DO YOU EVEN CRYPTO, BRO?

CRYPTOCURRENCIES IN HOUSEHOLD FINANCE

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Abstract: Using repeated large-scale surveys of U.S. households, we study the cryptocurrency investment decisions and motives of households relative to other financial assets. Cryptocurrency holders tend to be young, male and more libertarian relative to non-crypto holders. They expect much higher rates of returns for crypto and perceive it as relatively safer than do other households. They also view it as a better hedge against inflation. For those holding cryptocurrencies, changes in Bitcoin prices translate into their purchases of durable goods. Finally, exogenously-provided information about historical returns of cryptocurrencies leads individuals to increase their desired crypto holdings and makes them more likely to actually purchase cryptocurrency subsequently. We compare these views and behaviors to those of households toward other financial assets and argue that cryptocurrency is unique in many of these respects.

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Conflict-of-interest disclosure statement

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I have nothing to disclose.

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"[Bitcoin] is gold for nerds."	Stephen Colbert
"*I am late to the party but I am a supporter of Bitcoin*."	Elon Musk
"*Bitcoin was probably rat poison squared*."	Warren Buffet
"[Cryptocurrencies] are really vehicles for speculation."	Jerome Powell

I Introduction

It is not unusual to have divergent opinions on the soundness and promise of various investments but, since its inception in 2009, Bitcoin has been a genuine outlier in generating polar assessments ranging from embracing it (Musk) to treating it as a poison (Buffet). Bitcoin and other cryptocurrencies have been touted by some as a potential alternative to traditional currencies, a hedge against inflation, and a high-risk, high-reward investment. Fed chair Powell and others view it as just the most recent example of a financial bubble. Using a series of large quantitative surveys of U.S. households, we study the prevalence of crypto-ownership among U.S. households, the reasons some households choose to hold Bitcoin and others don't, the perceived risks and benefits of cryptocurrency as an investment, and the effects of crypto price volatility on the spending decisions of its investors. Because we measure beliefs with respect to other financial assets such as stocks and gold as well, our results speak to whether crypto is perceived differently from other financial assets by households. We also provide new causal evidence on how information about past returns affects the investment decisions of households, both with respect to cryptocurrency and other financial assets. Our findings ultimately suggest that Bitcoin is more than just gold for nerds, as quipped by Stephen Colbert.

We rely on a quarterly survey of U.S. households participating in the Nielsen Homescan Panel running since 2018. Starting in 2021, we began incorporating a wide range of questions focusing on the expectations of households towards financial assets, especially with respect to cryptocurrencies. These questions focus on identifying households who own crypto, the types of crypto they own, their reasons for holding crypto, and their expected returns for different assets while asking a parallel set of questions to those who did not own crypto at the time of the survey. Unlike other surveys focusing on cryptocurrency, we ask quantitative questions and do so to a *large representative* sample of U.S. households, providing an unprecedented look into the beliefs shaping the investment decisions of households both with respect to crypto as well as other financial assets.

We identify a number of stylized facts regarding cryptocurrency ownership, some of which confirm earlier evidence but most of which are, to the best of our knowledge, new. First, we confirm other surveys showing that the share of people owning any cryptocurrency rose sharply between 2021 and 2022 when Bitcoin prices were rising, from around 3% to 11%. As Bitcoin prices fell precipitously thereafter, the share of people holding any crypto rose further to 12%. Those holding cryptocurrencies are different from the average population: disproportionately male with higher incomes, Libertarian or otherwise politically independent, less likely to be white, and most important quantitatively, young. While most individuals owning crypto currencies report that these holdings are a small fraction of their financial wealth, almost 20% report that cryptocurrency accounts for at least 50% of their financial holdings. Furthermore, the vast majority of crypto-holders are either happy with their crypto-holdings or would like to hold more crypto as a share of their wealth. While Bitcoin is the most commonly held cryptocurrency, most individuals who own crypto own multiple currencies (with Ether and Dogecoin being the next most popular).

Why do these individuals buy cryptocurrencies while others don't? One might expect younger investors to naturally be more likely to hold a high-risk potentially high-return asset than older investors given the different time horizons of their investment objectives. Differential asset holdings could also reflect different beliefs about the expected return and risk of the asset. Finally, given its digital nature, older investors might be less aware and at ease investing in crypto. As a first pass to understand the decision to hold crypto as an asset, we elicited respondents' reasons for their choice. Crypto-holders most commonly justify their decision through the high expected returns of cryptocurrency, followed by a desire for a diversified portfolio. Other commonly cited reasons include holding crypto a store of value and hedge against inflation as well as a desire to support the development of cryptocurrencies. In contrast, those who do not hold cryptocurrencies generally appeal to one of two types of explanations. The first and most common is a lack of knowledge about cryptocurrency. This explanation suggests that cryptocurrency could grow further as discomfort with this new asset class fades, a question we explore using information treatments in the latter half of the paper. The second most common set of reasons is a negative opinion about cryptos as a financial asset, e.g. that they are a bad investment, that they are too risky, or that they will not add diversification benefits relative to the existing assets in their portfolios. In other words, crypto-owners and non-crypto-owners have heterogeneous beliefs about crypto as a financial asset.

To explore this source of differential financial choice in detail, we rely on the fact that we asked households about their expected returns to different financial assets, such as stocks, bonds, and gold. Households who say that they know little about cryptocurrencies (40% of households who do not own crypto) often are unwilling to provide quantitative forecasts of crypto returns (almost 90% of these households). For other households however, we can confirm quantitatively that those who own crypto and those who do not indeed have very different beliefs about the future performance of this financial asset class. For example, when asked to report expected future returns for Bitcoin in e.g. 2021Q3, crypto-owners reported an average expected return of 22% for the next year whereas non-crypto-owners reported an expected return of 7%.

These differences in perceptions of crypto as a financial asset extend to perceived correlations with other assets as well as with inflation. We show that among individuals holding crypto, those who expect higher inflation also expect higher crypto returns, consistent with cryptocurrencies serving as an inflation hedge. Across non-crypto-holders however, no such correlation exists. Using the fact that we observe individuals' expected returns about different assets as well as their inflation expectations, we also apply a principal component analysis to compare correlations in expected returns across asset classes for those holding crypto versus those who don't. The first principal component identifies a level factor of expected returns common across all assets, which does not differ materially across groups and is uncorrelated with inflation expectations. The second principal component loads strongly on individual inflation expectations and, across both groups of individuals, loads positively on expected housing, gold and stock returns but negatively on expected returns of bonds and savings accounts. This principal component therefore seems to capture the extent to which different asset classes are perceived as providing protection against inflation. When it comes to expected crypto returns, we observe an important difference in factor loadings: for those who hold crypto, the loading on crypto is large and positive, exceeding loadings on other assets, whereas for those not holding crypto, the loading is essentially zero. In short, consistent with the more qualitative descriptions of their investment motives, quantitative expectations confirm that crypto-owners tend to perceive cryptocurrency as a strong hedge against inflation whereas non-crypto owners view them as largely uncorrelated with inflation.

Strikingly, these differences in beliefs parlay into differences in investment decisions. We show that the explanatory power of a single variable, the expected return to crypto currency, significantly exceeds that of all the observable characteristics of individuals combined in accounting

for the variation in whether people choose to hold crypto-currencies. Other expectations also matter: accounting for the perceived riskiness of crypto currency, as well as the expected returns and riskiness for other asset classes helps further explain why some individuals hold crypto currency and others don't. Combined, these expectations have approximately twice as much explanatory power as all of the detailed individual characteristics that we observe in terms of explaining crypto asset holding decisions. Furthermore, these decisions are not innocuous. We show that changes in the price of Bitcoin affect the subsequent durable goods spending decisions of crypto holders in proportion to the share of their financial wealth that is held in the form of cryptocurrency.

Is cryptocurrency unique in these respects or, as quipped by Colbert, is it like any other asset but just targeted more toward certain types of young people? In many respects, we find that cryptocurrency is in fact quite different. First, it is unique in the extent to which most individuals are uninformed about it: the share of people who are unwilling to even hazard a guess for the expected return is higher for crypto than for any other type of asset.[1] Second, those who make predictions about future returns do so in ways that are strikingly different from what we observe for other assets. For example, while owners of cryptocurrency are much more optimistic about future crypto returns than those who hold no cryptocurrency, no such pattern arises for other assets. Whether we look at bonds, stocks or gold, those who hold each respective asset have the same average expected return for that asset as those who do not. We also do not find the same differences in beliefs about whether assets are an inflation hedge depending on whether an individual holds that asset or not. For gold and housing, there is a qualitatively similar feature that owners of those assets tend to perceive them as a better hedge against inflation, but quantitatively the effect is much larger for cryptocurrencies. We also find that the expected returns for other assets are much weaker predictors of whether people hold an asset relative to fundamentals than is the case with cryptocurrency. For every non-crypto asset class, observables have a much greater explanatory power than expected returns in accounting for who owns particular assets. Even along the dimension of passthrough into spending, crypto differs from more conventional assets. While the passthrough into durable goods purchases is broadly in line with those of other assets, the passthrough into non-durable spending is effectively zero, a finding strongly at odds with what we

[1] The lower share of respondents that are willing to express a view on the expected returns of crypto might be due to a general unawareness of this asset class. This lack of awareness might be due to the relative novelty of crypto as compared to the other asset classes we study or due to its digital nature, among other possible determinants.

observe for stocks and bonds. In this sense, crypto-earnings seem to be perceived more like lottery winnings (and therefore spent on one large purchase) rather than a persistent increase in wealth (which gets spread out over time in nondurable spending). Jointly, these results indicate that cryptocurrency has a unique place among current financial assets, perhaps as a result of how new it is and how uninformed most individuals remain about it.

Given these patterns, one might expect that providing information about cryptocurrency to survey participants could have meaningful effects on their decisions as to whether or not, and how much, to hold this asset. By applying information treatments to randomly selected groups of survey respondents, we confirm this conjecture. When individuals are told that cryptocurrency has experienced high positive returns in recent years, they tend to raise their desired share of cryptocurrency in their portfolio, usually at the expense of stocks, and are more likely to own cryptocurrency in subsequent waves. This effect is particularly pronounced for those individuals who initially said they owned no cryptocurrency because they did not know about it. This result supports one mechanism through which bubbles may arise: high rates of return for a new speculative asset lead new investors to expect similarly high rates in the future and help draw in a growing number of new investors seeking similarly high returns. In addition, we find that households tend to not only increase the amount of cryptocurrency they would like to hold in their ideal portfolio, they also tend to increase the desired share of gold. This increase in the desire to hold different kinds of high-risk assets is consistent with other evidence in Hackethal et al. (2022). In contrast, information about stock returns have little detectable impact on desired portfolio shares or actual crypto holdings, perhaps because these returns are already better known by households. Information about inflation tends to move the desired share of cryptocurrency in the same direction as inflation expectations, again consistent with the idea that some individuals perceive cryptocurrencies as an inflation hedge. These results therefore broadly confirm our earlier evidence, but in a causal setting through randomized information treatments.

Our results build on several literatures. One is a small but growing literature on cryptocurrency as a financial asset. Early surveys focused on crypto ownership relied on convenience samples (see Steinmetz et al. 2021). Various financial and policy institutions then ran larger surveys of households to determine who holds cryptocurrency and why (e.g. Steinmetz et al. 2021, Auer and Tercero-Lucas 2022, Pew Research 2022, JPMorgan Chase 2022, Board of Governors 2022, Benetton and Compiani 2022). Relative to this prior work, we contribute by

having repeated waves with *much larger cross-sections* and *a panel dimension*, a broader range of not only qualitative but also *quantitative* questions on holdings and expectations, as well as *randomized controlled trials* (RCT) to establish causality. Another branch of this literature has studied the properties of cryptocurrency as a financial asset either through high-frequency analysis of crypto prices around policy announcements (Benigno and Rosa 2023), time series analysis (Liu and Tsyvinski 2021, Liu, Tsyvinski and Wu 2022, Guler 2021) or through the trading decisions of individuals (Hackethal et al. 2022). Kogan et al. (2022) show for a large sample of retail traders that investors in crypto follow momentum strategies even though they are contrarian investors in stocks and gold. Similar to our results, they also find that observables explain only a small share of the variation in crypto ownership. Aiello et al. (2023) use transaction data of bank accounts and credit cards and U.S. crypto trading platforms and exchanges to study cryptocurrency investment decisions of U.S. individuals. Relative to these studies, we are able to combine information on a rich set of demographics, the expected returns, expected inflation, and asset holding decisions of households to study their association in the cross-section as well as causally through a RCT. Moreover, we are able to contrast investors and non-investors into crypto and delineate commonalities and differences.

In emphasizing the role of beliefs in the portfolio decision-making of individuals, our paper builds on recent work in the behavioral finance literature that has emphasized the importance of subjective expectations in shaping financial decisions. Giglio et al. (2022) for example use a survey of retirement investors for a large, registered investment advisor which is mapped to their investment decisions to document a strong association between beliefs about returns and the portfolio decisions of investors. Giglio et al. (2021) do a similar analysis over time during the COVID19 stock market crash. Bordalo et al. (2022) show that measures of expected long-run earnings growth help explain several leading stock market puzzles. The role of expectations has also been documented for e.g. exchange rates (Valente, Vasudevan and Wu 2022) and managerial decisions (Barrero 2022). Recent work has begun to use causal identification to establish that expectations directly affect portfolio decisions, either through quasi-experiments (e.g. Meeuwis et al. 2022 use the 2016 presidential election to study the differential portfolio decisions of Republicans and Democrats) or through RCTs that create exogenous variation in beliefs to assess how these affect the portfolio decisions of households (Weber et al. 2022, Beutel and Weber 2022).

We complement this prior work by using similar methods to study the crypto holding decisions of households as well as how beliefs about crypto compare to more traditional financial assets.

Finally, our paper is part of a broader literature that studies how the expectations of households causally shape their economic decisions. While our paper focuses on the portfolio allocation decision, other related work studies how household expectations affect their spending, labor supply and wage bargaining decisions. For example, Coibion, Gorodnichenko and Weber (2022) use RCTs to show that exogenous changes in the inflation expectations of households affect their subsequent spending decisions while Coibion et al. (2024) document that RCT-generated changes in the macroeconomic uncertainty perceived by households also affect their subsequent spending on both non-durables and durables. Hajdini et al. (2022) and Pilossoph and Ryngaert (2022) study labor supply decisions and inflation expectations while Mitra (2022) considers how macroeconomic sentiment affects labor search decisions.

We make three main contributions to the literature. First, we provide evidence on the drivers of crypto investments, how investors' views on crypto differ from their views on other asset classes, and how movements in the price of cryptos spill over into investors' consumption decisions. The literature so far has been unable to differentiate investors' views on crypto from those on other asset classes. Second, we study a large representative sample of the U.S. population, which allows us to contrast investors from non-investors, discuss why some Americans invest in crypto and why many Americans so far shy away from crypto investments. Naturally, the reasons why investors in our representative sample invest in crypto might differ from the motives in other countries in which distrust of the domestic currency and financial system might be a more important determinant. Third, we show that providing information on the returns of cryptos causally shapes individuals' views on future crypto returns, especially of those that previously did not invest in crypto, and subsequent investment in crypto. To the best of our knowledge, our paper is the first to establish a causal link between expected crypto returns and investment in cryptos.

II Data Description

To study the portfolio decisions of households, and their ownership of cryptocurrency in particular, we rely on a sequence of quarterly surveys of U.S. households run since 2018Q1. Respondents come from the Nielsen Homescan Panel, a group of approximately 80,000 households who track their individual purchases at the UPC level. Through their participation in the Nielsen panel, households provide extensive demographic information about themselves and their household.

Nielsen allows firms and researchers to run surveys of this broadly representative collection of households, and we have been doing so on a quarterly basis since 2018Q1. Response rates are generally 20-25%, yielding anywhere between 15,000 and 25,000 respondents per survey wave. There is a panel dimension to the survey, but since participation is voluntary and respondents can opt out of future surveys if they find them too difficult, this panel dimension is somewhat limited. On average, approximately 60% of each survey's respondents participated in the previous wave.

From 2018Q2 until 2018Q4, all participants were asked about their asset holding decisions:

What percent of your financial wealth (excluding housing) do you invest in the following categories? Put "0" if you do not invest in a given category.

	Wealth Investment Allotment
Checking and Savings Account, Certificate of Deposits	_____*percent*
Cash	_____*percent*
US Bonds	_____*percent*
US Stocks	_____*percent*
Foreign Stocks and Bonds	_____*percent*
Gold and precious metals	_____*percent*
Bitcoin and other cryptocurrencies	_____*percent*
Other	_____*percent*
Total	___*100*___*percent*

From 2019Q1-2020Q4, participants were first asked if they had financial investment worth at least one month of household income and, if they answered yes (51% did on average), they were then asked this same question about their financial portfolio. This question was discontinued in 2021Q1.

More detail about financial decisions of households was then asked in two initial waves in 2021Q3 and 2021Q4 as well as two subsequent waves in 2022Q3 and 2022Q4. In each of these waves, respondents were asked specifically whether they owned any cryptocurrency. Respondents then received a set of follow-up questions based on whether they stated that they owned cryptocurrency or not. For those who owned cryptocurrency, they were asked in all four of these waves about why they held cryptocurrency, by selecting among a list of pre-determined options (in randomized order) and were then asked to rank their selected reasons in order of importance. They were also asked about the share of cryptocurrency in their financial holdings:

How large a share of your financial portfolio are cryptocurrencies at the moment? Please express the dollar value of your cryptocurrency holdings as a percentage of your combined checking/savings/retirement/CDs/other liquid financial assets (do not include housing).

Cryptocurrency accounts for _____ % of my financial portfolio.

