

(3) Domestic bonds

(4) Foreign stocks and mutual funds managed primarily in foreign stocks (all denominated in foreign currencies)

(5) Foreign bonds

(6) Gold

(7) New digital financial instruments (crypto-assets, stable coins, STs, NFTs)

(8) Other

Q38. Please answer the following questions regarding your investment in real estate for investment purposes (real estate acquired by individuals for investment purposes).

(1) I have never invested and do not intend to invest in the next year

(2) I have never invested, but intend to do so in the next year

(3) I currently have investments, but do not intend to make additional investments in the next year

(4) I currently have investments, and intend to invest further over the next year

(5) I currently have investments, and intend to sell more over the next year

Q38. [For respondents who chose options (3) to (5) in Q37] Could you please provide specific amounts for the following?

(1) Amount currently held: ( ) dollars

(2) Estimated investment amount for the next year: ( ) dollars

(3) Estimated amount of sales for the next year: ( ) dollars