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Abstract

We examine how "finfluencers"—that is, social media influencers who provide investment advice—affect investment beliefs and the willingness to invest in stocks and cryptocurrencies. In an online experiment with young adult females from the United States, some respondents are randomly exposed to a short educational video featuring a celebrity who provides investment advice about either the stock market or cryptocurrency. Our main outcomes of interest are the willingness to invest in stocks and cryptocurrencies, as well as beliefs about the returns on the stock market and cryptocurrency investments. Furthermore, to isolate how the educational content of the videos affects investment decisions, we further include two mechanism treatments in which some respondents are exposed to neutral text-based versions of the videos. The results will provide the first step in understanding how finfluencers—who may be sponsored by third parties to promote risky financial products—affect financial beliefs and decisions.

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1 Introduction

Americans are increasingly turning to celebrities and social media influencers for investment advice and, according to a recent survey, one-third of Americans say they use social media to research investment ideas.[1] The rise of 'finfluencers"—that is, celebrities and social media influencers who provide investment advice—has led regulators and others to worry about people being guided towards investments that are not in their best interests.[2] As a case in point, Kim Kardashian had to pay a $1.26 million settlement with the SEC for promoting EMAX tokens on her Instagram account without disclosing that she was paid $250,000 for the service.[3] The EMAX token spiked in value after being promoted by Kardashian, but has since lost most of its value, leading to large losses for people who followed her advice. Another example is the 2022 Super Bowl commercial which featured videos with Larry David and Tom Brady promoting the crypto exchange FTX as "a safe and easy way to get into crypto." FTX subsequently crashed spectacularly, and filed for bankruptcy in November 2022. These cases highlight that blindly following the advice of fincluencers often can be very risky.

Over the past few years, technological developments have made it much easier to participate in financial markets and there has been a surge of inexperienced young investors with little experience entering the financial markets. Finfluencers are especially popular among this potentially vulnerable group. According to a recent Australian survey, 64% of those following finfluencers on social media had changed their financial behavior as a result of the finfluencer's advice.[4] Indeed, part of the attraction of finfluencers for large banks and crypto exchanges is that they can reach a young audience. According to Bloomberg, professional social media influencers hired by Wall Street may now earn more than bankers.[5]

[1] See https://www.tiaa.org/public/pdf/digital_engagement_survey.pdf (accessed September 13, 2023).

[2] In the US, both The Department of Financial Protection and Innovation and the Securities and Exchange Commission have been warning investors against making investments based solely on advice from celebrities and other finfluencers. In the UK, the Financial Conduct Authority recently warned against the "relentless and often misleading advertising techniques of some crypto businesses."

[3] See https://www.cbsnews.com/news/kim-kardashian-fined-1-million-by-sec-cryptocurrency/ (accessed September 13, 2023)

[4] See https://files.moneysmart.gov.au/media/kjvjabp5/young-people-and-money-survey-snapshot.pdf (accessed September 13, 2023).

[5] See https://www.bloomberg.com/news/articles/2021-09-17/social-media-influencers-income-advertising-wall-street-products (accessed September 13, 2023).

While there has been much interest about how finfluencers could affect the investment behavior among young investors, there is not much academic evidence on how young investors update their beliefs and investment strategies in response to finfluencer advice. In this paper, we take the first step in this direction by conducting a controlled randomized trial among young females on the impact of finfluencer advice on the willingness to invest in stocks and cryptocurrencies. We investigate the effect of finfluencer advice on the beliefs about the returns on stock market and cryptocurrency investments. For this purpose, we rely on videos featuring an A-list pop star celebrity—Megan the Stallion—in which she promotes stock market and Bitcoin investments as part of a broader campaign with CashApp with the stated purpose of educating her fans about investments.

We also analyze the underlying mechanisms behind the effect of finfluencers on young people's investment behavior. One potential mechanism is that the advice of finfluencers may have a large impact because people are particularly responsive to advice from people they look up to or admire. However, the advice from finfluencers also provides informational content by informing people of how to make financial investments. In a world with an abundance of informational sources, the finfluencers may be able to attract people's attention to the informational content about how to invest in financial markets. This effect may be particularly relevant given the recent and rapid developments in the availability of investment opportunities. To separate between these two mechanisms, we introduce two different treatments for both the stock market and cryptocurrencies advice. While some respondents are given the video treatment, others are given a text containing the same informational content as in the video. This allows us to decompose the effect of the fincluencer's advice into the effect of personal attributes and the informational content. Furthermore, this design allows us to analyze how this decomposition differs by asset class.

The growth of influencers and increase in financial participation among young adults have raised several concerns. The household finance literature shows that certain people make investing mistakes (Guiso and Sodini 2013; Campbell 2006) and that welfare costs of making investing mistakes may be large (Bhamra and Uppal 2019). US regulators are worrying about how the advice from finfluencers may impact the financial decisions of young and vulnerable investors. FINRA have identified finfluencers as a source of concern and conducted a sweep of the industry in 2021, while SEC has warned investors about the risks from making investment decisions based on social media

recommendations.[6] Regulators in other countries also warn against the consequences of finfluencers. The UK Financial Conduct Authority (FCA) warned against the "relentless and often misleading advertising techniques of some crypto businesses".[7] The Financial Supervisory Authority of Norway warns that influencers could trigger consumers to invest in products with a risk that they do not understand.[8]

We contribute to several different strands of the literature. First, we contribute to a financial literacy literature analyzing which interventions and advice that affect people's investment decisions. The overall effect of financial education campaigns on investment decisions is disputed (see Fernandes, Lynch Jr, and Netemeyer (2014) and Kaiser et al. (2022) for meta-studies reaching different conclusions).[9] We contribute to this literature is by analyzing how the effect of informational campaigns from social media influencers on young investors' beliefs and investment choices may differ from more traditional financial education campaigns. There are several reasons for why we could expect the effect to be different. First, Stolper and Walter (2019) show that homophily is a powerful principle when it comes to financial advice. They show that the larger similarities between the advisor and customer, the greater the likelihood that the customer follows the advice. Second, prior research finds a lack of interest in financial advice from traditional informational sources. Bhattacharya et al. (2012) find that there is a low demand for accepting to receive such advice, and among those that accept, few choose to follow the unbiased advice. Third, the large advertising industry developing around finfluencers indicates that the market thinks of this as a valuable strategy. Several studies find that investing together with an advisor leads to lower expected returns (Hackethal, Haliassos, and Jappelli 2012; Bergstresser, Chalmers, and Tufano 2008; Chalmers and Reuter 2020; Guercio and Reuter 2014). An underlying reason may be that financial agents maximize the commission fees paid by customers (Anagol, Cole, and Sarkar 2017). Mullainathan, Noeth, and Schoar (2012) find that financial advisors reinforce customers' biases when the advisor gains financially from such advice. We contribute to the literature on the effect of (potentially biased) advice