[] *Prefer not to say*
[] *I don't know*

In the 2021Q3 and 2022Q3 waves, an additional set of questions were asked of those who held cryptocurrency. For example, they were asked about which types of cryptocurrency they owned by selecting among 10 possible cryptocurrencies. They were also asked if they planned to purchase more cryptocurrency in the future:

> *In the next 6 months, do you plan to purchase more cryptocurrency in total, keep your holdings as they currently are, or sell cryptocurrency in total? (Select one)*
> [] *Purchase more cryptocurrency overall*
> [] *Keep my holdings of cryptocurrency the same*
> [] *Sell cryptocurrency overall*
> [] *Prefer not to say*
> [] *I don't know*

For those who said they planned to purchase more cryptocurrency, they were asked how much:

> *How much more cryptocurrency do you plan to buy in the next 6 months? Please express the percentage increase relative to your cryptocurrency holdings.*
> *I plan to increase my cryptocurrency holdings by _____ % in the next 6 months*
> [] *Prefer not to say*
> [] *I don't know*

Those who said they planned to sell currency over the next 6 months were asked an equivalent question but about the amount they wanted to sell. Finally, those owning cryptocurrency were asked about their longer-term plans for crypto holdings (ideal portfolio allocation in two years).

For respondents who said they did not own any cryptocurrency, the 2021Q3 and 2022Q3 waves included a primary follow-up question eliciting the reasons for non-holding among a predetermined list of options presented in randomized order with the next question asking them to rank their selected reasons in order of importance.

In addition to these questions focusing on cryptocurrency ownership, all participants were asked other questions focusing on their views about different types of financial investments. First, we inquired about their expected returns in each of the four waves:

> *What approximate rate of return do you expect to see for each of the following assets in the next 12 months?*
>
US Stocks:	_____ *%*	[] *Don't know*
US Bonds:	_____ *%*	[] *Don't know*
US Savings Account:	_____ *%*	[] *Don't know*
Cryptocurrency:	_____ *%*	[] *Don't know*
US Housing:	_____ *%*	[] *Don't know*
Gold:	_____ *%*	[] *Don't know*

Respondents were then asked about their perceptions of risk for each asset class:

> *Please rate how risky you perceive each of the following assets to be over the next twelve months on a scale of 1 (very safe) to 5 (very risky):*
> *US Stocks:* _____ [] *Don't know*
> *US Bonds:* _____ [] *Don't know*
> *Savings Account:* _____ [] *Don't know*
> *Cryptocurrency:* _____ [] *Don't know*
> *US Housing:* _____ [] *Don't know*
> *Gold:* _____ [] *Don't know*

In each of these questions, the ordering of the financial assets was randomized.

In addition to these questions, the surveys in 2021Q3 and 2022Q3 included information treatments that were randomly assigned to survey participants. We will describe these in Section V. Following the information treatments, all respondents (including those in the control group) were presented with some final follow-up questions. The goal of these questions was to assess whether the information treatments led respondents to change their views, but without asking identical questions as earlier in the sample.[2] To do so, we asked respondents about their ideal future portfolio allocation. For example, in 2021Q3, the question read:

> *By the end of 2022, how would you ideally like to see your financial wealth (excluding housing/real estate) allocated across the following assets? Please provide a percentage for each asset class. The total should sum to 100 percent.*
> *Stocks:* _____ *%*
> *Bonds:* _____ *%*
> *Cryptocurrency:* _____ *%*
> *Gold/precious metals:* _____ *%*
> *Cash/Checking/Savings:* _____ *%*
> *Other:* _____ *%*
> *Total:* *100 %*
> [] *I don't expect to have any financial assets*

For the 2022Q3 survey, we asked equivalent follow-up question but using the end of 2023 as the target date. In addition, we asked the following question to reassess expected returns for different assets as well as their perceived riskiness:

> *We would like to know how you think different assets might evolve over the next year. There is no right or wrong answer to this. For each of the following assets, please tell us what you think is the*

[2] The purpose of asking different question format before and after information provision is to alleviate survey fatigue and experimenter demand effects (Coibion et al. 2022). De Quidt et al (2018) show that experimenter demand effects tend to be small in settings like ours.

most likely rate of return over the next twelve months, as well as the lowest and highest rates of return that we might see over twelve months.

	Lowest rate of return	*Most likely rate of return*	*Highest rate of return*	*I don't know*
US Stocks	%	%	%	[]
US Bonds	%	%	%	[]
US Savings Account	%	%	%	[]
Cryptocurrency	%	%	%	[]
Gold	%	%	%	[]
US Housing	%	%	%	[]

III Who owns Crypto and why?

We first consider the prevalence of cryptocurrency ownership in our sample over time. Figure 1 presents the time-varying share of the sample that reports owning crypto-currency from different samples. In the 2018 surveys, all households were asked whether they owned cryptocurrency. The ownership rate was less than 2% at this time. From 2019 through 2020, respondents who reported that they held financial investments worth at least one month of their household income were the only ones who were asked whether they held any cryptocurrency. Around 4% of these households reported holding cryptocurrencies, with the fraction gradually increasing over the sample. In the 2022 and 2023 survey waves, we can measure the share of crypto-ownership among both groups. We observe that in 2022, the fraction of all households owning crypto was 11%, far higher than the 2% share in 2018. When looking at those with at least one month's worth of income in financial investments, the share rises to around 13% in 2022. Thus, there was a large increase in the share of crypto-ownership during the period when Bitcoin prices increased significantly. Strikingly, even as the price of Bitcoin fell sharply in 2022, the fraction of people owning crypto increased further, reaching approximately 12% by the end of 2023.

These results accord with those of other surveys that elicited information on crypto ownership for the general population. A Pew Research survey in July 2022 reported that 16% of their respondents had, at some point, owned or traded cryptocurrency. Similarly, a JPMorgan Chase (2022) study of cryptocurrency found that almost 15% of U.S. households had, by mid-2022, conducted transfers into crypto accounts. A Board of Governors Survey of households in 2021 found that 12% of Americans held or had owned cryptocurrency in the last 12 months.

In the rest of this section, we study in more detail who chooses to own cryptocurrency, why they do so, and why other Americans choose not to. We consider how their beliefs about asset returns shape these decisions and how changes in cryptocurrency affect their spending decisions.

III.A Who owns what and how much?

One of the advantages of surveys run on Nielsen Homescan participants is that far more information about these individuals is available than is commonly found in surveys. Nielsen gathers detailed demographic information about all of the household members and this information is available to us, in addition to the detailed questions included in our survey. We can therefore explore how these characteristics are related to the choice of whether or not to own cryptocurrency. In Table 1, we present results from regressing an indicator variable for cryptocurrency ownership in 2021Q3 on a wide range of observable characteristics of households.

Several results stand out. First, men are more likely to hold cryptocurrency than women, although the gender difference is not very large (4 percentage points). Second, higher income, higher spending levels, being employed and financial wealth that exceeds one month's worth of household income are all positively correlated with cryptocurrency ownership. Third, no significant correlation exists between education and the ownership of cryptocurrency once other observables are controlled for. Fourth, white individuals are somewhat less likely to own cryptocurrency, consistent with survey evidence by Ariel Investments and Bradford (2022). Fifth, an ideological component to cryptocurrency ownership is present: libertarians and independent voters are more likely to hold crypto. Sixth, those who received larger stimulus checks are more likely to hold cryptocurrency, consistent with Harris Poll (2021), Divakaruni and Zimmerman (2022), and Aiello et al (2023). Finally, and most important in a quantitative sense, age is a very strong predictor of crypto-ownership even after taking account all these other factors: those under 40 are 13 percentage points more likely to own cryptocurrency than those over 60. This result could reflect different forces. For example, apart from being more comfortable with digital technologies, the young should be more willing to hold a high-risk but potentially high-return asset than those with shorter investment horizons. Another explanation could be that the young hold different beliefs about expected crypto returns or the riskiness of cryptocurrency as a financial asset, a question we return to in Section 3.2.

To visualize the intensive margin of investment in crypto, Panel A of Figure 2 plots the distribution of the actual financial portfolio share of cryptocurrency from the 2021Q3 wave. For

most respondents, crypto represents a small share of financial portfolios: 70% of crypto-owners hold less than 15% of their financial holdings in cryptocurrency and 40% hold less than 5% of their holdings in crypto. But for some, cryptocurrencies represent a surprisingly large fraction of their holdings: about 20% of households hold more than half of their financial portfolio in cryptocurrency. The average crypto share across all households who own any cryptocurrency is 19%. Furthermore, of those who own cryptocurrency, 41% report that they would like to own more, 30% would like to keep their portfolio as is, and only 4% plan to sell crypto.

What kinds of cryptocurrency are these households buying? While Bitcoin is the most well-known cryptocurrency, there are many other currencies such as Ether, Litecoin, Dogecoin among others.[3] We asked households to report which cryptocurrencies they own and report results for the 2021Q3 wave in Panel B of Figure 2. Not surprisingly, the most popular cryptocurrency is Bitcoin. The two next most common types of cryptocurrencies are Dogecoin and Ethereum, both of which are held by over 40% of people who own any cryptocurrency. The choice of these three currencies as the primary ones held by households is suggestive that one primary motive of holding crypto is earning high rates of return by investing in the most well-known cryptocurrencies. Other cryptocurrencies were created to fill more niche roles, such as being stable relative to the dollar (Tether), to have faster transaction times than Bitcoin (Litecoin), to allow fast money transfer across countries with low transaction fees (Stellar), or to facilitate anonymous transactions (Monero). Their much lower prevalence in household "crypto wallets" suggests that these roles are not a primary determinant of why households purchase cryptocurrency.

III.B Why do some people buy crypto and others don't?

We report in Panel A of Figure 3 the primary reasons why some households choose to hold cryptocurrency, as reported in the 2021Q3 wave. The two most common reasons by far are in terms of cryptocurrency being a financial asset: high expected returns and to diversify their portfolio, which we interpret as being about a low perceived covariance of Bitcoin returns with other assets. Following this investment motivation are three other rationales. One is that cryptocurrency works as inflation hedge ("protect against inflation" and "store of value"). The second is more ideological ("support the development of cryptocurrency" and "being independent of bank"). The third involves its use for transactions ("anonymity of purchases" and "international

[3] Appendix Table A11 provides basic facts about the crypto currencies.

transactions"). Overall, we interpret these answers as indicating that for the vast majority of crypto-owners, the primary function of these assets is as an investment device that provides high potential returns, low correlation with other financial assets, and an inflation hedge.

When asked why they choose not to hold any crypto, non-crypto-owners provide two main types of responses, as illustrated in Panel B of Figure 3. The first and most prevalent type of response is a lack of knowledge about crypto ("don't know enough", "don't know what it is", and "don't know how to buy it."). This rationale suggests that, if these individuals were to receive information about crypto, they might then choose to invest in it. The second most common type of explanation is the opposite view of that mentioned by crypto-owners, namely that it is undesirable as an investment tool ("bad investment," "too risky," "no fundamental value," and "happy with current portfolio"). This explanation suggests that at least some non-crypto-owners hold a very different view about the characteristics of crypto as a financial asset compared to crypto-owners, namely that its expected returns are low, it is risky, and it does not provide diversification value relative to existing portfolios. A third, but much smaller category, is financial constraint ("don't have the money to buy it").

How pronounced are these differences in beliefs about crypto as a financial asset? To answer this question quantitively, we use the fact that respondents were asked to provide expected returns for cryptocurrencies in a quantitative manner, as well as other assets, in 2021Q3. However, many respondents were unwilling to provide answers to these questions. The share of respondents choosing "I don't know" when asked to provide quantitative forecasts of returns for cryptocurrency over the next twelve months was 87% for those not holding cryptocurrency and 54% for crypto-owners. For those who provided expected returns, we plot the distribution of these returns in Panel A of Figure 4 for those holding cryptocurrency and those who did not. A striking difference in expected returns across groups is present. First, the average expected return for those holding cryptocurrency is much larger than what non-crypto-owners predicted: 22% vs. 7%. The distribution of responses for crypto-owners is also more dispersed, with many reporting expected returns of 40%, 50% and even 100% over the next year (100% was the maximum allowable response). In contrast, about 50% of non-crypto-owners report an expected return of around zero. Across both groups, very few respondents predicted negative rates of return. Panel B of Figure 4 plots the implied uncertainty around point forecasts of respondents. Here, we see that those holding cryptocurrency display larger uncertainty around their predictions than non-crypto-owners. Panel

C of Figure 4 plots qualitative perceptions of riskiness of cryptocurrency across the two groups. Many non-crypto-owners are uncertain about the riskiness of this asset, but among those willing to provide an answer, around 63% assign it the highest risk level, whereas only around 45% of crypto-owners who provide a risk measure rate it as the highest risk level. While crypto-owners therefore are willing to acknowledge a lot of uncertainty in just how positive crypto returns will be, they tend to perceive the asset as less risky than those who do not own cryptocurrency. In short, these results confirm that crypto-owners and non-crypto-owners have strikingly different perspectives on the expected returns and risk associated with investing in cryptocurrency.

Since crypto-owners tend to think cryptocurrencies are useful as an inflation hedge (Figure 3), we can assess whether their expectations of inflation and expected returns for cryptocurrency are correlated. Specifically, we plot expected inflation against expected crypto returns for those holding cryptocurrency compared to those not owning any cryptocurrency. Figure 5 documents a strong positive cross-sectional correlation among crypto-owners. Those who expect higher rates of inflation also tend to expect higher returns to cryptocurrency, consistent with this asset serving as an inflation hedge. In contrast, no such correlation is visible across non-crypto-owners. This result suggests that not only do these agents differ in their levels of expected returns and perceived risk for cryptocurrencies, they also disagree in how well it serves as an inflation hedge.

Because we asked respondents to report expected returns for different assets, we can also assess how they perceive cryptocurrency as comoving with other assets. To this end, we extract two principal components that account for the cross-section of households' expected returns across different assets (crypto, stocks, bonds, savings accounts, gold and housing) as well as their expectations of inflation, separately for crypto-owners and non-crypto-owners. We report the resulting loadings in Table 2. Note that for each type of household, the first two principal components account for more than 50% of the variation in expected returns. The first principal component loads positively on all expected returns for both types of households but is uncorrelated with inflation expectations. We interpret this factor as an optimism factor, with some households expecting systematically higher returns across all assets. There is little variation in loadings across those holding crypto versus those not holding crypto along this dimension.

The second principal component loads very strongly on expected inflation for both crypto-owners and non-crypto-owners, and therefore can be informative about which assets households perceive as comoving with inflation. Across both types of households, this component loads

positively on stocks, gold and housing and negatively on bonds and savings accounts, indicating that households view the latter two as negatively exposed to inflation risk. The loading on cryptocurrency, however, is very different across the two groups. Among crypto-owners, the loading on crypto is positive and large, consistent with it serving as the strongest inflation hedge, whereas for non-crypto-owners the loading is close to zero, indicating that they do not perceive it as serving as an inflation hedge. Instead, non-crypto-owners perceive housing and gold as comoving most strongly with inflation.

For comparison, Table 2 also reports principal component analysis of actual returns for these assets from 2015-2022.[4] The first component does not exhibit a uniform movement of returns (e.g., housing and bonds load with different signs on the first factor). The second component again loads strongly on inflation but shows very different comovement with different assets than what is perceived by households. With higher inflation comes higher interest rates, so nominal returns on bonds and savings accounts are positively loading on this factor, while crypto and gold load negatively on it, suggesting that they did not serve as effective inflation hedges. On the other hand, housing returns do not load significantly on this factor and stocks move in the opposite direction.

In short, these results illustrate that crypto-owners and non-crypto-owners hold very different beliefs about the characteristics of crypto-currency as a financial asset. How important are these differences in explaining whether individuals choose to hold cryptocurrencies relative to the observable characteristics of individuals in Table 1? We consider a "horserace" of the two types of explanations in Table 3. In column (1), we report the R^2 from regressing an indicator variable for crypto-ownership on all the observables used in Table 1 for the subset of individuals who provided quantitative expected returns for different financial assets. Despite the large number of these characteristics, their combined explanatory power is relatively small, less than 0.09.

In column (2), we instead regress the same indicator variable for crypto-ownership on a single dependent variable: individuals' expected rate of return for cryptocurrency. The estimated coefficient is close to 1, indicating that each additional percentage point in expected returns is

[4] US stocks is S&P 500 Index (includes dividends, percent change from a year ago), Cryptocurrency is Coinbase Bitcoin price (percent change from a year ago), US Bonds is US Treasury 10-year bond (to compute the annual return on a constant maturity bond, we add two components: the promised coupon at the start of the period and the price change due to interest rate changes), savings account is National Rate on Non-Jumbo Deposits (Savings) before April 2021 and National Deposit Rates (Savings) since April 2021, US housing is S&P/Case-Shiller U.S. National Home Price Index (percent change from a year ago), and Gold is from the World Bank's Pink Sheet on commodity prices (percent change from a year ago).

associated with one percentage point higher probability of an individual owning cryptocurrency. The R^2 of this regression is 0.106, so this one expectation single-handedly explains more variation in the decision of whether or not to hold cryptocurrency than all of the observable characteristics of individuals combined. Column (3) controls for the perceived riskiness of cryptocurrency. While the coefficient has the expected sign (higher perceived risk of crypto lowers the probability of buying crypto), its quantitative effect is relatively small, with an R^2 of just 0.013. Column (4) controls for both expected crypto returns and their perceived riskiness, leading to an R^2 of 0.11. In column (5), we include expected returns and perceived riskiness of all other assets. Some of the effects are statistically significant and go in the expected direction: e.g. higher expected returns to other assets lowers the probability of holding crypto whereas higher perceived risk of other assets raises the probability of holding crypto. Their combined explanatory power is non-trivial, with the R^2 rising to 0.15. These expectational variables therefore explain almost twice as much of the variation in crypto holding decisions as observable characteristics. When we combine expectations and observables, the R^2 rises to 0.21 and none of the estimated coefficients change much. Thus, while observable characteristics of individuals play some role in explaining who purchases crypto, differences in beliefs about returns and risk play a much more important role.[5]

One possible concern is that respondents might be providing expectations to justify their holding choices, a type of survey demand effect. There are several reasons to be skeptical of this interpretation of the results however. First, survey demand effects are generally small (De Quidt et al. 2018). Second, we find that expectations about returns to other assets also help predict who holds crypto-currency, which would require a very strong form of survey demand effects. Third, we utilize an RCT in section 5 to tackle survey demand effects more directly.