[6] See https://www.finra.org/rules-guidance/guidance/targeted-examination-letters/social-media-influencers-customer-acquisition-related-information-protection (accessed September 13, 2023) and https://www.investor.gov/introduction-investing/general-resources/news-alerts/alerts-bulletins/investor-alerts/investor-62 (accessed September 13, 2023)

[7] See https://www.bbc.com/news/technology-58462517 (accessed September 13, 2023).

[8] See https://www.finanstilsynet.no/en/news-archive/news/2021/finfluencers-and-consumer-protection/ (accessed September 13, 2023).

[9] According to Beshears et al. (2018), the biggest limitation of this literature is the lack of studies that are able to credibly estimate causal treatment effects.

by analyzing the effect of receiving financial advice from social media influencers.

We also contribute to the literature relating investors' beliefs and portfolio choices (Giglio et al. 2021a; Laudenbach, Weber, and Wohlfart 2021; Giglio et al. 2021b; Ameriks et al. 2020; Meeuwis et al. 2018; Liu et al. 2021). Our contribution to this literature is twofold. First, while this literature primarily studies beliefs about the stock market, we also survey investors' beliefs about cryptocurrencies. Weber et al. (2023) survey cryptocurrency owners and find that they expect higher returns on crypto and expect it to function as a hedge against inflation. [10] Second, we construct a new measure for the demand for stocks and Bitcoin by handing out digital gift cards.

Third, we contribute to a literature understanding the gender gap in investing (Bucher-Koenen et al. 2021; Almenberg and Dreber 2015). Our contribution to this literature is to understand if an asset market participation encouragement particularly constructed and aimed towards young females can increase female investing.

Fourth, we also contribute to the broader literature on information provision in household finance (Beshears et al. 2015; Dolls et al. 2018; Bursztyn et al. 2014; Laudenbach, Weber, and Wohlfart 2021; Hanspal, Weber, and Wohlfart 2020; Beutel and Weber 2021), where we provide, to the best of our knowledge, the first information treatment on how participation costs affect the willingness to participate in the market for stocks and Bitcoin.

Finally, we contribute to the literature understanding incentives for asset market participation.[11] Vissing-Jorgensen (2003) rationalizes low participation rates with fixed costs of investing. However, new technology means that investing in stock markets and cryptocurrencies is becoming more accessible. Participation in asset markets has previously been found to be positively correlated with financial literacy (Van Rooij, Lusardi, and Alessie 2011; Balloch, Nicolae, and Philip 2015), years of schooling (Cole, Paulson, and Shastry 2016) and IQ (Grinblatt, Keloharju, and Linnainmaa 2011) after controlling for other factors, which may indicate a link between financial information and stock market participation. It has also been argued that trust is positively correlated with participation in the stock market (Guiso, Sapienza, and Zingales 2008).[12] Our

[10] Benetton and Compiani (2021) use answers from the Survey of Consumer Payment Choice to analyze beliefs about cryptocurrencies.

[11] Haliassos and Bertaut (1995) show that risk averse investors should invest some of their wealth in risky assets, because the first dollar invested has zero covariance with the marginal utility, but still the stock market participation rates are generally low around the world (Guiso, Jappelli, and Haliassos 2000).

[12] See Beshears et al. (2018) and Gomes, Haliassos, and Ramadorai (2021) for discussions of other

contribution is to analyze the effect of receiving asset market participation advice from a social media influencer. Previous research has found that people who state in surveys that they learn from media sources are more likely to participate in the stock market (Hermansson, Jonsson, and Liu 2022).

2 Sample and experimental design

2.1 Setting and sample size

We plan to collect using the online survey platform Prolific, which is commonly used in economic experiments (Haaland, Roth, and Wohlfart 2020). Recent research shows that Prolific has high data quality compared to other survey platforms (Eyal et al. 2021) and it provides us with an easy infrastructure to pay out monetary bonuses and gift cards to respondents.

Since the pop star included in the video treatments is most popular among young females, we will focus on young adult females between 18 and 35 years of age. Furthermore, given the low stock market participation of young females (Almenberg and Dreber 2015), this is an especially relevant group to study. We aim to recruit 3,500 respondents across five conditions (one passive control group and four treatment groups), giving us power to detect treatment effects of 15% of a standard deviation, in line with the sample size recommendations in (Haaland, Roth, and Wohlfart 2020).[13]

2.2 Experimental design

We first elicit demographics and ask some basic questions about stock market participation. We next randomize respondents into a pure control group and four treatments group. We then elicit our main post-treatment outcomes: Willingness to invest in stocks and cryptocurrencies as well as beliefs about the future returns of stock market and cryptocurrency investments. We describe each part of the experiment in detail below. Furthermore, complete screenshots of the experimental instructions are included in

explanations for limited stock market participation.

[13] Given the large presence of this demographic group on Prolific (over 15,000 active users matching the criteria have been active during the last months), we feel confident that we will be able to recruit such a large sample in a short time.

Section A.

2.2.1 Pre-treatment questions

The experiment starts with a basic attention check (as shown in Section A.1). In line with best practice for information provision experiments (Haaland, Roth, and Wohlfart 2020), respondents who fail the attention check are screened out of the survey. Respondents are next asked whether they currently own any stocks and whether they own any cryptocurrencies. For those who answer "No" to these questions, we ask a follow-up question in which respondents can provide the main reasons for why they are currently not owning any stocks or cryptocurrencies (including lack of knowledge, lack of money, unwillingness to take risks, pessimistic about future returns, don't knowing how to get started, never having considered it, and an open-ended text option with other reasons).

2.2.2 Control group

Respondents in the control group are not shown any information and proceed straight to the post-treatment outcome questions.