III.C Do crypto price changes affect spending?

One reason why crypto-ownership may be important for aggregate outcomes and policy is if the high volatility in crypto prices affects the spending decisions of households who own it. To assess the passthrough of Bitcoin price changes into spending, we first use households' reported answers as to whether or not they purchased a durable good in that quarter ($\mathbb{I}_{i,t}^{dur}$). We then regress this measure on whether they planned to purchase a durable good in the previous quarter ($\mathbb{I}_{i,t-1}^{plan}$) and

[5] The number of observations in Table 3 is less than one thousand because we restrict our attention to individuals who provided quantitative expected returns and perceived risk for all assets. Similar results hold in columns (1)-(4) if we use the maximum sample available for each specification.

their exposure to crypto-price changes, defined as the share of cryptocurrency in their financial portfolio in the previous quarter ($CryptoShare_{i,t-1}$) times the (log) percentage change in the price of Bitcoin in the current quarter ($\Delta\, log\, P_{i,t}^{Bitcoin}$). Our specification is therefore

$$\mathbb{I}_{i,t}^{dur} = \gamma \times \mathbb{I}_{i,t-1}^{plan} + \beta \times CryptoShare_{i,t-1} \times \Delta\, log\, P_{i,t}^{Bitcoin} + \phi \times CryptoShare_{i,t-1} + \lambda_t + error \quad (1)$$

in which we pool across survey waves from 2018 to 2021.[6] We report coefficient estimates in Panel A of Table 4 for different types of durable goods purchases. For example, the first column reports whether Bitcoin price changes affected spending decisions for any durable good, combining decisions across houses, cars and big-ticket items. We find a strong positive coefficient, indicating that a doubling of Bitcoin prices makes a household whose financial portfolio is all in cryptocurrency 1.4 percentage points more likely to purchase a durable good than they otherwise would have been. The next three columns consider the effects on either house purchases, car purchases or purchases of other big-ticket items like computers or refrigerators. The effects are largest for big ticket items and decrease as we move to larger purchases like cars or homes. These results suggest that the volatility in cryptocurrency prices is potentially not innocuous for households who choose to be financially exposed to it, with a clear discernible passthrough into their durable goods spending decisions.

In column (5), we report equivalent estimates using the reported (log) non-durable spending[7] as the dependent variable over the same time period but using lagged spending as a control (we do not elicit planned non-durable spending in the survey). We find little pass-through of Bitcoin price changes into non-durable spending, which suggests that changes in cryptocurrency values are not necessarily viewed as persistent increases in wealth by households, as the latter would tend to feed into non-durable spending. Instead, passthrough into one-time big-ticket items appears to be closer to gambling or small lottery winnings.

[6] We focus on this early sample because households reported decompositions of their financial portfolios into crypto, stocks, etc. In section 4, we consider equivalent regressions for the pass-through of price changes in these asset types into spending decisions and we focus on the common sample with portfolio shares for all asset classes.

[7] Non-durable spending includes rent, maintenance and home owner/renter insurance, housekeeping and cleaning service (but not including mortgage payments), utilities, food, clothing, footwear, and personal care, gasoline, other regular transportation costs, medical care, travel, recreation, and entertainment, education and child care, furniture, jewelry, small appliances and other small durable goods, and other spending.

Panel B corroborates this interpretation. We use durable goods purchases from the subsequent quarterly survey wave and regress it again on the spending plans from the previous wave but also the portfolio share in crypto times its percentage price change from the two survey waves prior to see whether spending adjusts persistently.[8] Across all outcomes, we find economically small and statistically insignificant effects of realized crypto returns on durable and non-durable purchases. Hence, realized crypto returns only result in immediate, temporary, one-off purchases in purchases of larger ticket rather than a persistent increase in overall spending, consistent with the idea that investors consider crypto gains as gambling income rather than increases in permanent income.[9]

IV Is Crypto Unique?

We have documented a number of novel facts about who owns cryptocurrencies, how their expectations about cryptocurrency returns and risk shape their holding decisions, and the extent to which cryptocurrency price changes affect their subsequent consumption decisions. The next question we address is whether cryptocurrency is unique in these respects or if these patterns are similar for other financial assets.

We first consider the characteristics of those holding different types of financial assets and replicate the results in Table 1 for gold, stocks and bonds (see Appendix Tables A1-A3). Gold has a number of features that are similar to crypto. Like crypto, those owning gold are more likely to be men, to have higher income and wealth, less likely to be white, and more likely to be Libertarian or politically independent. However, gold is somewhat different from crypto in that it is also more likely to be held by Republicans and more likely to be held by those who are looking for a job or who are inactive in the labor market. Most strikingly, whereas age strongly predicts crypto-ownership, no such pattern is visible for ownership of gold. Whereas unconditionally a strong relationship between age and gold holdings is present (older individuals are more likely to hold gold as shown in Appendix Figure A1), this relationship disappears when conditioning on other observable characteristics. Stocks are also more likely to be held by men, higher income and higher wealth individuals as well as those with higher education. Libertarians are again more likely to hold this financial asset as are whites. Those between 41 and 60 also have a higher probability of

[8] We thank Antoinette Schoar for inspiring this analysis.
[9] Consistently, in unreported results we also find that the durable spending response is strongest for investors with less than median portfolio allocations into crypto.

owning stocks. Bond ownership is again more likely for men and those with higher incomes, higher wealth and higher education. Bond ownership is most likely for older households, consistent with life cycle portfolio rebalancing (Parker et al 2022). As with other assets, bonds are more likely to be held by Libertarians. In short, across asset types, the ability to purchase financial assets, as measured through income or wealth is an important determinant of ownership. Men and libertarians are systematically more likely to own all kinds of financial assets. Life cycle considerations are visible across different assets such as stocks and bonds. Thus, along many of these observable characteristics, crypto-ownership does not appear qualitatively different other than that, because it is riskier, it is more likely to be held by those with longer investment horizons.

One striking finding from crypto-ownership documented in the previous section was how few households were willing to provide answers for their expected returns for cryptocurrency, even among those holding cryptocurrency. Does this non-response extend to other financial assets? In Table 5, we report the frequency of respondents selecting "I don't know" when asked to provide an expected return over the next twelve months for each type of asset. This share varies from a low of 60% for savings accounts to 78% for gold. While these non-response rates are high across the board, the 84% non-response rate for cryptocurrency stands out as discernably higher. Table 5 also provides these non-response rates for those holding each asset versus those not holding that asset. As one might expect, non-response rates are always higher among those who don't own the asset. Among those holding the asset, the non-response rate of crypto-owners is similar to what we observe for those holding other assets, but it is significantly higher among those not holding each asset. The very high rate of non-response to expected cryptocurrency returns therefore reflects two effects. First, the crypto-ownership rate is lower than that for other assets, and since ownership of an asset is correlated with being willing to provide an estimate for expected return, this accounts for some of the higher non-response rate. Second, there is greater unwillingness to provide expected returns for cryptocurrency among non-crypto-owners than is the case for other assets, which suggests that knowledge about this asset is particularly limited.

Among those who provide expected returns for non-crypto assets, do these expectations display similar characteristics as those for crypto expected returns? Figure 6 presents distributions of expected returns across asset types, reported uncertainty in these expected returns as well as dynamics of asset prices and shares of ownership in each asset. With respect to the latter, we observe different dynamics for ownership shares than for cryptocurrency in Figure 1. For gold,

stocks and bonds, a gradual increase in the share of households owning each type of asset occurred from 2018 to 2019, with a mild reversal taking place thereafter. In contrast, crypto-ownership was rising through this period. Expected returns also display a striking difference relative to cryptocurrency: the expected returns for each asset among those holding the asset and those who do not are very similar. For example, those owning gold expected a rate of return on gold of 9.9% over the next twelve months in 2022Q3, whereas those who did not hold gold expected a return of 10.3%. In contrast, we documented that crypto-owners expected a much higher rate of return for crypto than those who did not hold any crypto.

Another way in which crypto-owners and non-crypto-owners differed in their expectations was the perceived inflation hedge of crypto. As shown in Figure 5, those holding crypto expected higher returns when inflation is high whereas no such pattern was visible for non-crypto-owners. Table 6 assesses whether this pattern also holds for other assets by regressing individuals' expected returns for each asset on individuals' expected inflation separately for those holding versus not holding each type of asset. Because ownership of different assets is only identified in survey waves 2018Q2-2020Q4, we run this regression specifically in 2021Q3 using households who had provided responses to ownership of different assets in an earlier wave. Panel A presents results for cryptocurrencies. These are reproduced in Figure 5 but for the earlier sample of households. Because Bitcoin ownership was less common in this early sample, the number of observations available for crypto-owners is limited. Still, we can strongly reject the null of equality in slopes across owners and non-owners, with little visible correlation between expected inflation and expected crypto returns among non-crypto-owners. We find a similar result for gold owners, although the quantitative difference is not as large. Hence in this respect, gold and crypto are similar qualitatively but not quantitatively. Strikingly, we find that for stocks and bonds, the correlation between expected returns and expected inflation is the same for those holding that asset and those not holding the asset. Thus, individuals seem to agree on whether different assets serve as an inflation hedge independent of ownership, a feature strongly at odds with what we found for crypto. The results for homeowners and non-homeowners are similar to gold, with a statistically significant difference in the correlation between expected inflation and expected returns.

Next, we study whether risk and return expectations or household characteristics are more important in driving holdings in other asset classes. We documented in Table 3 that, in the case of cryptocurrency, expected returns played a very powerful role in accounting for who chooses to

own crypto, with a significantly larger R^2 coming from expected returns than a wide range of household observable characteristics combined. In Table 7, we replicate this exercise but for other financial assets, comparing the explanatory power of the same set of observables as used in Table 1 compared to the complete set of expected returns and perceived riskiness of different assets also used in Table 3. The patterns are strikingly different. Whereas the explanatory power of expected returns was twice that of observable characteristics for crypto-ownership when going from column (1) to column (5) in Table 3, for other financial assets the roles are reversed: observables have an explanatory power that is generally five to six times as large as that of expected returns and perceived risk of financial assets. Thus, when one accounts for observables like income and age, there is little additional predictive power coming from differences in expected returns for explaining which assets are held by different households, except in the case of crypto.[10] For the latter, it is primarily differences in expected returns that explain who chooses to own the asset.

Finally, we consider whether asset price changes affect spending decisions in a similar manner across asset types. In particular, we estimate the same empirical specification as in section 3.3 but for each of the other financial assets, with results reported in Panels C-E of Table 4. We find broadly similar results across asset types: changes in the value of an asset affect the likelihood of a household purchasing durable goods that quarter, although the effects are barely detectable for stocks. The exact pass-throughs differ, with gold having the highest overall passthrough into durable goods and stocks having the lowest, with cryptocurrency being approximately in the middle of the range. Pass-through into non-durable good spending, however, differs more: for stocks and bonds, we find clear evidence that changes in the prices of these assets affect regular spending decisions. In contrast, gold and crypto price changes only affect durable goods purchases. In this spirit, price changes in the latter two assets are probably perceived more like lottery winning whereas stock and bond price changes are perceived as more persistent and induce wealth effects that are reflected in non-durable good spending (Di Maggio et al 2020).

In short, along some dimensions, cryptocurrency is a "normal" asset. For example, many of the observable characteristics that predict crypto-ownership (such as income and wealth) also predict ownership of other financial assets. While the young are more likely to own

[10] In Appendix Tables A6 and A7, we show that qualitatively similar results hold when we compare the role of observables and expected returns in explaining the actual portfolio shares of different assets (Appendix Table A6) and desired portfolio shares (Appendix Table A7).

cryptocurrency, this is not inconsistent with lifecycle investment decisions that are also observed for stocks and bonds. The passthrough of crypto price changes into spending also appears to be in line with what we observe for some other financial assets, especially gold, in that it primarily affects durable goods spending. However, along many dimensions, cryptocurrency really does stand out. First, significantly less knowledge exists about it than about other assets. Second, when households learn about it, they seem to form starkly different opinions about it as a financial asset, a point we investigate more with information treatments in section 5. Differences in expected returns for crypto are much more pronounced between those who hold the asset and those who don't both quantitatively (e.g. in terms of average expected returns) and qualitatively (e.g. whether crypto is an inflation hedge) than for other assets. In addition, those differences in returns play a very large role in explaining which households choose to buy cryptocurrency, whereas for other assets differences in expected returns play a much more muted role.

V The Role of New Information on Crypto Holdings

Given that cryptocurrency is unique in terms of how uninformed most households are about it, one might expect that relaying information about cryptocurrency to households might have pronounced effects on decisions as to whether or not to hold the asset. To assess this hypothesis and causally relate expected returns to the holding of crypto assets, we implemented randomized information treatments in 2021Q3 and 2022Q3. In both waves, households were randomly assigned to either a control group that received no information or one of many treatments groups in which households received different pieces of information. Treatments, as described below, involved receiving information recent (past year) or long-run (past 5 years) returns on Bitcoin, stocks, or both, either in text or in visual form. Other information treatments involved inflation, either through recent inflation values, the FOMC's inflation forecast or through the central bank's inflation target.

V.A Information treatments

Participants were randomly assigned to different groups of approximately equal size. The control group was not provided with any additional information and instead moved straight to follow-up questions we describe below. All other groups received some type of information (Table 8 and Figure 7 provide the information). These treatments can be grouped into several broad categories: inflation treatments, long-run return treatments, short-term return treatments, volatility treatments, and visual treatments. The inflation treatments provided information about either past inflation

(over the last year or over the last two years), the Fed's inflation target, or the FOMC inflation forecast. The long-run return treatments provided information about the cumulative return of Bitcoin, stocks or both over the previous 5 years. The corresponding values were returns of 4,611% for Bitcoin in 2021Q3 and 674% in 2022Q3, whereas for stocks (as measured by the S&P) they were 100% and 59% respectively. The short-run treatments were equivalent but for returns over the previous 12 months. Those returns were 244% in 2021Q3 and -43% in 2022Q3 for Bitcoin and 34% and -12% for stocks in the corresponding periods. Volatility treatments included not just the return of the asset over the previous twelve months but also an indication of volatility. For Bitcoin in 2021Q3, for example, the treatment (T9) read "The value of a Bitcoin has increased by 244% in the last 12 months but fell as much as 23% in just one month during that time." The corresponding value for the stock treatment in 2021Q3 was a 34% increase with a 1% decline in just one month. We again included a combined volatility treatment with the information about both Bitcoin and stocks. In 2022Q3, the corresponding volatility treatment for Bitcoin was "The value of a Bitcoin has fallen by 43% in the last 12 months but increased as much as 33% in just one month during that time." For the stock volatility treatment in 2022Q3, the equivalent volatility was an increase of 5% in just one month. Finally, we included four visual treatments. One plotted the cumulative Bitcoin return since 2015, one plotted the cumulative stock return since 2015, one plotted the two together, and the final treatment plotted the monthly percentage returns in both stocks and Bitcoin since 2015. The figures were identical in 2021Q3 and 2022Q3 except that the latter extended the end of the sample from July of 2021 to July of 2022.

V.B Econometric Specification and Outcomes

We focus on the effects of information treatments on two outcomes. One is the decision to hold cryptocurrency. For this outcome, we assess whether being provided with information affected the probability of a respondent owning any cryptocurrency in the next wave. In other words, we run the following regression:

$$\mathbb{I}_{i,t+1}^{crypto} = \alpha + \delta \mathbb{I}_{i,t}^{crypto} + \sum_{j \in J} \beta_j \mathbb{I}_{i,t}\{i \in j\} + \gamma X_i + error \qquad (2)$$

where $\mathbb{I}_{i,t+1}^{crypto}$ is an indicator variable for whether household *i* owned any cryptocurrency in wave $t+1$, $\mathbb{I}_{i,t}\{i \in j\}$ is an indicator variable for household i being in treatment group *j* (where *J* denotes the set of all treatment groups), X_i is a vector of household control variables. We control for whether a household owned any cryptocurrency in the wave that the information treatment was

applied, which helps identify changes in crypto-currency ownership due to the treatments. Second, we consider how information treatments affect the desired portfolio share for different asset classes reported immediately after treatments by changing the outcome variable in equation (2). That specification omits the control for previous ownership of the asset.

We present results from this regression in Table 9, with Panel A focusing on the 2021Q3-Q4 waves and Panel B focusing on the 2022Q3-Q4 waves.[11] We separate the two waves because the nature of the information treatments was different in the two periods. In 2021Q3, all historical returns were positive, so treatments were all providing "good" information about the assets. In 2022Q3, 1-year returns were negative, so many of the treatments were providing "negative" information about the assets.