2.2.3 Treatment 1: Stock market video

In TREATMENT 1, respondents are first told that they will be shown a "a short video about the stock market." On the following page, they are shown a 2-minute video in which celebrity pop star Megan Thee Stallion acts as a finfluencer by giving people financial advice about the stock market.[14] The video was created in a partnership with the mobile payment service CashApp and was part of a broader "Investing for Hotties" campaign which included Megan Thee Stallion creating "educational videos on teaching her fans about buying stocks."[15] In the video, she briefly talks about the

[14] Megan Thee Stallion is widely known as one of the most popular pop stars of her generation and she won the Billboard Award for best female rapper in both 2021 and 2022. Furthermore, she was named one of the 100 most influential people in the world by Time Magazine in 2020 (https://ti.me/32VmXw1; accessed September 13, 2023). She was also the first Black woman to cover the Forbes annual "30 Under 30" list.

[15] The video can be seen on the following link: https://youtu.be/NGr_MMZ8_hQ. See also the following article for more background about her partnership with CashApp: https://yr.media/news/megan-stallion-cashapp-stocks-kierra-frazier/ (accessed September 13, 2023).

process of buying stocks, dollar cost averaging as an investment strategy,[16] the benefits of diversification, and the simplicity of buying stocks with apps such as CashApp.

2.2.4 Treatment 2: Stock market text

In TREATMENT 2, respondents are given a text-based version of the video:

> **Buying stocks**
>
> Buying stocks isn't only for the big players. Anyone can start with as little as $1. Putting in a little money and seeing how it moves is a great way to learn about the stock market and start building up a portfolio. With Cash App, you can buy and sell small pieces of stocks called fractional shares and ease your way in nice and slow.
>
> **Dollar cost averaging**
>
> Buying stocks a little at a time on a regular schedule can help grow your investments while limiting how much risk you're exposed to. It's called dollar cost averaging. You buy the dips and rock the waves without even having to think about it.
>
> **Diversification**
>
> It can be a good idea to spread your investments across different companies, industries, asset types, and markets. That's called diversification and it's a great way to help manage risk. Investing in a little here and a little there, a little at a time, means that when the market waters get choppy, you might be able to take a hit without your whole ship sinking.
>
> **Final wisdom**
>
> If you want to try it, Cash App lets you schedule regular buying of the stocks you like, starting with as little as $1 worth. Buying stocks seems complicated, but really, it's a pretty simple process. The more you educate yourself, the better equipped you'll be to navigate investing.

The text follows exactly the script from the video and is not edited by us. The purpose of this treatment is to isolate the *informational* content in the video without influencing people in other ways, such as possible emotional responses from being encouraged by a celebrity they trust to invest in the stock market.

[16] Although economic theory does not consider dollar cost averaging an optimal strategy (Constantinides 1979; Choi 2022), Brennan, Li, and Torous (2005) argue that uninformed investors who follow this strategy are better than if they followed the strategies recommended by academics.

2.2.5 Treatment 3: Bitcoin video

In TREATMENT 3, respondents are shown a similar video with Megan Thee Stallion in which she talks about Bitcoin. This video is also around two minutes and is part of the same "Investing for Hotties" campaign in which she partnered with CashApp to educate her fans about investments (and attract fans to the CashApp platform).[17] In the video, she explains how Bitcoin is a new kind of money, why scarcity can make it valuable, that its price is determined by supply and demand, and that you can easily buy it with apps such as CashApp.

2.2.6 Treatment 4: Bitcoin text

In TREATMENT 4 again tries to isolate the informational content of the video by providing respondents with the script from the video:

> **Bitcoin**
>
> Let's talk about Bitcoin. It's the new digital currency that's been getting a lot of hype.
>
> **What is Bitcoin?**
>
> Bitcoin is a new kind of money. While the cash in your wallet is issued and regulated by the government, Bitcoin is a cryptocurrency. Like a wild stallion, it can't be controlled by anyone. That means that no one person, or organization, gets to decide how much of it is used, how much is in circulation, or what it is worth.
>
> **Why is Bitcoin valuable?**
>
> Okay, so boom, there's only a limited amount of Bitcoin — like gold or silver. Its scarcity and security is what can make Bitcoin valuable. Every Bitcoin is unique and has its own ID that is certified by a super secure technology called the blockchain. You can't make a fake Bitcoin, no matter how hard you try.
>
> **Why does Bitcoin's price change?**
>
> Like gold or gas prices, Bitcoin's value can go up and down as demand changes, although there's some other nitty-gritty stuff that factors in too. That means, when people are selling, the price goes down, when lots of people are buying it, it comes back up.
>
> **How do you get Bitcoin?**
>
> Bitcoin is not hard to get, you just got to know how. You can get it from another person, or from special markets called cryptocurrency exchanges. You can also easily buy it on CashApp, starting with as low as $1's worth.

[17] The video is available on the following link: https://youtu.be/5AN5veSPfY4.

> Bitcoin is an investment, so you can lose money. The price can go up and down by the hour. But the more you educate yourself on Bitcoin, the better equipped you'll be to navigate those curves.

The purpose of this treatment is again to isolate the *informational* content in the video without influencing people in other ways, such as possible emotional responses to the video.

2.2.7 Main outcomes: Self-reported willingness to participate in the stock market

To examine how the treatments affect people's willingness to invest in stocks and Bitcoin, we first examine people's self-reported views by asking them about the perceived chance that they will buy or sell stocks over the next three months and buy or sell any cryptocurrencies over the next three months. Specifically, we ask "How likely is it that you will buy or sell stocks over the next three months?" and "How likely is it that you will buy or sell any cryptocurrencies over the next three months?"

2.2.8 Main outcomes: Willingness to pay for stock and Bitcoin gift cards

To also examine treatment effects on a revealed preference measure, we elicit willingness to pay for a $25 stock market gift card and a $25 cryptocurrency gift card (in randomized order). Stockpile is a serious provider and has been included on a Forbes list of the 15 best investment apps for everyday investors.[18] We can send the gift cards anonymously to respondents by private message by providing a code that can be redeemed after creating an account on the Stockpile web-page.