Consider first the effects of the Bitcoin-only treatments in 2021Q3. We find that three out of the four treatments lead households to immediately revise upward the desired share of their portfolio that they would like to allocate to cryptocurrency, with the one exception being the treatment in which they are also told that crypto prices fell as much as 23% in one month. Interestingly, as they increase their desired portfolio share of crypto, households also tend to raise their desired share of gold, even though no information about gold was provided. This finding is in line with recent work by Hackethal et al. (2022) who find that upon purchasing cryptocurrency, investors tend to engage in other high-risk investments as well. We also find some evidence that households reduce their desired portfolio share of stocks and other investment categories. In 2022Q3, when the Bitcoin treatments are more negative, the effects are reversed. When looking at whether households actually buy more crypto after the treatments, we find a statistically significant positive effect only for the 12-month return treatment. However, because identification in this case stems from individuals who change their crypto-ownership status across waves, which is infrequent, and the number of "switchers" in each treatment group is limited, it is generally difficult to establish statistical significance along this margin for a given treatment group. To address this, we also report results for pooling treatments across the different Bitcoin-only treatments and report the p-value for the null of no response at the bottom of Table 9. We can reject the null that the treatments jointly do not affect the crypto buying decision, even though for

[11] In Appendix Table A9, we apply the procedure of Romano and Wolf (2016) to address issues with multiple hypothesis testing and find no meaningful difference in results.

individual treatments it is hard to detect an effect. This indicates that providing positive information about recent Bitcoin returns induces some households to start buying cryptocurrency.

When looking at the effects of treatments involving information about stock prices, the effects on desired portfolios are not as pronounced. In most cases, we cannot reject the null of no effect on desired portfolio allocations. One exception is in 2022Q3: when told about the 5-year return to stocks, we find that households raised their desired portfolio share of both stocks and bonds while significantly reducing their exposure to cryptocurrency, checking/savings accounts, and other investments. When we combine information about stocks and Bitcoin prices, the treatment effects seem to be strongly dominated by the effects of the Bitcoin information. In 2021Q3, we see the desired portfolio share of crypto and gold rise, just as was the case with the Bitcoin-only treatments, with no clear change in the desired share of stocks in portfolios. In 2022Q3, we mostly see reductions in the desired portfolio shares of crypto and gold, with little change in the desired share of stocks. Taken together, we find much clearer effects of information treatments involving new information about Bitcoin than we do when the information involves stocks, consistent with households being generally better informed about stocks than cryptocurrency. Indeed, when we compare results for the subsample of households who reported not buying cryptocurrency because they were not sufficiently informed about it, we generally find stronger effects than when we look at the subsample of households who reported not buying cryptocurrency because they thought it was a bad investment (Appendix Table A8).

Finally, we consider how information about inflation affects desired portfolio shares and crypto purchases. In 2021Q3, the effects overall are quite muted and we see little systematic response to the provided information. In 2022Q3, on the other hand, the effects are more pronounced and we can reject the null of no effect when pooling across all inflation treatments for several desired portfolio shares. Most notably, the average desired portfolio share of cryptocurrency falls across treatments. Since average inflation expectations decline with these treatments (prior expectations of inflation were quite high in 2022Q3), the concurrent decline in inflation expectations and decline in desired portfolio share of crypto from the treatments is consistent with the inflation hedge motive illustrated in Figure 5. With other assets, the effects are harder to identify. A similar decline in the desired share of gold can be seen in some treatments, but the effects are less precise. One treatment suggests a move into bonds rather than risky assets,

but again the results are fairly imprecise overall. The decline in the desired share of cryptocurrency is the clearest finding from these inflation treatments.

Jointly, we view these results as illustrating one mechanism that can help explain the appearance of asset price bubbles. With a new asset that is generally unknown, news about recent returns can have large effects on the expectations and asset holding decisions of average consumers. Positive returns induce entry of new participants which push the price up further. The experience of high returns in the past does not seem to lead individuals to expect any mean reversion, rather extrapolation of past returns into future returns seems to be the rule (Greenwood and Shleifer 2014). As we can see from information treatments, news about these past returns then translates into the portfolio decisions of agents. In contrast, these information effects appear to be weaker when it comes to more established financial assets like stocks, likely due to the greater prior information and experience individuals have with these assets.

VI Conclusion

Cryptocurrency has become an increasingly visible and important asset in financial markets. Who buys this asset and why? Our results shed new light on the types of individuals buying cryptocurrency, their reasons for doing so, and the ways in which their opinions and expectations differ from those who choose not to invest in this asset class. We find that cryptocurrency looks different from most financial assets in a number of ways, the most striking of which may be just how different the beliefs about the asset are for those holding the asset versus those not holding the asset. The reasons seem to be two-fold. First, many individuals are very uninformed about cryptocurrency, to a much larger extent than what we observe for other financial assets. Second, conditional on learning about it, individuals seem to reach very different conclusions about crypto's viability as a financial asset. Some view it as having a high expected return, being an inflation hedge, and a good diversification opportunity whereas others view it as a low expected return investment and excessively risky. Strikingly, these different views can account for much more of the variation in who chooses to buy cryptocurrency than a wide range of observable characteristics, whereas the latter play a much larger role than differences in expected returns in explaining ownership decisions for other asset types. Finally, providing simple information about historical rates of return for cryptocurrency has large effects on the crypto purchasing decisions of individuals, suggesting a mechanism through which price increases in a new asset class induce entry by other participants that further fuel price growth.

So is crypto just gold for nerds, as quipped by Colbert? While there are certainly some similarities along some dimensions, cryptocurrency stands out in how poorly understood it is by most individuals. But even as information about it is acquired, potential investors reach very different conclusions about its viability as a financial asset. The absence of common information and beliefs about crypto across investors suggests that price volatility will continue to be one of the most defining characteristics of this new asset for the foreseeable future.

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Table 1: Who Owns Cryptocurrency?

Dependent variable: Indicator for ownership of cryptocurrency			
Gender		*House ownership [omitted category: own house/apt without a mortgage]*	
Male	3.966***	Own house/apt	-0.945
	(0.859)	fixed-rate mortgage	(1.190)
		Own house/apt	2.903
Income [omitted category: Bottom Tercile]		variable-rate mortgage	(3.886)
Medium Tercile	1.730*	Rent house/apt	2.023
	(1.016)		(1.275)
Highest Tercile	3.012***	Other	-1.410
	(0.956)		(1.971)
Education [omitted category: High school or less]		*Monthly spending debt and rent payments*	
Assoc. Degree or some college	-1.422	Log spending	0.413**
	(0.952)		(0.165)
College or more	0.253		
	(1.110)	*Stimulus check*	
Age [omitted category: 40 or less]		Log stimulus amount	0.181*
[41, 60]	-7.877***		(0.097)
	(1.580)		
61 or more	-13.079***	*Financial Wealth >*	
	(1.607)	1-month HH's income	4.204***
			(0.872)
Race			
White	-3.510***	*Political party [omitted category: Democrats]*	
	(1.117)	Republicans	0.635
			(0.909)
Employment status [omitted category: Paid job]		Green party	2.789
Looking for a job	-3.369*		(5.855)
	(1.776)	Libertarian party	7.492**
Inactive	-0.825		(3.643)
	(1.221)	Other or independent	2.301*
Retiree	-1.158		(1.249)
	(0.845)	Prefer not to answer	-0.756
			(1.115)
Observations			9,844
R^2			0.062

Notes: The table reports coefficients from regressing an indicator variable for those households reporting that they own any crypto in 2021Q3 on observable characteristics. Statistical significance at the 1%, 5% and 10% levels are indicated by ***, ** and * respectively.

Table 2: PCA Decomposition of Expected Returns of Crypto Holders vs Others

	Individuals holding crypto		Individuals not holding crypto		Historical returns: 2015-2022	
	PC(1)	PC(2)	PC(1)	PC(2)	PC(1)	PC(2)
Share explained:	0.38	0.17	0.36	0.16	0.41	0.21
Loading:						
Stock returns	0.45	0.15	0.45	0.11	0.15	-0.31
Crypto returns	0.32	0.47	0.30	0.07	-0.09	-0.63
Bond returns	0.44	-0.27	0.45	-0.20	0.55	0.13
Saving account returns	0.40	-0.46	0.40	-0.40	0.14	0.64
Housing returns	0.41	0.17	0.40	0.33	-0.52	-0.02
Gold returns	0.39	0.22	0.41	0.28	0.36	-0.13
Inflation rate	-0.12	0.63	-0.08	0.77	-0.51	0.25

Notes: The table reports results of principal component (PC) analysis of expected returns of different assets and expected inflation across either individuals holding crypto (first three columns), individuals not holding crypto (next three columns) as well as principal components coming from historical returns to those assets and actual inflation from 2015-2022. PC(k) shows results for the k^{th} PC.

Table 3: Contribution of Observables and Beliefs in Explaining Asset Holding

	Dependent variable: own crypto					
	(1)	(2)	(3)	(4)	(5)	(6)
1-year-ahead expected crypto return		0.82***		0.80***	0.81***	0.76***
		(0.13)		(0.13)	(0.13)	(0.12)
Perceived risk crypto			-3.21**	-2.56**	-3.56***	-4.11***
			(1.25)	(1.14)	(1.17)	(1.15)
1-year-ahead expected stocks return					0.37	0.24
					(0.27)	(0.26)
Perceived risk stocks					2.41*	2.50**
					(1.37)	(1.27)
1-year-ahead expected bonds return					-1.23***	-1.15***
					(0.37)	(0.38)
Perceived risk bonds					-1.24	-0.79
					(1.31)	(1.16)
1-year-ahead expected gold return					-0.18	-0.08
					(0.15)	(0.16)
Perceived risk gold					-1.04	-0.78
					(1.23)	(1.16)
Expected Inflation					0.38	0.29
					(0.35)	(0.36)
Control for Observables	Y	N	N	N	N	Y
Observations	913	913	913	913	913	913
R^2	0.086	0.106	0.013	0.114	0.145	0.210

Notes: The table reports results from regressing an indicator variable for owning cryptocurrency in 2021Q3 on the observables listed in Table 1 (columns 1 and 6) or measures of expected returns or perceived risks of different financial assets (columns 2-6). The sample is restricted to respondents who provided quantitative responses for returns for each asset class. The perceived risk for an asset is measured with a question eliciting perceptions of risk on a 1 (very safe) to 5 (very risky) scale. *, **, and *** denote statistical significance at the 10%, 5% and 1% levels respectively.

Table 4: The Effect of Bitcoin Price Changes on Durable Goods Purchases

	Purchase of				ln(Non-durable spending)
	Any Durable	Home	Car	Big item	
	(1)	(2)	(3)	(4)	(5)
Panel A: Bitcoin Price Changes					
$Crypto\_Sh_{i,t-1} \times \Delta\, log\, P_{i,t}^{Bitcoin}$	1.42***	0.16**	0.41**	0.94***	-0.33
	(0.38)	(0.07)	(0.20)	(0.25)	(0.29)
Observations	39,404	39,404	39,404	39,404	47,399
Panel B: Bitcoin Price Changes after one Quarter					
$Crypto\_Sh_{i,t-1} \times \Delta\, log\, P_{i,t}^{Bitcoin}$	0.15	0.05	0.25	0.02	0.18
	(0.47)	(0.08)	(0.26)	(0.36)	(0.49)
Observations	21,729	21,729	27,729	27,729	30,916
Panel C: Gold Price Changes					
$Gold\_Sh_{i,t-1} \times \Delta\, log\, P_{i,t}^{Gold}$	2.23***	0.14	0.41	2.12***	-0.54
	(0.55)	(0.11)	(0.33)	(0.42)	(0.75)
Observations	39,203	39,203	39,203	39,203	47,154
Panel D: Stock Price Changes					
$Stock\_Sh_{i,t-1} \times \Delta\, log\, P_{i,t}^{Stocks}$	0.56***	-0.04***	0.29***	0.39***	0.39**
	(0.11)	(0.01)	(0.06)	(0.09)	(0.16)
Observations	38,203	38,203	38,203	38,203	46,692
Panel E: Bond Price Changes					
$Bond\_Sh_{i,t-1} \times \Delta\, log\, P_{i,t}^{Bonds}$	1.67**	1.20***	0.20	1.51***	2.15***
	(0.71)	(0.14)	(0.43)	(0.58)	(0.73)
Observations	38,739	38,739	38,739	38,739	47,110
Panel F: Pooled					
Bitcoin Price Changes	0.93***	0.01	0.20	0.77***	-0.45
	(0.28)	(0.03)	(0.16)	(0.20)	(0.32)
Gold Price Changes	2.08***	-0.10*	0.43	1.98***	-1.16
	(0.47)	(0.06)	(0.27)	(0.37)	(1.02)
Stock Price Changes	0.76***	-0.04***	0.32***	0.57***	0.18
	(0.10)	(0.01)	(0.06)	(0.09)	(0.17)
Bond Price Changes	0.54	-0.05	-0.22	1.06**	1.92*
	(0.64)	(0.09)	(0.39)	(0.53)	(1.13)
Observations	37,064	37,064	37,064	37,064	46,311

Notes: The table reports regressions of an indicator variable for whether a household purchased any durable good (column 1), a house (column 2), a car (column 3) or a big-ticket item (column 4) on their lagged portfolio share in an asset interacted with the log change in price of that asset since the last quarter for different assets. For column 5, the dependent variable is the household's level of spending on non-durables and services. Robust standard errors clustered by households are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5% and 1% levels respectively. The sample period is 2018Q3-2020Q4.

Table 5: Share of "I Don't Know" Responses to Expected Return Question

		By ownership of asset	
	Overall	Own	Don't own
Savings Account	60%	n.a.	n.a.
Stocks	68%	47%	77%
Housing	72%	68%	80%
Bonds	74%	62%	74%
Gold	78%	55%	80%
Cryptocurrency	84%	54%	87%

Notes: The table reports the fraction of households who responded "I don't know" when asked to provide an expected return for each type of financial asset in 2021Q3.

Table 6: Correlation between Expected Asset Returns and Expected Inflation

	Dependent variable: expected return		p-value(equality)
	Owner	Non-owner	
	(1)	(2)	(3)
Panel A: Bitcoin			
Expected inflation	0.373**	-0.070	0.019
	(0.182)	(0.053)	
Observations	448	1,780	
R-squared	0.007	0.001	
Panel B: Gold			
Expected inflation	0.245***	0.051	0.043
	(0.079)	(0.055)	
Observations	568	2,749	
R-squared	0.010	0.000	
Panel C: US Stocks			
Expected inflation	-0.054	-0.040	0.814
	(0.042)	(0.043)	
Observations	2,487	2,287	
R-squared	0.001	0.000	
Panel D: US Bonds			
Expected inflation	-0.023	-0.070***	0.158
	(0.027)	(0.019)	
Observations	1,221	2,605	
R-squared	0.001	0.007	
Panel E: Housing			
Expected inflation	0.100*	-0.116	0.011
	(0.054)	(0.096)	
Observations	3,402	864	
R-squared	0.001	0.001	

Notes: The table reports regressions of a household's expected return reported in 2021Q3 for different assets over the next 12 months on their inflation expectations over their next 12 months. Column (1) restricts the sample to those who own the asset (indicated by the panel) while column (2) restricts the sample to those who do not own the asset. Expected inflation is computed as the mean expectation implied by the reported subjective distribution for one-year-ahead inflation forecast. The format of the question follows the Survey of Consumer Expectations run the Federal Reserve Bank of New York. See Coibion, Gorodnichenko and Weber (2022) for more details. Robust standard errors are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5% and 1% levels respectively.

Table 7: Relative Explanatory Power of Observables and Expectations for Asset Ownership

	R^2 of asset holding coming from	
Asset	Observables	Expected Returns and Risk
Crypto	0.09	0.15
Gold	0.11	0.02
Bonds	0.20	0.03
Stocks	0.34	0.07

Notes: The table reports R^2 from regressing indicator variable for ownership in 2021Q3 of each type of asset on either individual observables (from Table 1) in the first column or on expected returns and perceived risk for all asset classes (as in Table 3) in the second column.