While the nominal value of the gift card is $25, respondents who do not want to invest in the stock market might prefer to receive a lower monetary bonus instead of the gift card. They also have to invest in stocks or cryptocurrencies before they can take out the money from the account. Given the "participation costs" that arise from getting the gift card—including setting up the account and figuring out which stocks or cryptocurrencies to buy—we think a higher willingness to pay for the gift card indicates a higher latent desire to invest in stocks or cryptocurrencies.

[18] See https://www.forbes.com/sites/jaimecatmull/2019/10/07/the-15-best-investment-apps-for-everyday-investors/ (accessed September 13, 2023)

To elicit willingness to pay for the gift card, we rely on an incentive-compatible Becker–DeGroot–Marschak procedure in which it is optimal for respondents to reveal their true willingness to pay for the product (see Section A.11 and Section A.13 for screenshots). We take care to explain the procedure to respondents with an example and explain why it is optimal for them to reveal their true valuation of the product (screenshots of this explanation are provided in Section A.9). We also ask a set of control questions about the procedure and correct any incorrect answers on a second screen. After explaining the procedure, respondents are simply asked "How much are you maximally willing to pay for a $25 stock gift card?" and "How much are you maximally willing to pay for a $25 crypto gift card?" On both questions, respondents can answer any amount between $0 and $25. If the randomly drawn number between 0 and 25 is higher than their stated willingness to pay, they will receive the dollar amount determined by the random number paid out as a monetary bonus. If the randomly drawn number is lower than their willingness to pay for the gift card, they will instead receive the $25 gift card. It is thus optimal for respondents to always reveal their true willingness to pay for the product. Respondents are informed that one out of 10 respondents will have one of their decisions implemented. Having the choice incentivized is important to mitigate concerns about experimenter demand effects (Quidt, Vesterlund, and Wilson 2019).

2.3 Probabilistic beliefs about future returns

To measure whether the treatments affect beliefs about the returns to stock market and cryptocurrency investments, we rely on a probabilistic belief elicitation that allows us to calculate mean expectations as well the uncertainty of the forecast. We elicit, in randomized order, beliefs about how the U.S. stock market and the price of Bitcoin will develop over the next 12 months (across 8 bins ranging from "More than 30%" to "Less than -30%").

2.4 Point beliefs about future returns

Finally, to measure subjective returns about their own potential investments (which could differ from general expectations about the stock market and the price of Bitcoin), we ask the following two questions: "If you invested $1,000 in the stock market

tomorrow, what do you expect the return on your stock market investments to be to be over the next 12 months?" and "If you invested $1,000 in cryptocurrencies tomorrow, what do you expect the return on your stock market investments to be to be over the next 12 months?" We are thus able to differentiate between belief updating about the market and their own ability to select stocks/cryptocurrencies that might outperform the market.

2.5 Perceived study purpose

At the end of the study, we ask a simple question about the perceived study purpose: "If you had to guess, what would you say was the purpose of the study?" We will hand-code these responses to examine whether results differ for respondents who correctly guessed the study purpose.

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A Experimental instructions

A.1 Attention check

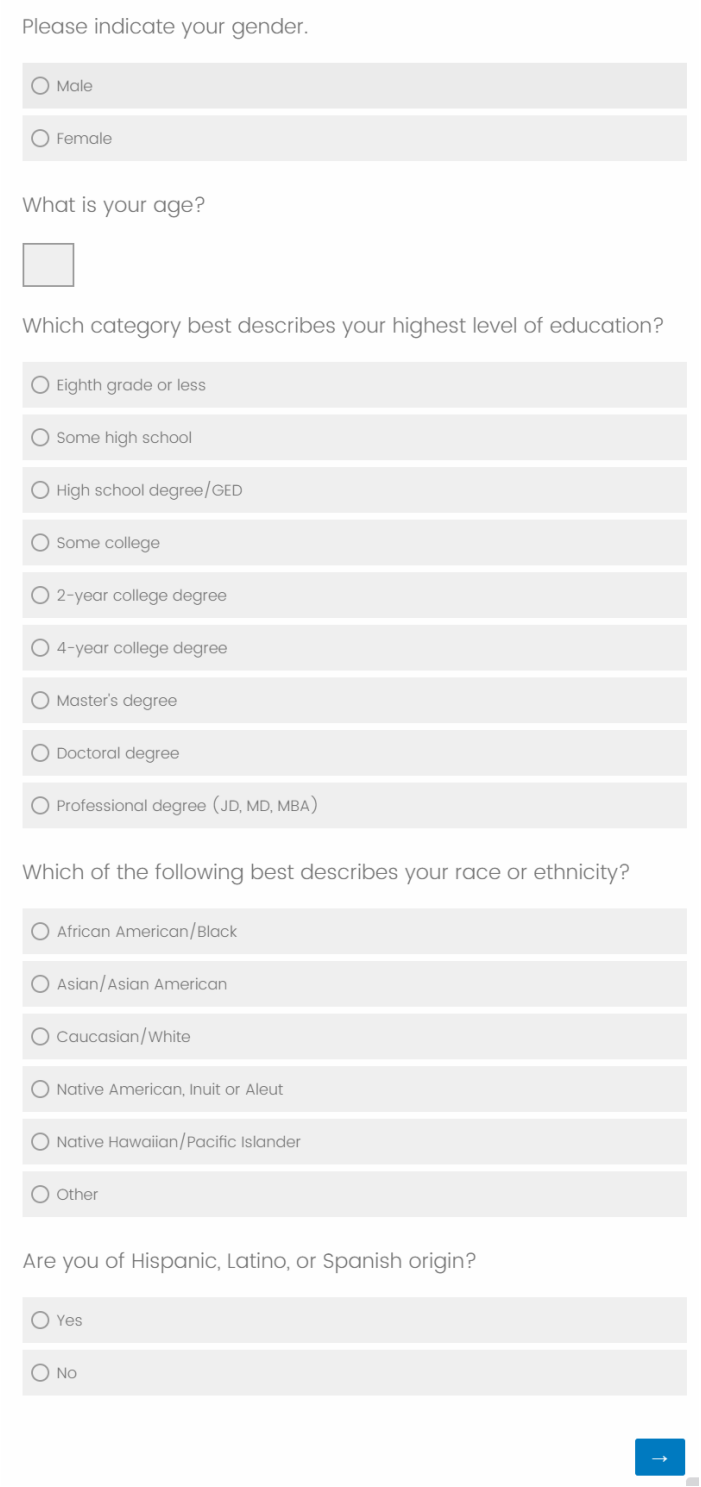
The next question is about the following problem. In questionnaires like ours, sometimes there are participants who do not carefully read the questions and just quickly click through the survey. This means that there are a lot of random answers which compromise the results of research studies. To show that you read our questions carefully, please choose both "**Extremely interested**" and "**Not at all interested**" as your answer in the question below.