Table 8. Information treatments

Treatment	July 2021 wave	August 2022 wave
T2	Over the last twelve months, the inflation rate in the U.S. (as measured by the Consumer Price Index) averaged 5.8%.	Over the last twelve months, the inflation rate in the U.S. (as measured by the Consumer Price Index) averaged 8.5%.
T3	The inflation rate that the Federal Reserve tries to achieve on average is 2% per year.	The inflation rate that the Federal Reserve tries to achieve on average is 2% per year.
T4	The U.S. Federal Open Market Committee (which sets short-term interest rates) forecasts a 2.1% inflation rate in 2022.	The U.S. Federal Open Market Committee (which sets short-term interest rates) forecasts a 2.6% inflation rate in 2023.
T5	Over the last two years, the inflation rate in the U.S. (as measured by the Consumer Price Index) averaged 2.9% per year.	Over the last two years, the inflation rate in the U.S. (as measured by the Consumer Price Index) averaged 6.7% per year.
T6	The value of a Bitcoin has increased by 4,611% in the last 5 years.	The value of a Bitcoin has increased by 674% in the last 5 years.
T7	The U.S. stock market (as measured by the S&P 500) has increased by exactly 100% in the last 5 years.	The U.S. stock market (as measured by the S&P 500) has increased by 59% in the last 5 years.
T8	The value of a Bitcoin has increased by 4,611% in the last 5 years and the U.S. stock market (as measured by the S&P 500) has increased by exactly 100% over the same period.	The value of a Bitcoin has increased by 674% in the last 5 years and the U.S. stock market (as measured by the S&P 500) has increased by 59% over the same period.
T9	The value of a Bitcoin has increased by 244% in the last 12 months.	The value of a Bitcoin has fallen by 43% in the last 12 months.
T10	The U.S. stock market (as measured by the S&P 500) has increased by 34% in the last 12 months.	The U.S. stock market (as measured by the S&P 500) has fallen by 12% in the last 12 months.
T11	The value of a Bitcoin has increased by 244% in the last 12 months and the U.S. stock market (as measured by the S&P 500) has increased by 34% over the same period.	The value of a Bitcoin has fallen by 43% in the last 12 months and the U.S. stock market (as measured by the S&P 500) has fallen by 12% over the same period.
T12	The value of a Bitcoin has increased by 244% in the last 12 months but fell as much as 23% in just one month during that time.	The value of a Bitcoin has fallen by 43% in the last 12 months but increased as much as 33% in just one month during that time.
T13	The value of the U.S. stock market (as measured by the S&P 500) has increased by 34% in the last 12 months but fell as much as 1% in just one month during that time.	The value of the U.S. stock market (as measured by the S&P 500) has fallen by 12% in the last 12 months but increased as much as 5% in just one month during that time.
T14	n.a.	The value of a Bitcoin fell by 43% in the last 12 months but increased as much as 33% in just one month during that time. The U.S. stock market (as measured by the S&P 500) fell by 12% in the last 12 months but rose as much as 5% in just one month during that time.
T15	Picture with time-series of Bitcoin price. (see Fig. 7)	Picture with time-series of Bitcoin price. (see Fig. 7)
T16	Picture with time-series of S&P500 price. (see Fig. 7)	Picture with time-series of S&P500 price. (see Fig. 7)
T17	Picture with time-series of Bitcoin price and S&P500 price. (see Fig. 7)	Picture with time-series of Bitcoin price and S&P500 price. (see Fig. 7)
T18	Picture with time-series of Monthly Percentage Return on Bitcoin and U.S. Stocks. (see Fig. 7)	Picture with time-series of Monthly Percentage Return on Bitcoin and U.S. Stocks. (see Fig. 7)

Table 9: The Effects of Information Treatments on Desired and Actual Portfolios

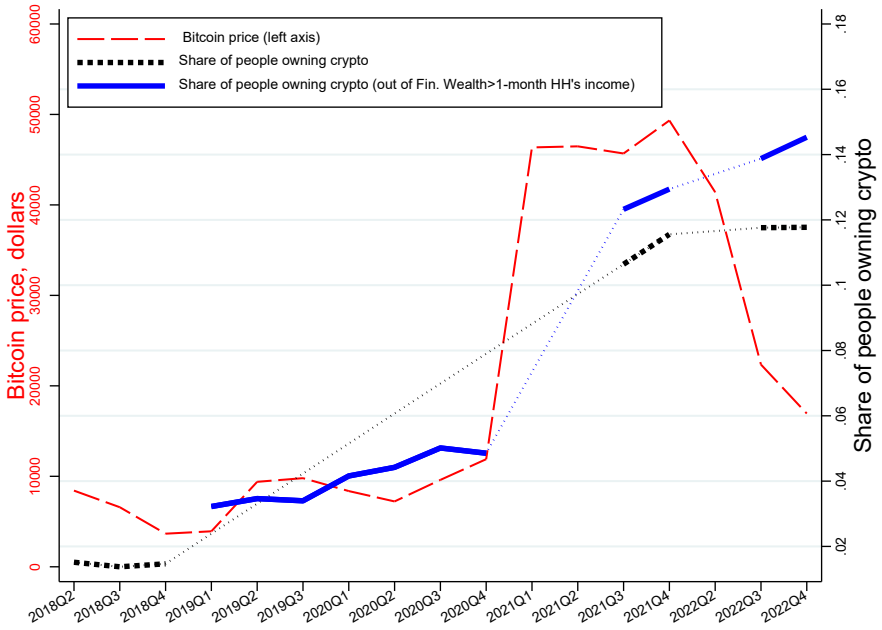
	Own Crypto	Ideal share					
		crypto	gold	stocks	bonds	accounts	other
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: Survey in Summer 2021							
Inflation treatments							
Past inflation (5.8%)	-0.74	0.35	0.67	0.16	0.17	-0.79	-0.56
	(0.94)	(0.32)	(0.46)	(1.41)	(0.66)	(1.80)	(1.11)
Inflation target (2%)	-0.55	0.25	0.57	0.05	0.69	0.27	-1.82*
	(0.93)	(0.32)	(0.46)	(1.40)	(0.69)	(1.76)	(1.03)
FOMC inflation forecast (2.1%)	-0.25	0.57*	0.98**	-0.84	0.13	0.87	-1.71
	(0.83)	(0.34)	(0.48)	(1.42)	(0.66)	(1.76)	(1.07)
Past inflation, 2 years (2.9%)	0.57	0.03	0.76	-0.56	-1.03	1.61	-0.80
	(0.85)	(0.30)	(0.47)	(1.39)	(0.64)	(1.77)	(1.09)
Bitcoin treatments							
Return, past 5 years (4,611%)	-1.12	0.79**	1.68***	-0.92	-0.13	0.29	-1.72
	(0.76)	(0.33)	(0.53)	(1.35)	(0.67)	(1.74)	(1.05)
Return, past 12 months (244%)	1.75*	1.02***	1.49***	-1.24	1.15*	-1.48	-0.95
	(1.02)	(0.35)	(0.47)	(1.36)	(0.69)	(1.78)	(1.08)
Return, past 12 months & 1 month (-23%)	1.15	0.38	0.84*	-2.37*	0.17	1.60	-0.62
	(0.94)	(0.32)	(0.47)	(1.39)	(0.67)	(1.81)	(1.08)
Figure with price dynamics, 5 years	0.05	0.69**	0.63	-3.00**	1.07	2.11	-1.50
	(0.93)	(0.33)	(0.43)	(1.34)	(0.68)	(1.76)	(1.06)
Stock treatments							
Return, past 5 years (100%)	-0.22	0.70*	0.80*	-2.17	-0.25	3.10*	-2.18**
	(0.98)	(0.37)	(0.47)	(1.39)	(0.66)	(1.80)	(1.03)
Return, past 12 months (34%)	-0.10	0.31	0.29	-0.37	0.64	-0.69	-0.18
	(0.84)	(0.30)	(0.44)	(1.36)	(0.68)	(1.75)	(1.11)
Return, past 12 months & 1 month (-1%)	0.47	0.30	1.14**	-1.50	0.10	-0.13	0.10
	(0.98)	(0.30)	(0.46)	(1.36)	(0.66)	(1.77)	(1.11)
Figure with price dynamics, 5 years	0.85	0.29	0.88*	-0.05	1.06	-0.72	-1.45
	(0.99)	(0.31)	(0.48)	(1.38)	(0.69)	(1.77)	(1.08)
Combined (bitcoin & stocks) treatments							
Return, past 5 years	-0.06	1.05***	1.15**	-0.75	0.24	-1.55	-0.13
	(0.95)	(0.36)	(0.49)	(1.39)	(0.67)	(1.81)	(1.12)
Return, past 12 months	1.33	1.16***	0.71	-1.15	0.70	-0.11	-1.31
	(0.89)	(0.37)	(0.46)	(1.35)	(0.68)	(1.75)	(1.06)
Figure with price dynamics, 5 years	0.19	0.78**	1.51***	-1.59	0.52	1.32	-2.54**
	(1.00)	(0.34)	(0.48)	(1.37)	(0.69)	(1.77)	(1.02)
Figure with price dynamics, 5 years	0.60	0.43	0.93**	-0.33	0.64	0.57	-2.25**
	(0.98)	(0.31)	(0.46)	(1.38)	(0.70)	(1.76)	(1.01)
Observations	8,690	11,474	11,474	11,474	11,474	11,474	11,474
R-squared	0.62	0.28	0.03	0.17	0.06	0.13	0.02
p-value (inflation treatments)	0.580	0.424	0.270	0.944	0.125	0.729	0.353
p-value (bitcoin treatments)	0.004	0.024	0.004	0.175	0.193	0.286	0.482
p-value (stock treatments)	0.815	0.448	0.089	0.409	0.344	0.183	0.094
p-value (combined treatments)	0.522	0.005	0.019	0.784	0.828	0.602	0.034

(continued on next page)

	Own Crypto	Ideal share					
		crypto	gold	stocks	bonds	accounts	other
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel B: Survey in Summer 2022							
Inflation treatments							
Past inflation (8.5%)	-0.05	-0.53	0.16	1.73	0.56	-2.24	0.32
	(0.51)	(0.33)	(0.56)	(1.29)	(0.74)	(1.63)	(0.91)
Inflation target (2%)	-0.35	-0.39	-0.74	-0.36	0.32	3.02*	-1.84**
	(0.57)	(0.31)	(0.53)	(1.39)	(0.76)	(1.81)	(0.76)
FOMC inflation forecast (2.6%)	-0.46	-0.93***	-0.14	1.61	1.96**	-1.41	-1.09
	(0.53)	(0.31)	(0.58)	(1.33)	(0.78)	(1.73)	(0.90)
Past inflation, 2 years (6.7%)	0.29	-0.52	-0.48	-1.10	1.13	1.67	-0.71
	(0.44)	(0.32)	(0.54)	(1.34)	(0.75)	(1.69)	(0.85)
Bitcoin treatments							
Return, past 5 years (647%)	-0.69	-0.03	-0.35	-2.51*	0.70	2.28	-0.08
	(0.65)	(0.33)	(0.53)	(1.36)	(0.76)	(1.80)	(0.95)
Return, past 12 months (43%)	-0.71	-1.06***	-0.35	0.82	1.21	0.52	-1.14
	(0.59)	(0.30)	(0.52)	(1.35)	(0.75)	(1.70)	(0.80)
Return, past 12 months & 1 month (+33%)	0.50	-0.92***	-0.52	0.37	-0.11	2.34	-1.16
	(0.51)	(0.29)	(0.57)	(1.41)	(0.70)	(1.73)	(0.88)
Figure with price dynamics, 5 years	-0.50	-0.43	0.13	0.09	1.07	-1.27	0.41
	(0.54)	(0.33)	(0.55)	(1.38)	(0.79)	(1.73)	(0.94)
Stock treatments							
Return, past 5 years (59%)	-0.96	-0.78**	-0.58	3.59***	3.32***	-4.01**	-1.53*
	(0.64)	(0.31)	(0.52)	(1.36)	(0.79)	(1.64)	(0.83)
Return, past 12 months (-12%)	-0.66	0.06	0.12	-0.81	0.56	1.08	-1.01
	(0.63)	(0.36)	(0.59)	(1.31)	(0.76)	(1.73)	(0.85)
Return, past 12 months & 1 month (+5%)	0.06	-0.45	0.12	0.78	0.78	0.68	-1.91**
	(0.60)	(0.34)	(0.58)	(1.38)	(0.73)	(1.72)	(0.76)
Figure with price dynamics, 5 years	-0.75	-0.60*	0.03	0.64	0.29	0.10	-0.45
	(0.62)	(0.32)	(0.57)	(1.32)	(0.71)	(1.73)	(0.87)
Combined (bitcoin & stocks) treatments							
Return, past 5 years	-1.03	0.28	0.51	1.76	1.38*	-1.39	-2.54***
	(0.67)	(0.35)	(0.60)	(1.34)	(0.76)	(1.71)	(0.73)
Return, past 12 months	-0.52	-0.59*	-0.71	1.90	0.42	-0.44	-0.59
	(0.64)	(0.33)	(0.53)	(1.43)	(0.74)	(1.74)	(0.85)
Return, past 12 months & 1 month	-0.73	-0.00	0.19	-1.98	1.08	2.22	-1.51*
	(0.71)	(0.34)	(0.58)	(1.35)	(0.77)	(1.77)	(0.86)
Figure with price dynamics, 5 years	-0.18	-0.86**	1.02	1.05	1.07	0.60	-2.88***
	(0.66)	(0.34)	(0.63)	(1.40)	(0.73)	(1.73)	(0.69)
Figure with monthly returns, 5 years	-0.89	-0.74**	-1.10**	1.20	1.26*	0.75	-1.38
	(0.56)	(0.33)	(0.53)	(1.36)	(0.74)	(1.76)	(0.85)
Observations	8,197	9,198	9,198	9,198	9,198	9,198	9,198
R-squared	0.74	0.33	0.06	0.14	0.05	0.10	0.02
p-value (inflation treatments)	0.494	0.036	0.581	0.344	0.104	0.110	0.114
p-value (bitcoin treatments)	0.156	0.001	0.817	0.344	0.327	0.377	0.406
p-value (stock treatments)	0.409	0.057	0.802	0.082	0.001	0.105	0.085
p-value (combined treatments)	0.538	0.013	0.036	0.194	0.209	0.701	0

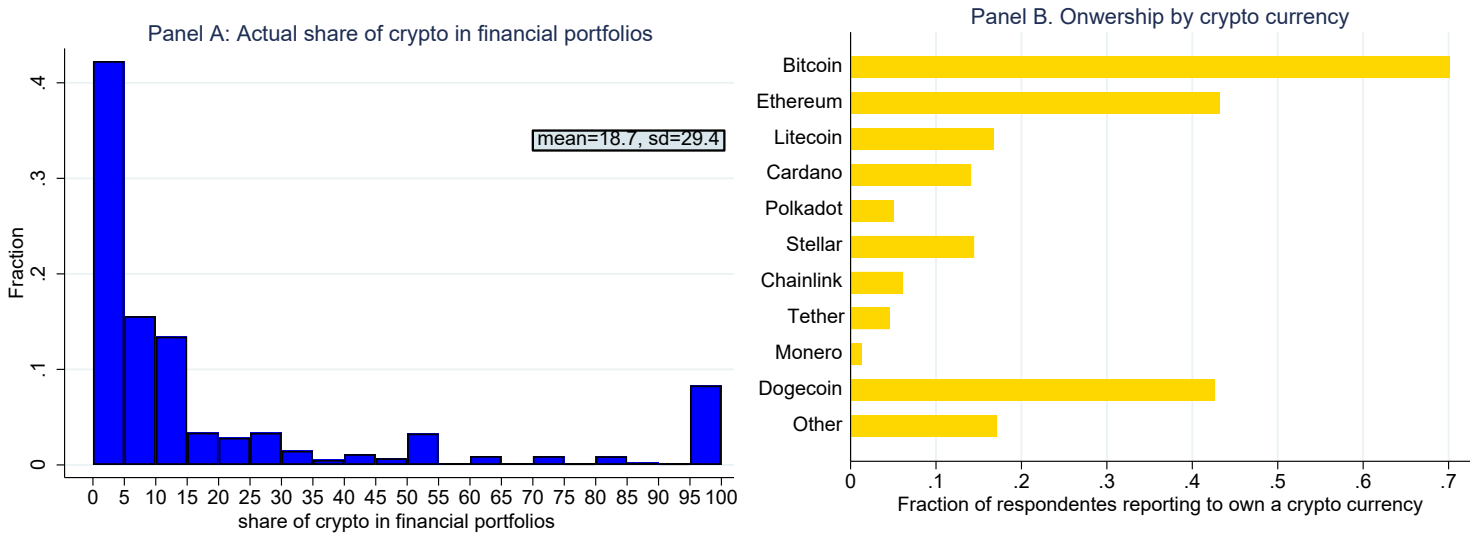
Notes: Sociodemographic controls as well as controls for reasons for owning or not owning crypto currency are included but not reported. In column (1), the dependent variable is an indicator variable equal to one if a respondent owns crypto current in a follow-up wave and zero otherwise. In this column, we also control for owning crypto currency (indicator variable) in pre-treatment. In columns (2)-(7), the dependent variables are the percent share that respondents assign to their ideal portfolio allocation of financial assets. These responses are recorded after the treatment in the same wave. Robust standard errors are reported in parentheses. ***, **, * denote statistical significance at 1, 5 and 10 percent levels. The sample period is 2021Q3-2021Q4.

Figure 1: Ownership of Cryptocurrencies by U.S. Households



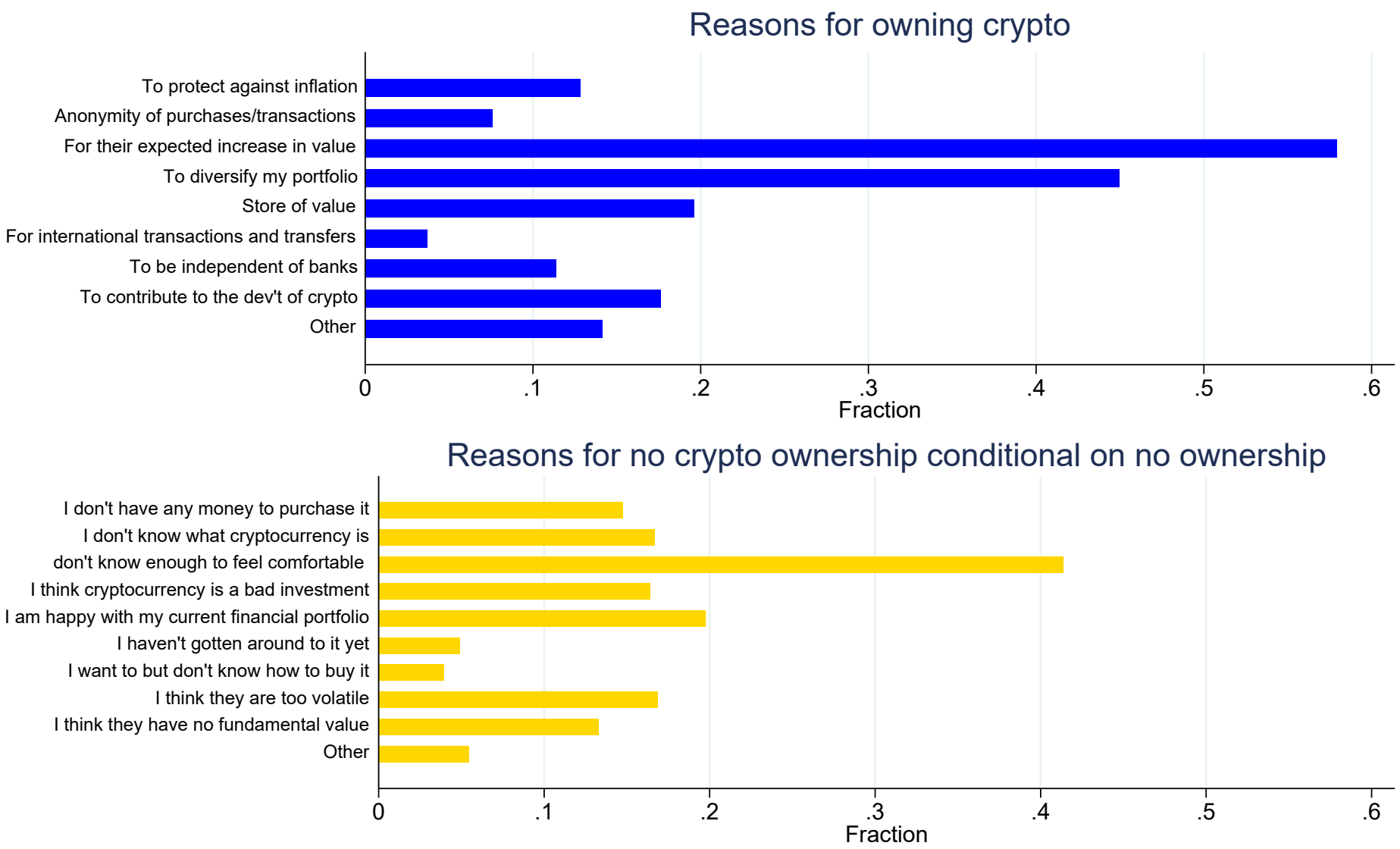
Notes: the figure reports time series for Bitcoin prices and the share of households reporting that they own crypto currency. The format of the ownership question evolved across survey waves. In the early (2018) and late (2021-2022) waves of the survey, all households were asked to report if they own crypto currency. In the middle waves (2019-2020), households were asked about crypto-currency ownership only if they reported that they have financial wealth greater than their monthly income.