Given the above, how interested are you in sports?

- ☐ Extremely interested
- ☐ Very interested
- ☐ A little bit interested
- ☐ Almost not interested
- ☐ Not at all interested

→

A.2 Demographics



What was your family's gross household income in 2021 in US dollars?

- ◯ Less than $15,000
- ◯ $15,000 to $24,999
- ◯ $25,000 to $49,999
- ◯ $50,000 to $74,999
- ◯ $75,000 to $99,999
- ◯ $100,000 to $149,999
- ◯ $150,000 to $200,000
- ◯ More than $200,000

What is your region of residence?

- ◯ **Northeast** (CT, ME, MA, NH, RI, VT, NJ, NY,PA),
- ◯ **Midwest** (IL, IN, MI, OH, WI, IA, KS, MN, MO, NE, ND, SD)
- ◯ **South** (DE, DC, FL, GA,MD, NC, SC, VA, WV, AL, KY, MS, TN, AR, LA, OK, TX)
- ◯ **West** (AZ, CO, ID, NM, MT, UT,NV, WY, AK, CA, HI, OR, WA)

What is your current employment status?

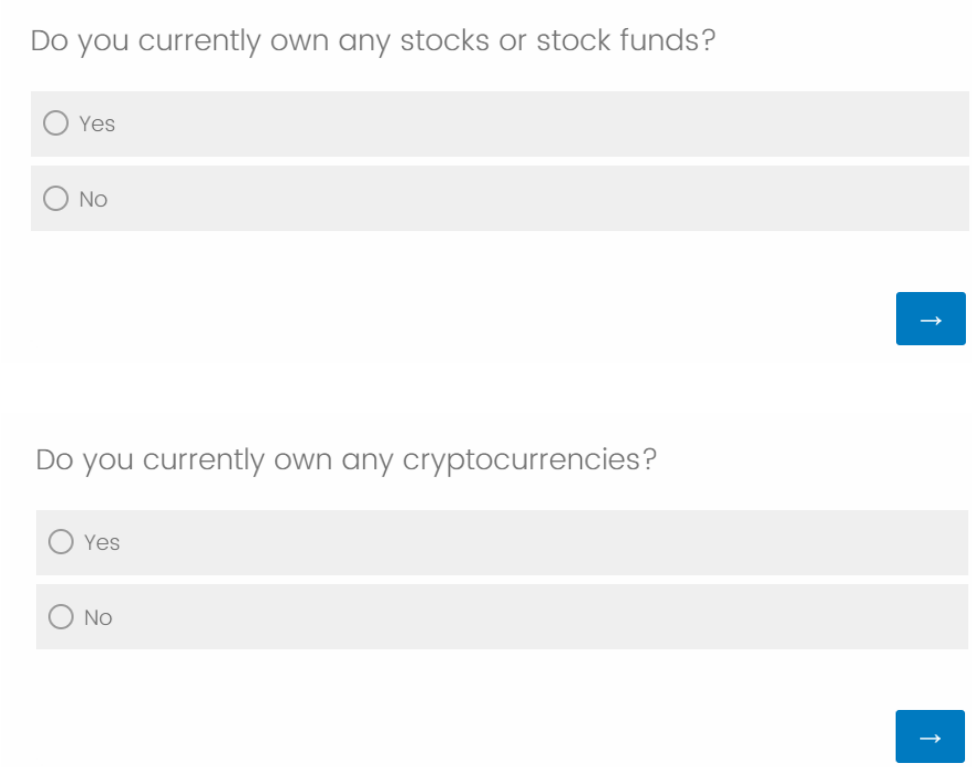
- ◯ Full-time employee
- ◯ Part-time employee
- ◯ Self-employed or small business owner
- ◯ Unemployed and looking for work
- ◯ Student
- ◯ Not in labor force (for example: retired or full-time parent)

Are you liberal or conservative?

- ◯ Very liberal
- ◯ Liberal
- ◯ Neither liberal nor conservative
- ◯ Conservative
- ◯ Very conservative