Figure 2: Crypto in Financial Portfolios of Crypto-Owners



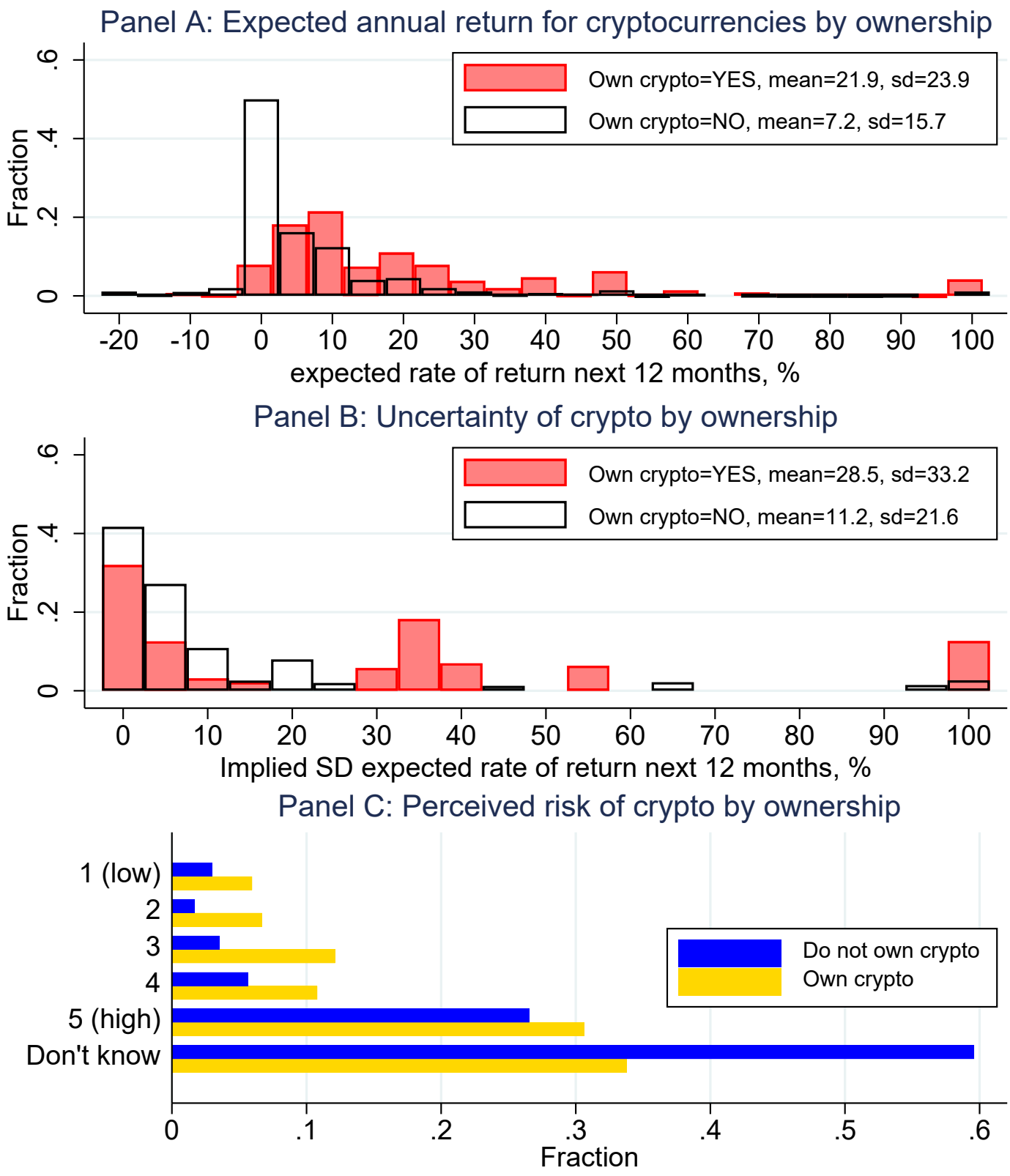
Notes: Panel A reports the share of financial portfolio allocated to crypto currencies conditional on owning a crypto currency. Panel B reports which crypto currencies are in financial portfolios conditional on owning a crypto currency. For Panel B, respondents can choose multiple currencies. The data are from the Summer 2021 survey wave.

Figure 3: Reasons why individuals do and do not own cryptocurrency



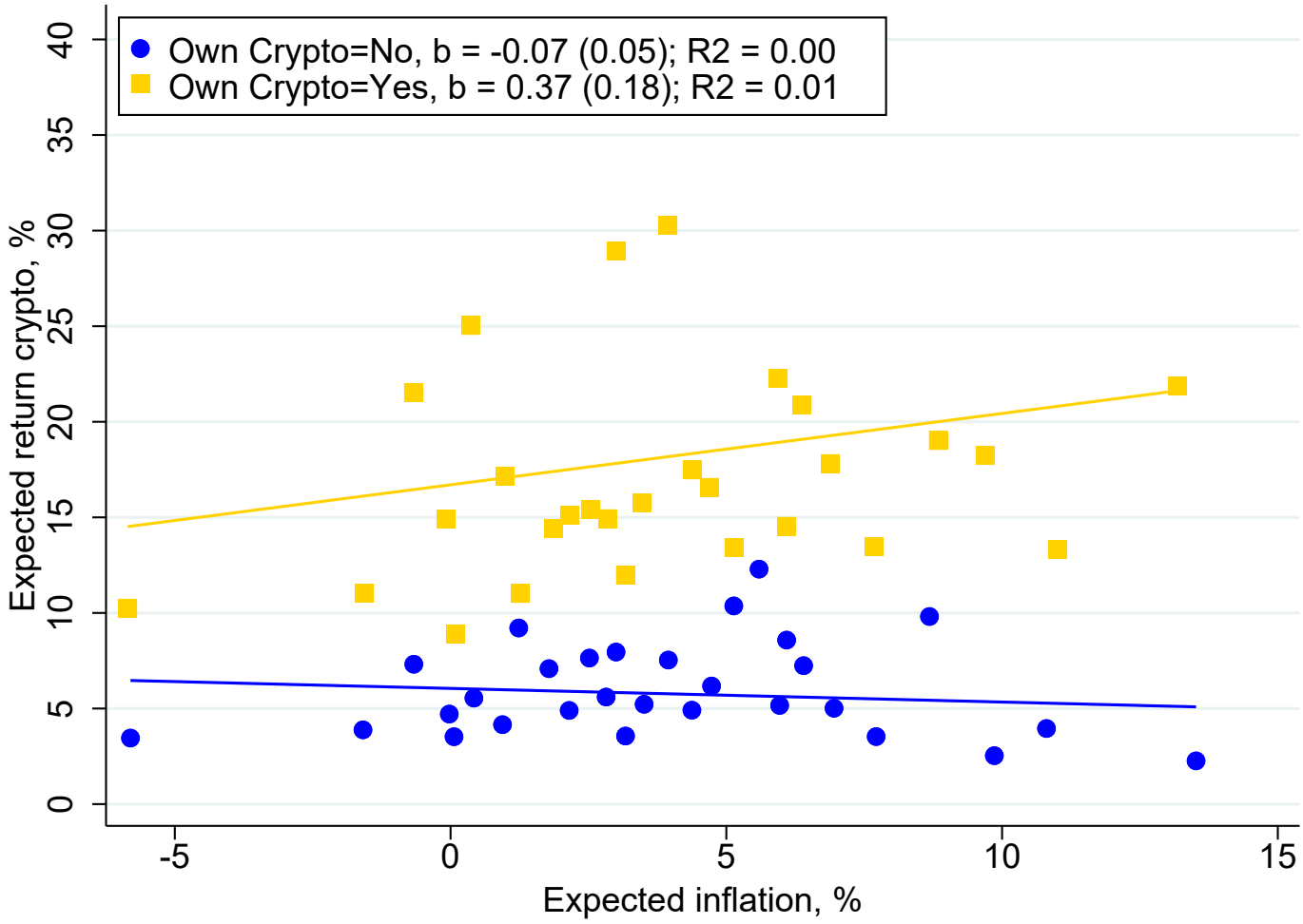
Notes: The top panel shows the distribution of responses to "Why do you hold cryptocurrency? Please select all that apply." The bottom panel shows the distribution of responses to "Please select the reason(s) that best describe why you don't own any cryptocurrency?". The data are from the Summer 2021 survey wave.

Figure 4: Expected Crypto Returns, Uncertainty about Returns, and Perceived Risk of Crypto



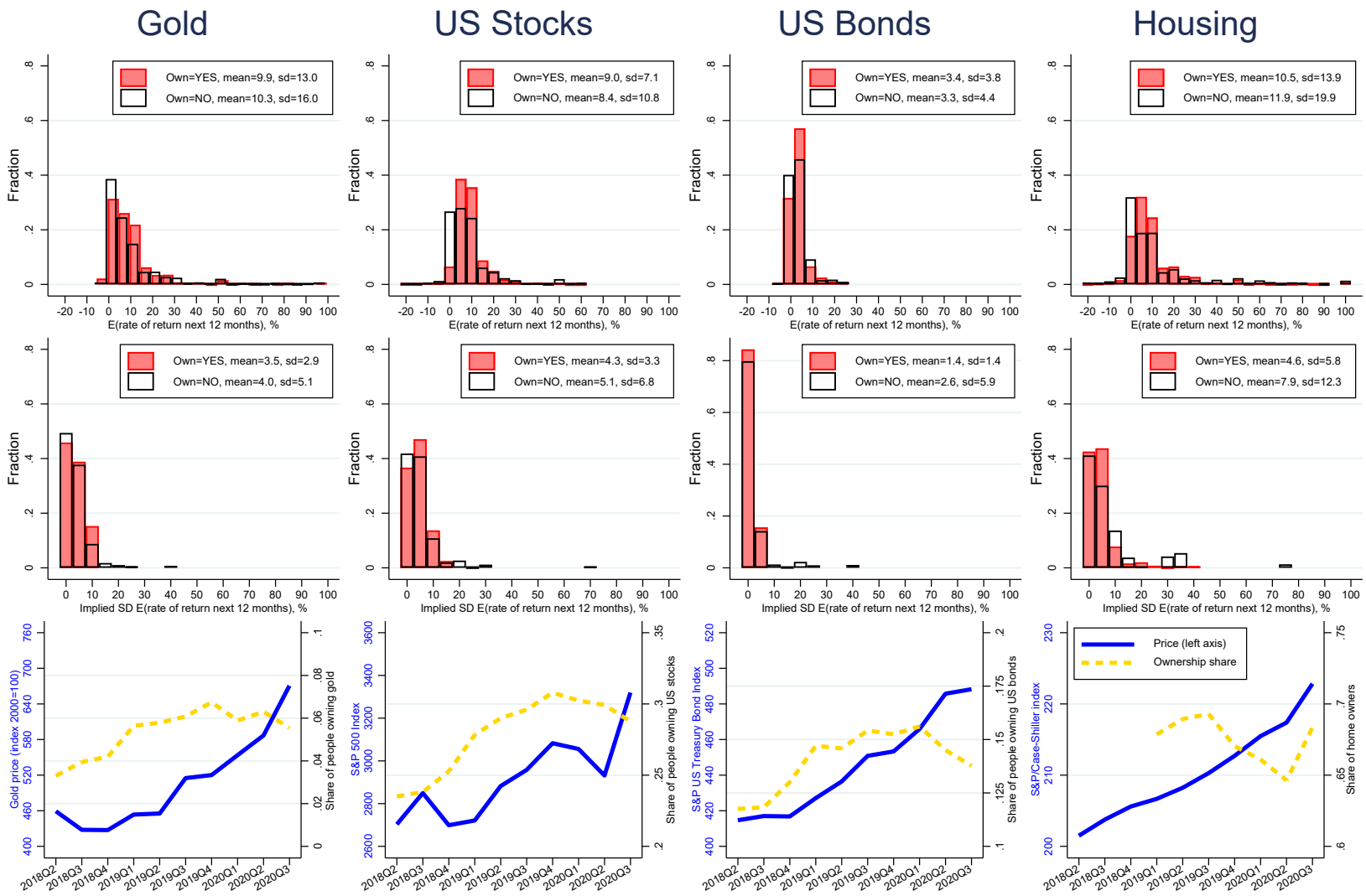
Notes: Panel A reports the histogram of expected returns for Bitcoin by crypto ownership. Panel B reports the histogram for implied standard deviation (uncertainty) in the reported subjective distributions by ownership status. The data for Panel B is restricted to the control group because subjective distributions were elicited only post-treatment. Panel C reports the distribution of the qualitative responses on Bitcoin's perceived riskiness. The data are from the Summer 2021 survey wave.