→

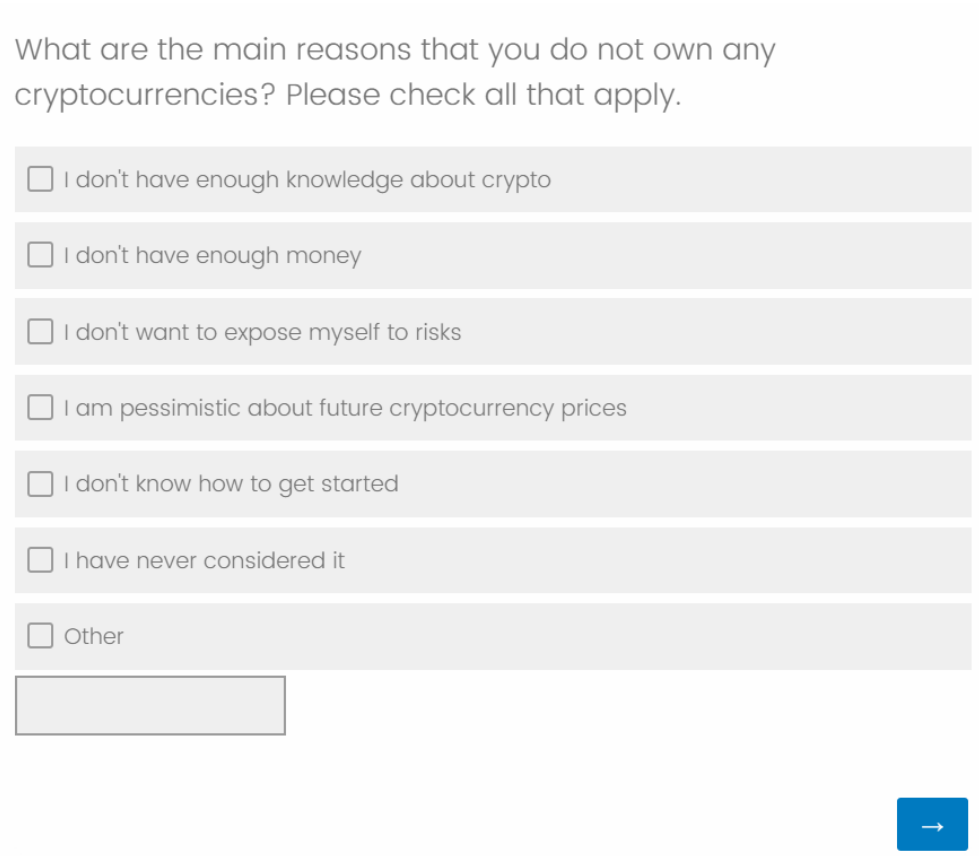
A.3 Pre-treatment questions



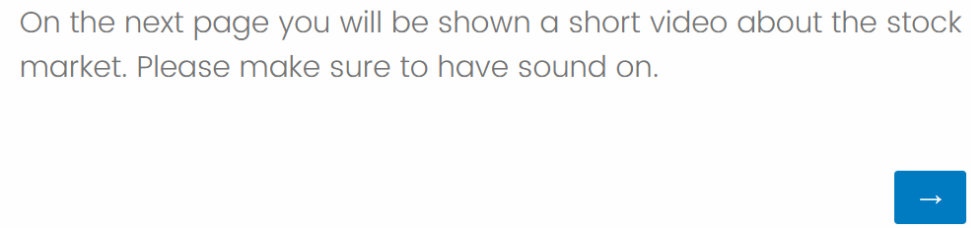
What are the main reasons that you do not own any stocks or stock funds? Please check all that apply.

- ☐ I don't have enough knowledge about the stock market
- ☐ I don't have enough money
- ☐ I don't want to expose myself to risks
- ☐ I am pessimistic about future stock market returns
- ☐ I don't know how to get started
- ☐ I have never considered it
- ☐ Other

→



A.4 Treatment 1: Stock market video



A.5 Treatment 2: Stock market text

On the next page you will receive a short text about the stock market.

→

Buying stocks

Buying stocks isn't only for the big players. Anyone can start with as little as $1. Putting in a little money and seeing how it moves is a great way to learn about the stock market and start building up a portfolio. With Cash App, you can buy and sell small pieces of stocks called fractional shares and ease your way in nice and slow.

Dollar cost averaging

Buying stocks a little at a time on a regular schedule can help grow your investments while limiting how much risk you're exposed to. It's called dollar cost averaging. You buy the dips and rock the waves without even having to think about it.

Diversification

It can be a good idea to spread your investments across different companies, industries, asset types, and markets. That's called diversification and it's a great way to help manage risk. Investing in a little here and a little there, a little at a time, means that when the market waters get choppy, you might be able to take a hit without your whole ship sinking.

Final wisdom

If you want to try it, Cash App lets you schedule regular buying of the stocks you like, starting with as little as $1's worth. Buying stocks seems complicated, but really, it's a pretty simple process. The more you educate yourself, the better equipped you'll be to navigate investing.

A.6 Treatment 3: Bitcoin video

On the next page you will be shown a short video about Bitcoin.
Please make sure to have sound on.

→

A.7 Treatment 4: Bitcoin text

On the next page you will receive a short text about Bitcoin.

→

Bitcoin

Let's talk about Bitcoin. It's the new digital currency that's been getting a lot of hype.

What is Bitcoin?

Bitcoin is a new kind of money. While the cash in your wallet is issued and regulated by the government, Bitcoin is a cryptocurrency. Like a wild stallion, it can't be controlled by anyone. That means that no one person, or organization, gets to decide how much of it is used, how much is it in circulation, or what it is worth.

Why is Bitcoin valuable?

Okay, so boom, there's only a limited amount of Bitcoin — like gold or silver. Its scarcity and security is what can make Bitcoin valuable. Every Bitcoin is unique and has its own ID that is certified by a super secure technology called the blockchain. You can't make a fake bitcoin, no matter how hard you try.

Why does Bitcoin's price change?

Like gold or gas prices, Bitcoin's value can go up and down as demand changes, although there's some other nitty-gritty stuff that factors in too. That means, when people are selling, the price goes down, when lots of people are buying it, it comes back up.

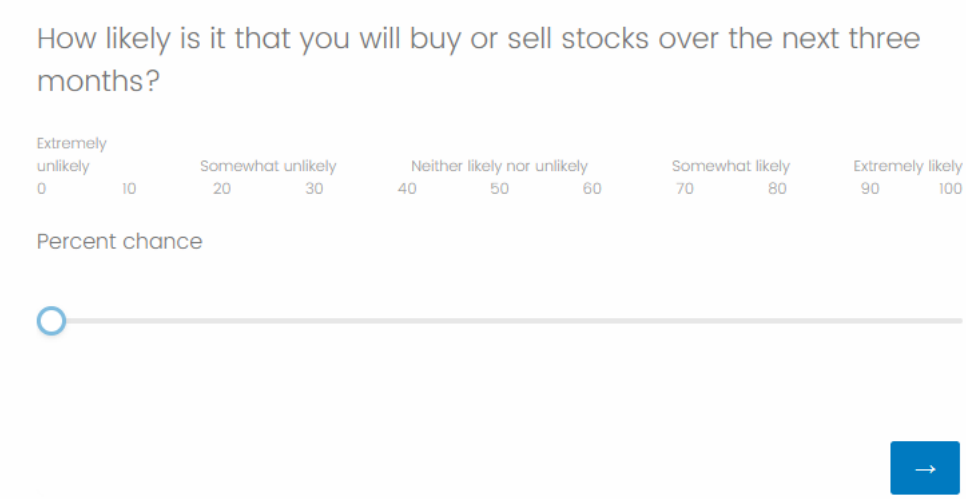
How do you get Bitcoin?

Bitcoin is not hard to get, you just got to know how. You can get it from another person, or from special markets called cryptocurrency exchanges. You can also easily buy it on CashApp, starting with as low as $1's worth.