Figure 5: Expected Crypto Returns and Expected Inflation



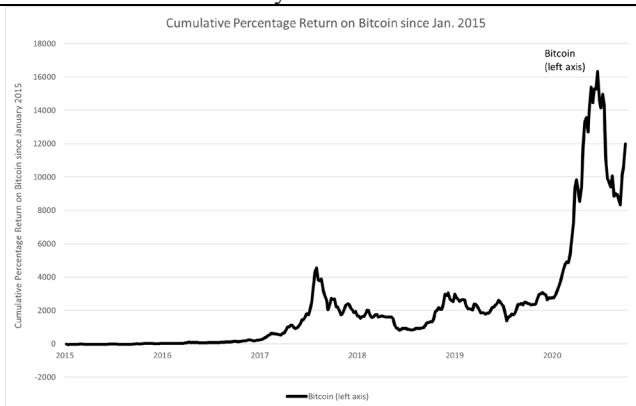
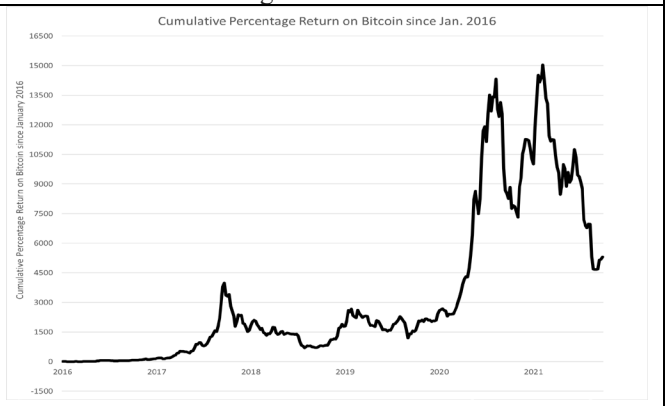
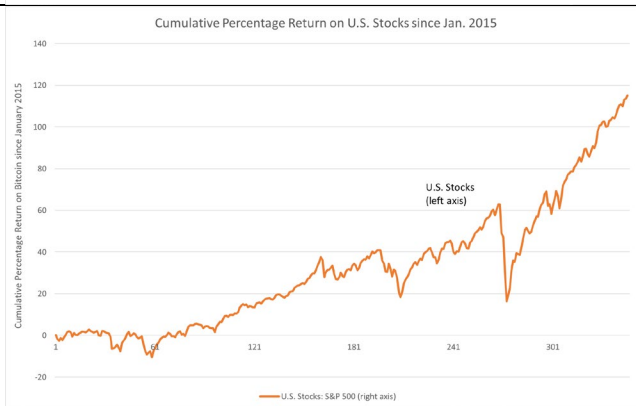
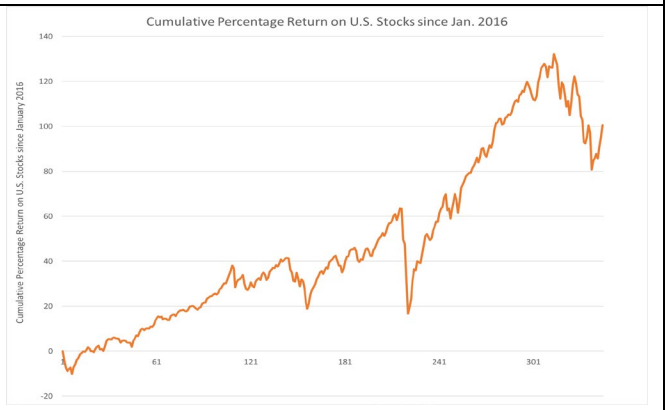
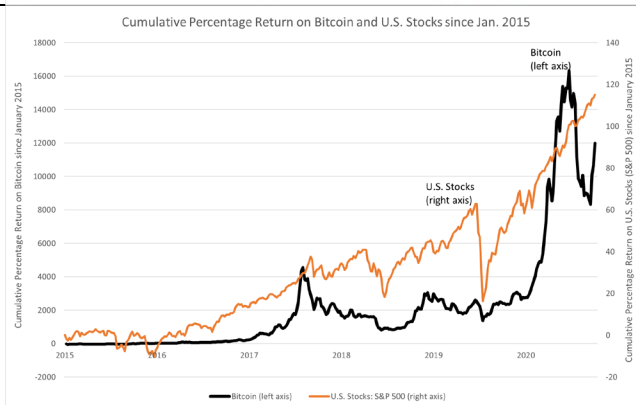
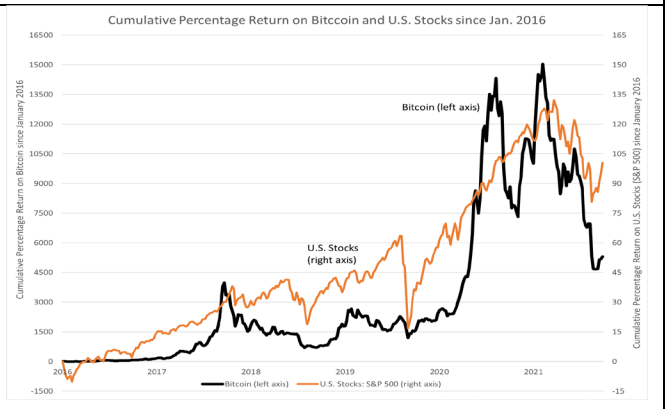
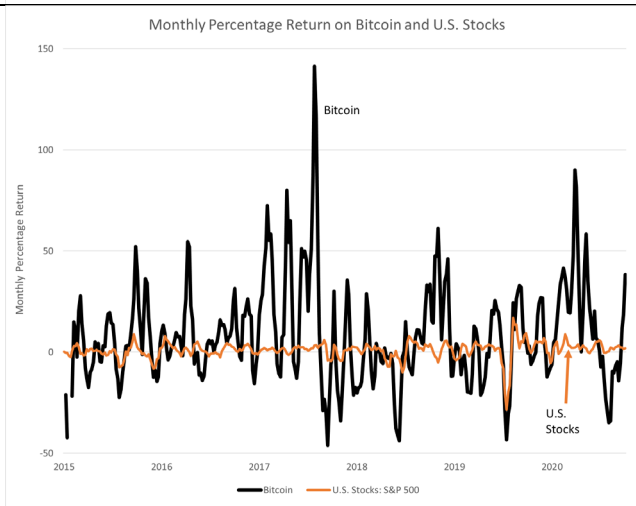
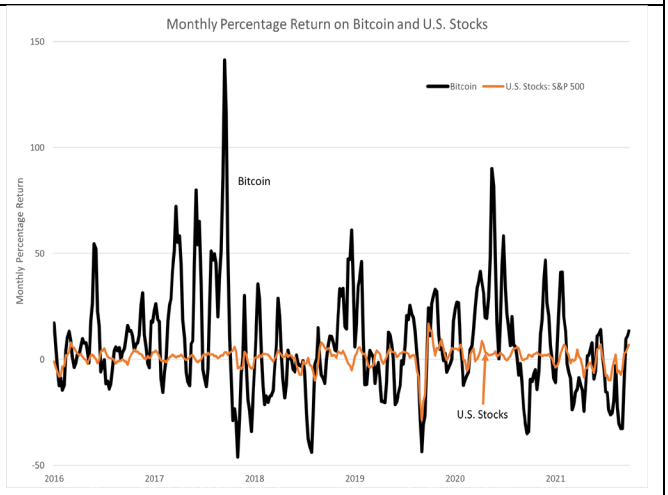
Notes: the figure reports a binscatter plot of one-year-ahead forecasts for inflation and Bitcoin returns. Expected inflation is computed as the mean expectation implied by the reported subjective distribution for one-year-ahead inflation forecast. The format of the question follows the Survey of Consumer Expectations run the Federal Reserve Bank of New York. See Coibion, Gorodnichenko and Weber (2022) for more details. The data are for the Summer 2021 survey wave.

Figure 6: Expected Returns, Return Uncertainty and Ownership of Other Assets



Notes: The top row reports the histogram of expected returns for each type of assets by ownership status in 2021Q3. The middle row reports the histogram for implied standard deviation (uncertainty) in the reported subjective distributions by ownership status in 2021Q3. The data for this row is restricted to the control group because subjective distributions were elicited only post-treatment. Because of space constraints in the survey, we were not able to elicit subjective probabilities for each scenario. As a result, we assume a symmetric triangular distribution when we compute the implied mean and uncertainty for asset class k and respondent i as follows: $E\left(return_i^k\right) = \frac{1}{4}\{Lowest\ rate\}_i^k + \frac{1}{2}\{Most\ likely\ rate\}_i^k + \frac{1}{4}\{Highest\ rate\}_i^k$ and $E\ var\left(return_i^k\right) = \frac{1}{4}\left(\{Lowest\ rate\}_i^k\right)^2 + \frac{1}{2}\left(\{Most\ likely\ rate\}_i^k\right)^2 + \frac{1}{4}\left(\{Highest\ rate\}_i^k\right)^2 - \left(E\left(return_i^k\right)\right)^2$ and $E\ std\left(return_i^k\right) = \sqrt{E\ var\left(return_i^k\right)}$. The bottom row reports the time series asset prices and the share of households reporting that they own the asset. The sample period is 2018Q2-2020Q4.

Figure 7. Graphical information treatments

Treatment	July 2021 wave	August 2022 wave
T15		
T16		
T17		
T18		

Online Appendix

Appendix Table A.1: Who Owns Gold?

Dependent variable: Indicator for ownership of gold			
Gender		*House ownership [omitted category: own house/apt without a mortgage]*	
Male	3.962***	Own house/apt fixed-rate mortgage	-0.156
	(0.307)		(0.343)
		Own house/apt variable-rate mortgage	1.262*
Income [omitted category: Bottom Tercile]			(0.767)
Medium Tercile	-0.107	Rent house/apt	-0.270
	(0.257)		(0.375)
Highest Tercile	1.589***	Other	-0.281
	(0.287)		(0.630)
Education [omitted category: High school or less]		*Monthly spending debt and rent payments*	
Assoc. Degree or some college	-0.343	Log spending	-0.522***
	(0.293)		(0.123)
College or more	0.263		
	(0.333)	*Stimulus check*	
Age [omitted category: 40 or less]		Log stimulus amount	-
[41, 60]	-0.156		-
	(0.285)		
61 or more	0.152	*Financial Wealth >*	
	(0.418)	1-month HH's income	10.413***
			(0.231)
Race			
White	-2.228***	*Political party [omitted category: Democrats]*	
	(0.308)	Republicans	3.180***
			(0.305)
Employment status [omitted category: Paid job]		Green party	3.539
Looking for a job	1.853***		(2.306)
	(0.582)	Libertarian party	7.451***
Inactive	0.630**		(1.006)
	(0.282)	Other or independent	2.134***
Retiree	0.356		(0.368)
	(0.423)	Prefer not to answer	0.631**
			(0.299)
Observations			77,031
R2			0.069

Notes: see notes for Table 1. The data is pooled across 10 survey waves.

Appendix Table A.2: Who Owns Stocks?

Dependent variable: Indicator for ownership of stocks			
Gender		*House ownership [omitted category: own house/apt without a mortgage]*	
Male	5.978***	Own house/apt fixed-rate mortgage	0.037
	(0.420)		(0.501)
		Own house/apt variable-rate mortgage	-2.135*
Income [omitted category: Bottom Tercile]			(1.099)
Medium Tercile	0.044	Rent house/apt	-2.347***
	(0.410)		(0.527)
Highest Tercile	7.523***	Other	-2.529***
	(0.430)		(0.942)
Education [omitted category: High school or less]		*Monthly spending debt and rent payments*	
Assoc. Degree or some college	2.569***	Log spending	-0.065
	(0.459)		(0.149)
College or more	10.682***		
	(0.502)	*Stimulus check*	
Age [omitted category: 40 or less]		Log stimulus amount	-
[41, 60]	1.526***		-
	(0.417)		
61 or more	0.625	*Financial Wealth >*	
	(0.584)	1-month HH's income	50.800***
			(0.361)
Race			
White	1.073**	*Political party [omitted category: Democrats]*	
	(0.430)	Republicans	-0.309
			(0.453)
Employment status [omitted category: Paid job]		Green party	0.056
Looking for a job	-1.771**		(2.542)
	(0.772)	Libertarian party	5.294***
Inactive	-1.176***		(1.134)
	(0.438)	Other or independent	-0.044
Retiree	-1.501**		(0.518)
	(0.597)	Prefer not to answer	-1.301**
			(0.511)
Observations			77,031
R2			0.412

Notes: see notes for Table 1. The data is pooled across 10 survey waves.

Appendix Table A.3: Who Owns Bonds?

Dependent variable: Indicator for ownership of bonds	
Gender	
Male	2.463***
	(0.409)
Income [omitted category: Bottom Tercile]	
Medium Tercile	-0.506
	(0.335)
Highest Tercile	4.689***
	(0.361)
Education [omitted category: High school or less]	
Assoc. Degree or	0.635*
some college	(0.376)
College or more	6.761***
	(0.428)
Age [omitted category: 40 or less]	
[41, 60]	1.320***
	(0.389)
61 or more	2.789***
	(0.559)
Race	
White	0.929**
	(0.412)
Employment status [omitted category: Paid job]	
Looking for a job	-0.989
	(0.684)
Inactive	-1.305***
	(0.375)
Retiree	-0.719
	(0.565)
House ownership [omitted category: own house/apt without a mortgage]	
Own house/apt	-0.623
fixed-rate mortgage	(0.474)
Own house/apt	-1.031
variable-rate mortgage	(0.986)
Rent house/apt	-3.020***
	(0.477)
Other	-2.314***
	(0.821)
Monthly spending debt and rent payments	
Log spending	-0.543***
	(0.143)
Stimulus check	
Log stimulus amount	-
	-
Financial Wealth >	
1-month HH's income	24.588***
	(0.303)
Political party [omitted category: Democrats]	
Republicans	-2.195***
	(0.431)
Green party	5.134*
	(2.665)
Libertarian party	3.386***
	(1.167)
Other or independent	-1.601***
	(0.490)
Prefer not to answer	-1.834***
	(0.474)
Observations	77,031
R2	0.179

Notes: see notes for Table 1. The data is pooled across 10 survey waves.

Appendix Table A.4: Power of Observables and Expectations for Share of Crypto in Portfolio

Dependent variable: crypto share	(1)	(2)	(3)	(4)	(5)	(6)
1-year-ahead expected crypto return		0.226***		0.222***	0.247***	0.245***
		(0.068)		(0.068)	(0.072)	(0.071)
Perceived risk crypto			-0.742	-0.585	-0.384	-0.590
			(0.497)	(0.472)	(0.559)	(0.503)
1-year-ahead expected stocks return					-0.036	-0.051
					(0.051)	(0.051)
Perceived risk stocks					-0.225	-0.066
					(0.643)	(0.424)
1-year-ahead expected bonds return					-0.158	-0.145
					(0.147)	(0.140)
Perceived risk bonds					1.052	0.923
					(0.835)	(0.667)
1-year-ahead expected gold return					-0.050	-0.044
					(0.044)	(0.045)
Perceived risk gold					-0.262	-0.133
					(0.466)	(0.410)
Expected Inflation					-0.034	-0.059
					(0.135)	(0.171)
Control for Observables	Y	N	N	N	N	Y
Observations	898	898	898	898	898	898
R-squared	0.077	0.081	0.007	0.086	0.106	0.178

Notes: The table reports results from regressing the share of crypto in portfolio reported in wave 2021Q3 on the observables listed in Table 1 (columns 1 and 6) or measures of expected returns or perceived risks of different financial assets (columns 2-6). The sample is restricted to respondents who provided quantitative responses for returns for each asset class. The perceived risk for an asset is measured with a question eliciting perceptions of risk on a 1 (very safe) to 5 (very risky) scale. *, **, and *** denote statistical significance at the 10%, 5% and 1% levels respectively.

Appendix Table A.5: Power of Observables and Expectations for Desired Share of Crypto in Portfolio

Dependent variable: desired crypto share	(1)	(2)	(3)	(4)	(5)	(6)
1-year-ahead expected crypto return	0.206***			0.200***	0.200***	0.191***
	(0.052)			(0.050)	(0.050)	(0.048)
Perceived risk crypto		-1.143***		-0.984***	-1.001***	-1.079***
		(0.409)		(0.357)	(0.375)	(0.361)
1-year-ahead expected stocks return					0.009	0.006
					(0.041)	(0.042)
Perceived risk stocks					0.350	0.397
					(0.371)	(0.317)
1-year-ahead expected bonds return					-0.167	-0.175*
					(0.115)	(0.106)
Perceived risk bonds					0.224	0.198
					(0.404)	(0.363)
1-year-ahead expected gold return					0.041	0.046
					(0.061)	(0.062)
Perceived risk gold					-0.283	-0.234
					(0.268)	(0.242)
Expected Inflation					0.029	0.029
					(0.092)	(0.112)
Control for Observables	Y	N	N	N	N	Y
Observations	901	901	901	901	901	901
R-squared	0.056	0.128	0.032	0.152	0.165	0.207

Notes: The table reports results from regressing the desired fraction of financial portfolio/savings allocated to cryptocurrencies in two years reported in wave 2021Q3 on the observables listed in Table 1 (columns 1 and 6) or measures of expected returns or perceived risks of different financial assets (columns 2-6). The sample is restricted to respondents who provided quantitative responses for returns for each asset class. The perceived risk for an asset is measured with a question eliciting perceptions of risk on a 1 (very safe) to 5 (very risky) scale. *, **, and *** denote statistical significance at the 10%, 5% and 1% levels respectively.

Appendix Table A6: Relative Explanatory Power of Observables and Expectations for Share of Asset in Portfolio

	R^2 of asset holding coming from	
Asset	Observables	Expected Returns and Risk
Crypto	0.08	0.11
Gold	0.08	0.06
Bonds	0.18	0.04
Stocks	0.22	0.14

Notes: The table reports R^2 from regressing the share of each type of asset in an individual's financial portfolio on either individual observables (from Table 1) in the first column or on expected returns and perceived risk for all asset classes (as in Table 4) in the second column. The sample period is 2021Q3.

Appendix Table A7: Relative Explanatory Power of Observables and Expectations for Desired Share of Asset in Portfolio

	R^2 of asset holding coming from	
Asset	Observables	Expected Returns and Risk
Crypto	0.06	0.17
Gold	0.07	0.08
Bonds	0.05	0.03
Stocks	0.25	0.14

Notes: The table reports R^2 from regressing the desired share of each type of asset in an individual's financial portfolio on either individual observables (from Table 1) in the first column or on expected returns and perceived risk for all asset classes (as in Table 4) in the second column. The sample period is 2021Q3.