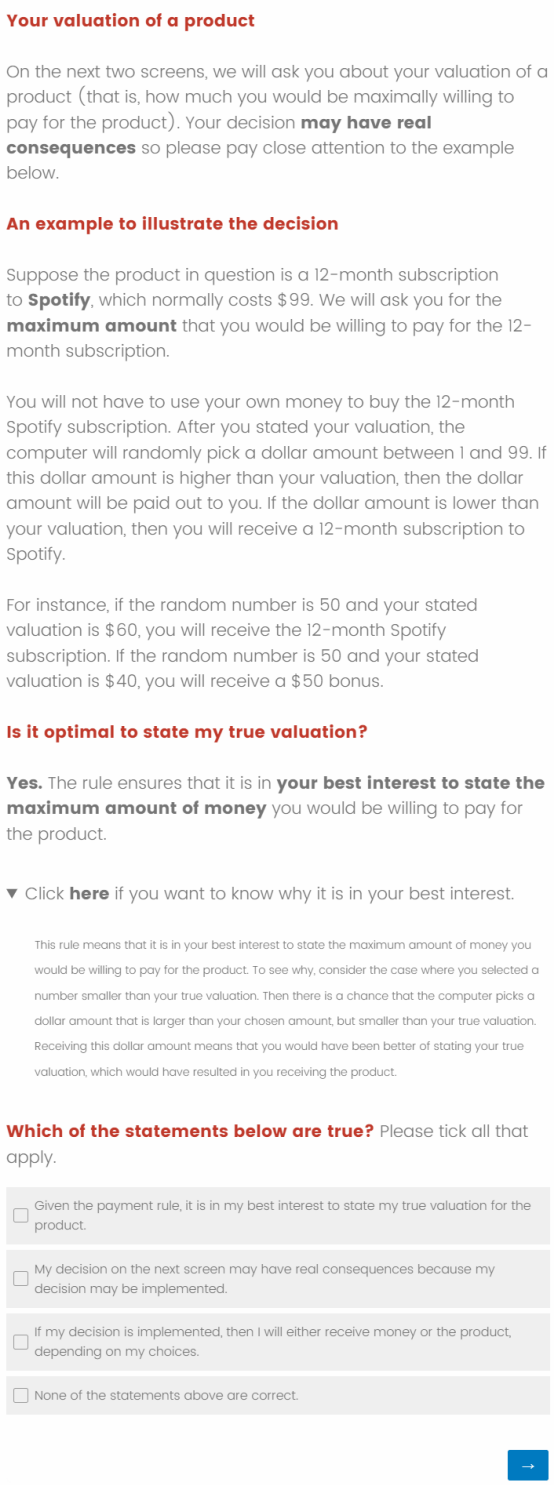
Bitcoin is an investment, so you can lose money. The price can go up and down by the hour. But the more you educate yourself on Bitcoin, the better equipped you'll be to navigate those curves.

→

A.8 Self-reported willingness to invest



A.9 Willingness to pay: Example



Your valuation of a product

On the next two screens, we will ask you about your valuation of a product (that is, how much you would be maximally willing to pay for the product). Your decision **may have real consequences** so please pay close attention to the example below.

An example to illustrate the decision

Suppose the product in question is a 12-month subscription to **Spotify**, which normally costs $99. We will ask you for the **maximum amount** that you would be willing to pay for the 12-month subscription.

You will not have to use your own money to buy the 12-month Spotify subscription. After you stated your valuation, the computer will randomly pick a dollar amount between 1 and 99. If this dollar amount is higher than your valuation, then the dollar amount will be paid out to you. If the dollar amount is lower than your valuation, then you will receive a 12-month subscription to Spotify.

For instance, if the random number is 50 and your stated valuation is $60, you will receive the 12-month Spotify subscription. If the random number is 50 and your stated valuation is $40, you will receive a $50 bonus.

Is it optimal to state my true valuation?

Yes. The rule ensures that it is in **your best interest to state the maximum amount of money** you would be willing to pay for the product.

▼ Click **here** if you want to know why it is in your best interest.

This rule means that it is in your best interest to state the maximum amount of money you would be willing to pay for the product. To see why, consider the case where you selected a number smaller than your true valuation. Then there is a chance that the computer picks a dollar amount that is larger than your chosen amount, but smaller than your true valuation. Receiving this dollar amount means that you would have been better of stating your true valuation, which would have resulted in you receiving the product.

Which of the statements below are true? Please tick all that apply.

- ☐ Given the payment rule, it is in my best interest to state my true valuation for the product.
- ☐ My decision on the next screen may have real consequences because my decision may be implemented.
- ☐ If my decision is implemented, then I will either receive money or the product, depending on my choices.
- ☐ None of the statements above are correct.

→

A.10 Willingness to pay: Correcting incorrect answers

You did not tick off the box to indicate that the following statement is true: "Given the payment rule, it is in my best interest to state my true valuation for the product."

As we explained on the previous page, **it is in your best interest to provide your true valuation for the product.**

You did not tick off the box to indicate that the following statement is true: "My decision on the next screen may have real consequences because my decision may be implemented."

As we explained on the previous page, **your decision on the next screen may have real consequences because your decision may be implemented.**

You did not tick off the box to indicate that the following statement is true: "If my decision is implemented, then I will either receive money or the product, depending on my choices."

As we explained on the previous page, **you will receive the money or the product, depending on your choices, if your decision is implemented.**

→

A.11 Willingness to pay: Stock gift card

Your valuation for a $25 stock gift card

Below, we will ask you for your valuation of a $25 stock gift card. You can redeem the gift card in **any stock or stuck fund that you want to invest in**. This is how it works.

1. You report your valuation.
2. The computer will randomly pick a dollar amount between 0 and 25.
3. If the dollar amount determined by the random number draw is higher than your valuation, you will receive the dollar amount paid out as a monetary bonus. If the dollar amount is lower than your valuation, you will instead receive the $25 stock gift card.

As explained on the previous page, it is in your best interests to truthfully report your valuation of the gift card.

1 out of 10 respondents will have one of their decisions implemented.

▶ Click **here** if you want to know exactly how you would receive your stock gift card.

Your decision

How much **are you maximally** willing to pay for a $25 stock gift card?

I am maximally willing to pay $ for a $25 stock gift card.

→

A.12 Willingness to pay: Stock gift card with drop-down menu

Your valuation for a $25 stock gift card

Below, we will ask you for your valuation of a $25 stock gift card. You can redeem the gift card in **any stock or stuck fund that you want to invest in**. This is how it works.