Appendix Table A8. Effects of Information Treatments by Reason for Not Owning Crypto

	Ideal share for those who do not know enough about crypto						Ideal share for those who think crypto is a bad investment					
	crypto	gold	stocks	bonds	accounts	other	crypto	gold	stocks	bonds	accounts	other
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Inflation treatments												
Past inflation (5.8%)	0.05	-0.09	-1.44	0.87	-0.02	0.63	-0.06	1.19	-0.33	-0.41	2.05	-2.44
	(0.36)	(0.60)	(1.90)	(0.91)	(2.48)	(1.50)	(0.28)	(0.82)	(2.56)	(1.25)	(3.02)	(1.83)
Inflation target (2%)	0.25	0.94	-0.60	0.71	0.23	-1.53	0.03	0.17	2.43	0.21	-0.46	-2.37
	(0.36)	(0.67)	(1.90)	(0.89)	(2.43)	(1.33)	(0.28)	(0.68)	(2.42)	(1.29)	(2.87)	(1.78)
FOMC inflation forecast (2.1%)	0.40	1.21*	-3.82**	0.05	3.18	-1.02	0.13	0.20	2.95	-0.05	-1.37	-1.85
	(0.37)	(0.71)	(1.93)	(0.89)	(2.54)	(1.42)	(0.29)	(0.67)	(2.52)	(1.27)	(2.85)	(1.91)
Past inflation, 2 years (2.9%)	-0.18	0.76	-3.05	-0.52	3.19	-0.21	-0.12	0.57	2.52	-2.41**	2.35	-2.91
	(0.30)	(0.66)	(1.88)	(0.87)	(2.46)	(1.46)	(0.28)	(0.71)	(2.54)	(1.18)	(2.97)	(1.81)
Bitcoin treatments												
Return, past 5 years (4,611%)	0.64*	1.09	-2.74	0.83	0.71	-0.53	0.06	0.58	3.97	-0.63	-0.71	-3.27*
	(0.37)	(0.70)	(1.87)	(0.94)	(2.44)	(1.41)	(0.27)	(0.75)	(2.52)	(1.28)	(2.93)	(1.83)
Return, past 12 months (244%)	0.96**	0.87	-3.34*	1.65*	0.79	-0.94	0.76*	0.70	2.81	2.30*	-3.62	-2.95
	(0.41)	(0.62)	(1.88)	(0.94)	(2.55)	(1.43)	(0.41)	(0.70)	(2.39)	(1.31)	(2.80)	(1.82)
Return, past 12 months & 1 month (-23%)	0.40	0.82	-5.07***	0.96	4.34*	-1.46	0.28	1.05	-1.74	-0.95	2.46	-1.10
	(0.38)	(0.65)	(1.89)	(0.94)	(2.55)	(1.34)	(0.34)	(0.83)	(2.42)	(1.23)	(2.98)	(1.97)
Figure with price dynamics, 5 years	0.47	0.53	-4.87***	0.97	4.81*	-1.92	0.20	0.47	1.72	0.48	1.52	-4.38***
	(0.37)	(0.58)	(1.88)	(0.94)	(2.49)	(1.34)	(0.30)	(0.69)	(2.39)	(1.23)	(2.80)	(1.64)
Stock treatments												
Return, past 5 years (100%)	1.04**	0.44	-4.03**	0.45	3.65	-1.54	0.43	1.33*	-1.11	-0.95	2.42	-2.13
	(0.45)	(0.65)	(1.87)	(0.89)	(2.46)	(1.36)	(0.31)	(0.78)	(2.47)	(1.27)	(3.01)	(1.85)
Return, past 12 months (34%)	0.24	0.47	-2.45	0.68	1.38	-0.33	0.15	0.32	3.86	0.39	-2.11	-2.61
	(0.34)	(0.61)	(1.88)	(0.92)	(2.44)	(1.41)	(0.30)	(0.73)	(2.47)	(1.32)	(2.90)	(1.86)
Return, past 12 months & 1 month (-1%)	0.10	0.74	-1.72	0.26	-0.65	1.27	0.14	1.21	-1.11	-0.53	0.41	-0.12
	(0.32)	(0.62)	(1.94)	(0.90)	(2.51)	(1.49)	(0.34)	(0.79)	(2.42)	(1.22)	(2.93)	(1.98)
Figure with price dynamics, 5 years	0.29	0.28	-1.31	1.61*	0.98	-1.85	-0.06	1.64**	0.81	2.41*	-2.17	-2.63
	(0.35)	(0.62)	(1.91)	(0.95)	(2.48)	(1.39)	(0.28)	(0.81)	(2.45)	(1.39)	(2.93)	(1.90)
Combined (bitcoin & stocks) treatments												
Return, past 5 years	1.27***	1.04	-1.99	-0.24	-0.60	0.52	0.28	2.08**	-1.11	-0.95	2.32	-2.62
	(0.43)	(0.66)	(1.91)	(0.88)	(2.52)	(1.46)	(0.29)	(0.89)	(2.47)	(1.30)	(3.06)	(1.91)
Return, past 12 months	1.93***	0.02	-3.33*	1.08	1.52	-1.21	0.37	1.05	-0.47	0.78	-0.28	-1.46
	(0.49)	(0.58)	(1.85)	(0.94)	(2.45)	(1.40)	(0.34)	(0.81)	(2.46)	(1.34)	(2.94)	(1.92)
Figure with price dynamics, 5 years	0.83**	0.87	-3.47*	1.33	2.57	-2.14	0.43	1.06	-0.35	-0.28	2.64	-3.51*
	(0.42)	(0.61)	(1.85)	(0.95)	(2.47)	(1.33)	(0.34)	(0.80)	(2.52)	(1.33)	(2.94)	(1.81)
Figure with price dynamics, 5 years	0.75*	1.02	-1.39	0.57	0.92	-1.86	0.28	1.04	0.53	0.58	0.41	-2.84
	(0.39)	(0.64)	(1.89)	(0.90)	(2.45)	(1.31)						
Observations	6,036	6,036	6,036	6,036	6,036	6,036	3,984	3,984	3,984	3,984	3,984	3,984
R^2	0.12	0.04	0.16	0.06	0.12	0.02	0.07	0.04	0.17	0.07	0.17	0.03
p-value (inflation treatments)	0.536	0.229	0.204	0.517	0.430	0.556	0.921	0.615	0.567	0.137	0.656	0.562
p-value (bitcoin treatments)	0.161	0.493	0.0560	0.520	0.165	0.635	0.402	0.760	0.139	0.110	0.231	0.0670
p-value (stock treatments)	0.229	0.819	0.272	0.516	0.462	0.194	0.564	0.177	0.227	0.155	0.512	0.429
p-value (combined treatments)	0.001	0.204	0.298	0.387	0.726	0.220	0.705	0.202	0.972	0.722	0.801	0.334

Notes: see notes for Table 9.

Appendix Table A9. P-values adjusted (Romano-Wolf, RW) for multiple hypothesis testing

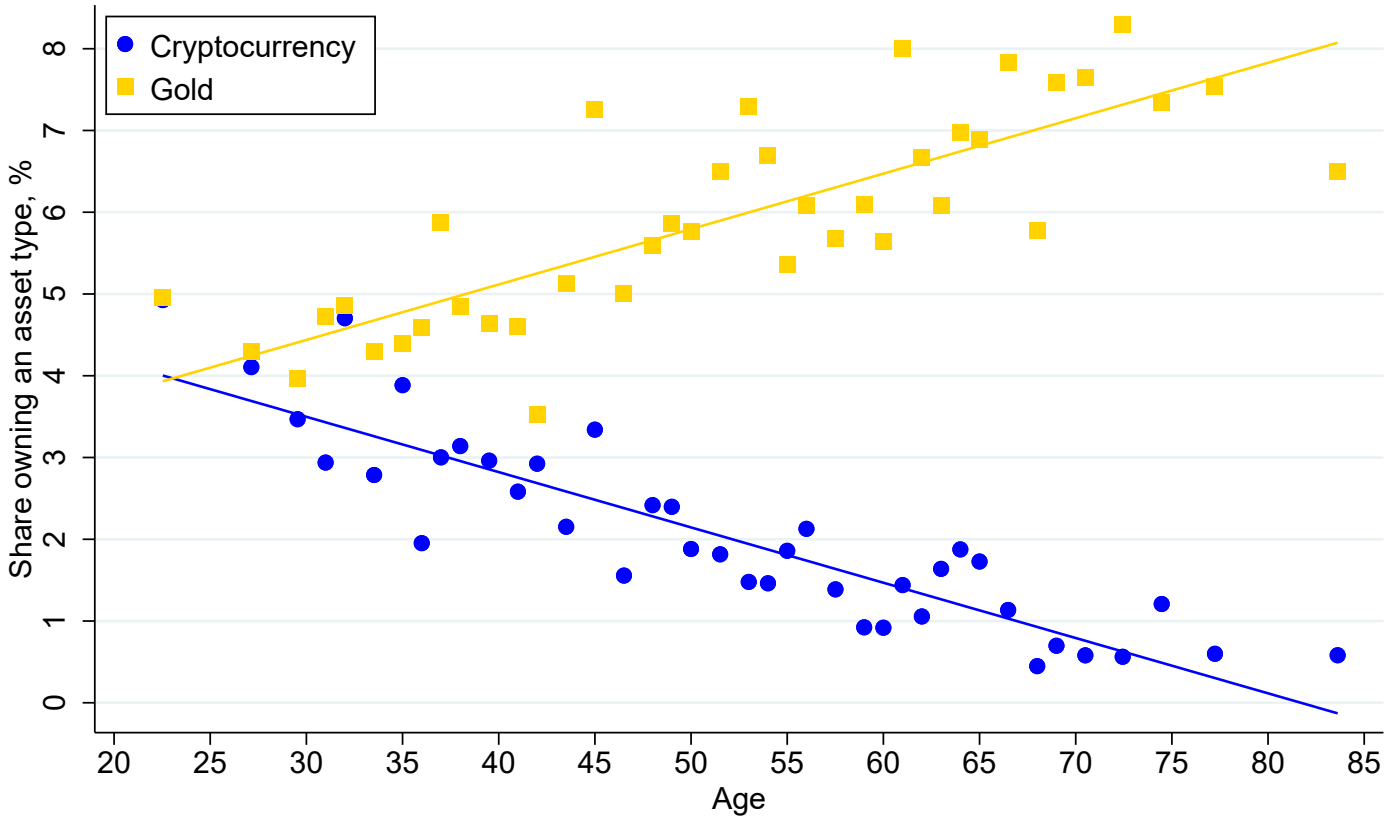
Treatment	Own Crypto		Ideal share											
			crypto		gold		stocks		bonds		accounts		other	
	Raw	Adj.	Raw	Adj.	Raw	Adj.	Raw	Adj.	Raw	Adj.	Raw	Adj.	Raw	Adj.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Panel A: Survey in Summer 2021														
Inflation treatments														
Past inflation (5.8%)	0.4336	0.9910	0.2747	0.7512	0.1491	0.3926	0.9122	1.0000	0.7911	1.0000	0.6608	0.9990	0.6126	0.9670
Inflation target (2%)	0.5567	0.9970	0.4432	0.7512	0.2180	0.3926	0.9715	1.0000	0.3190	0.9441	0.8798	0.9990	0.0783	0.4635
FOMC inflation forecast (2.1%)	0.7640	1.0000	0.0928	0.4456	0.0394	0.2547	0.5550	0.9910	0.8497	1.0000	0.6233	0.9980	0.1081	0.5624
Past inflation, 2 years (2.9%)	0.5028	0.9950	0.9214	0.9251	0.1101	0.3926	0.6851	0.9950	0.1074	0.6394	0.3628	0.9980	0.4621	0.9461
Bitcoin treatments														
Return, past 5 years (4,611%)	0.1403	0.7003	0.0175	0.1469	0.0015	0.0260	0.4980	0.9850	0.8508	1.0000	0.8685	0.9990	0.1005	0.5514
Return, past 12 months (244%)	0.0858	0.5345	0.0038	0.0400	0.0016	0.0280	0.3631	0.9570	0.0944	0.6144	0.4078	0.9850	0.3821	0.9281
Return, past 12 months & 1 month (-23%)	0.2192	0.8641	0.2391	0.7353	0.0755	0.3477	0.0869	0.5215	0.8036	1.0000	0.3766	0.9850	0.5664	0.9670
Figure with price dynamics, 5 years	0.9574	1.0000	0.0335	0.2328	0.1427	0.3926	0.0248	0.2108	0.1170	0.6543	0.2298	0.8961	0.1548	0.6723
Stock treatments														
Return, past 5 years (100%)	0.8221	1.0000	0.0587	0.3387	0.0853	0.3516	0.1192	0.6314	0.7081	1.0000	0.0846	0.5445	0.0337	0.2537
Return, past 12 months (34%)	0.9062	1.0000	0.2985	0.7512	0.5052	0.4975	0.7845	0.9990	0.3501	0.9510	0.6920	0.9990	0.8730	0.9950
Return, past 12 months & 1 month (-1%)	0.6330	0.9970	0.3094	0.7512	0.0139	0.1209	0.2704	0.9021	0.8846	1.0000	0.9424	0.9990	0.9300	0.9950
Figure with price dynamics, 5 years	0.3914	0.9820	0.3526	0.7512	0.0668	0.3357	0.9698	1.0000	0.1268	0.6773	0.6820	0.9990	0.1774	0.6813
Combined (bitcoin & stocks)														
Return, past 5 years	0.9501	1.0000	0.0031	0.0360	0.0187	0.1409	0.5874	0.9910	0.7251	1.0000	0.3905	0.9850	0.9080	0.9950
Return, past 12 months	0.1350	0.7003	0.0017	0.0220	0.1196	0.3926	0.3947	0.9590	0.3042	0.9441	0.9504	0.9990	0.2138	0.7373
Figure with price dynamics, 5 years	0.8492	1.0000	0.0207	0.1558	0.0016	0.0280	0.2447	0.8841	0.4501	0.9750	0.4552	0.9850	0.0129	0.1179
Figure with price dynamics, 5 years	0.5390	0.9970	0.1714	0.6234	0.0420	0.2547	0.8102	0.9990	0.3559	0.9510	0.7454	0.9990	0.0265	0.2138
Panel B: Survey in Summer 2022														
Inflation treatments														
Past inflation (8.5%)	0.9173	0.9930	0.1030	0.6044	0.7773	1.0000	0.1815	0.9291	0.4456	0.9740	0.1686	0.9111	0.7239	0.9730
Inflation target (2%)	0.5360	0.9610	0.2101	0.7353	0.1562	0.8961	0.7932	0.9950	0.6728	0.9740	0.0956	0.7632	0.0155	0.2088
FOMC inflation forecast (2.6%)	0.3850	0.9610	0.0025	0.0370	0.8035	1.0000	0.2258	0.9331	0.0123	0.1868	0.4145	0.9920	0.2257	0.8531
Past inflation, 2 years (6.7%)	0.5132	0.9610	0.1070	0.6044	0.3715	0.9920	0.4139	0.9900	0.1329	0.8152	0.3217	0.9790	0.4045	0.9441
Bitcoin treatments														
Return, past 5 years (647%)	0.2915	0.9610	0.9299	0.9980	0.5094	0.9970	0.0639	0.6384	0.3585	0.9600	0.2068	0.9251	0.9310	0.9730
Return, past 12 months (43%)	0.2341	0.9321	0.0005	0.0090	0.5051	0.9970	0.5452	0.9950	0.1046	0.7532	0.7613	0.9970	0.1537	0.7862
Return, past 12 months & 1month (+33%)	0.3284	0.9610	0.0013	0.0190	0.3654	0.9920	0.7916	0.9950	0.8733	0.9740	0.1758	0.9121	0.1875	0.8312
Figure with price dynamics, 5 years	0.3541	0.9610	0.1899	0.7353	0.8136	1.0000	0.9489	0.9950	0.1756	0.8332	0.4643	0.9940	0.6607	0.9730
Stock treatments														
Return, past 5 years (59%)	0.1227	0.8092	0.0138	0.1588	0.2633	0.9640	0.0082	0.1379	0.0000	0.0020	0.0146	0.2268	0.0638	0.5455
Return, past 12 months (-12%)	0.2966	0.9610	0.8682	0.9970	0.8422	1.0000	0.5360	0.9950	0.4647	0.9740	0.5307	0.9970	0.2344	0.8531
Return, past 12 months & 1 month (+5%)	0.9226	0.9930	0.1846	0.7353	0.8398	1.0000	0.5694	0.9950	0.2889	0.9301	0.6927	0.9970	0.0123	0.1818
Figure with price dynamics, 5 years	0.2216	0.9261	0.0582	0.4545	0.9623	1.0000	0.6296	0.9950	0.6787	0.9740	0.9548	0.9970	0.6024	0.9730
Combined (bitcoin & stocks)														
Return, past 5 years	0.1284	0.8092	0.4344	0.9051	0.3916	0.9920	0.1909	0.9291	0.0701	0.6513	0.4166	0.9920	0.0005	0.0090
Return, past 12 months	0.4133	0.9610	0.0735	0.5135	0.1798	0.9081	0.1839	0.9291	0.5676	0.9740	0.8009	0.9970	0.4909	0.9580
Return, past 12 months & 1 month	0.3083	0.9610	0.9946	0.9980	0.7389	1.0000	0.1439	0.8871	0.1624	0.8332	0.2101	0.9251	0.0798	0.6054
Figure with price dynamics, 5 years	0.7813	0.9880	0.0112	0.1409	0.1088	0.8002	0.4502	0.9910	0.1449	0.8182	0.7303	0.9970	0.0000	0.0010
Figure with monthly returns, 5 years	0.1128	0.7762	0.0262	0.2587	0.0371	0.4515	0.3755	0.9850	0.0881	0.7143	0.6686	0.9970	0.1039	0.6683

Notes: the table reports("raw") p-values for coefficients reported in Table 9 as well as p-values adjusted ("Adj.")for multiple hypothesis testing (Romano and Wolf 2016).

Appendix Table A11. Basic Facts about Crypto Currencies.

Cryptocurrency	Ticker	Initial release	Peak Market Cap. (Date)	Market Cap. (8/2021)	Market Cap. (8/2022)	Circulating Supply (11/2022)	Max Supply	Consensus Mechanism
Bitcoin	BTC	2009	1.23T (11/2021)	863.12B	446.40B	19,220,312	21,000,000	Proof-of-Work
Ethereum	ETH	2015	548.39B (11/2021)	382.55B	241.71B	122,373,866	unlimited	Proof-of-Work (until 9/2022), Proof-of-Stake
Litecoin	LTC	2011	23.17B (5/2021)	11.89B	4.29B	71,722,094	84,000,000	Proof-of-Work
Cardano	ADA	2017	94.74B (9/2021)	61.83B	18.23B	34,439,755,761	45,000,000,000	Proof-of-Stake
Polkadot	DOT	2020	53.21B (11/2021)	23.22B	9.27B	1,140,253,126	unlimited	Proof-of-Stake
Stellar	XLM	2014	15.75B (5/2021)	9.30B	3.17B	25,704,864,430	50,001,806,812	Stellar Consensus Protocol
Chainlink	LINK	2019	20.76B (5/2021)	11.66B	3.98B	507,999,970	1,000,000,000	Decentralized Oracle Networks
Tether	USDT	2014	83.16B (5/2022)	63.39B	67.55B	65,362,681,003	not available	Proof-of-Work, Proof of Reserves
Monero	XMR	2014	7.90B (5/2021)	4.80B	3.09B	18,207,268	unlimited	Proof-of-Work
Dogecoin	DOGE	2013	73.80B (5/2021)	44.52B	10.18B	132,670,764,300	unlimited	Proof-of-Work

Appendix Figure A1: Gold and Crypto-ownership by Age



Notes: The figure plots the binscatter for the distribution of asset ownership by age for 2019-2020. The ownership information is elicited for respondents who report to have meaningful (monthly income or more) financial wealth. No controls are included.