1. You report your valuation.
2. The computer will randomly pick a dollar amount between 0 and 25.
3. If the dollar amount determined by the random number draw is higher than your valuation, you will receive the dollar amount paid out as a monetary bonus. If the dollar amount is lower than your valuation, you will instead receive the $25 stock gift card.

As explained on the previous page, it is in your best interests to truthfully report your valuation of the gift card.

1 out of 10 respondents will have one of their decisions implemented.

▼ Click **here** if you want to know exactly how you would receive your stock gift card.

1. We will send you a unique gift card code. The code is completely anonymous and cannot be used to identify your email or any other of your personal characteristics.
2. We provide you with a link to a website where you can redeem it
3. You set up your brokerage account with some basic information.
4. You redeem your gift card and select the stock that you want to invest in.
5. **That's all!** You're now a stock owner.

Your decision

How much **are you maximally** willing to pay for a $25 stock gift card?

I am maximally willing to pay $ [ ] for a $25 stock gift card.

→

A.13 Willingness to pay: Crypto gift card

Your valuation for a $25 crypto gift card

Below, we will ask you for your valuation of a $25 crypto gift card. You can redeem the gift card in **any cryptocurrency that you want to invest in, including Bitcoin**. This is how it works.

1. You report your valuation.
2. The computer will randomly pick a dollar amount between 0 and 25.
3. If the dollar amount determined by the random number draw is higher than your valuation, you will receive the dollar amount paid out as a monetary bonus. If the dollar amount is lower than your valuation, you will instead receive the $25 crypto gift card.

As explained on the previous page, it is in your best interests to truthfully report your valuation of the gift card.

1 out of 10 respondents will have one of their decisions implemented.

▶ Click **here** if you want to know exactly how you would receive your crypto gift card.

Your decision

How much **are you maximally** willing to pay for a $25 crypto gift card?

I am maximally willing to pay $ ____ for a $25 crypto gift card.

→

A.14 Willingness to pay: Crypto gift card with drop-down menu

Your valuation for a $25 crypto gift card

Below, we will ask you for your valuation of a $25 crypto gift card. You can redeem the gift card in **any cryptocurrency that you want to invest in, including Bitcoin**. This is how it works.

1. You report your valuation.
2. The computer will randomly pick a dollar amount between 0 and 25.
3. If the dollar amount determined by the random number draw is higher than your valuation, you will receive the dollar amount paid out as a monetary bonus. If the dollar amount is lower than your valuation, you will instead receive the $25 crypto gift card.

As explained on the previous page, it is in your best interests to truthfully report your valuation of the gift card.

1 out of 10 respondents will have one of their decisions implemented.

▼ Click **here** if you want to know exactly how you would receive your crypto gift card.

1. We will send you a unique gift card code. The code is completely anonymous and cannot be used to identify your email or any other of your personal characteristics.
2. We provide you with a link to a website where you can redeem it
3. You set up your brokerage account with some basic information.
4. You redeem your gift card and select the cryptocurrency that you want to invest in (e.g., Bitcoin).
5. **That's all!** You're now a crypto owner.

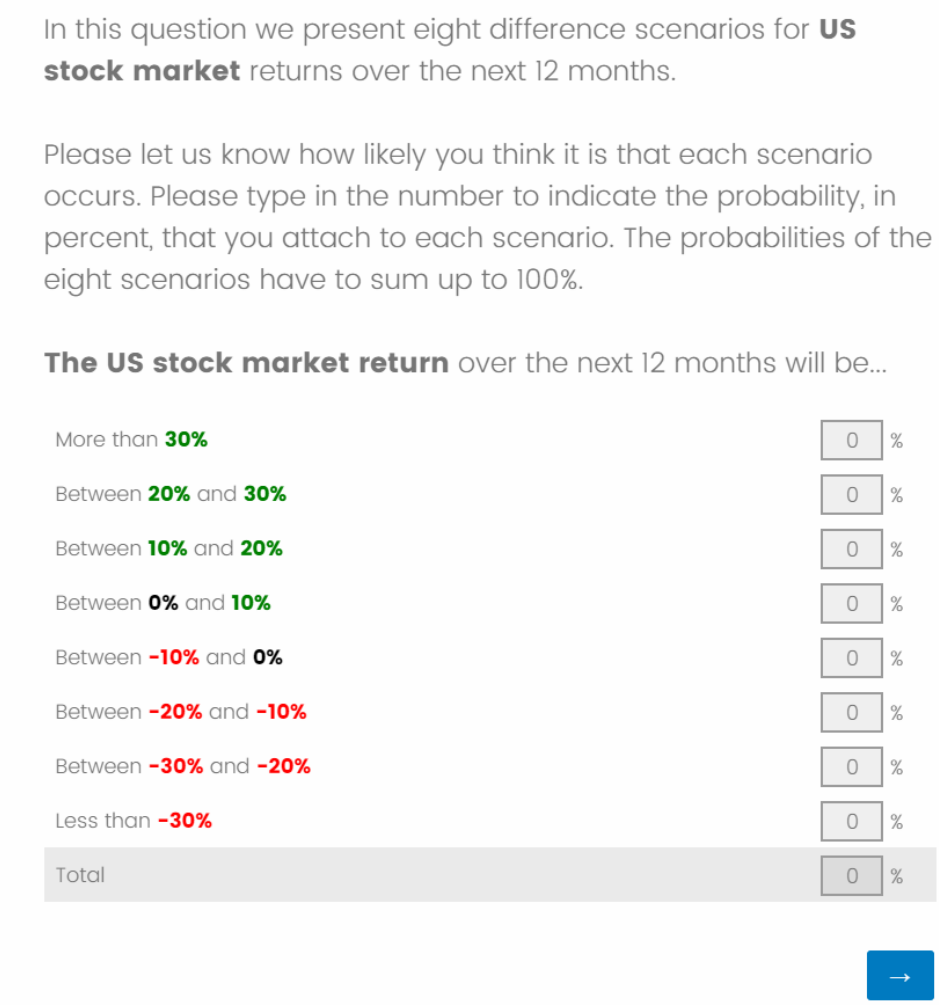
Your decision

How much **are you maximally** willing to pay for a $25 crypto gift card?

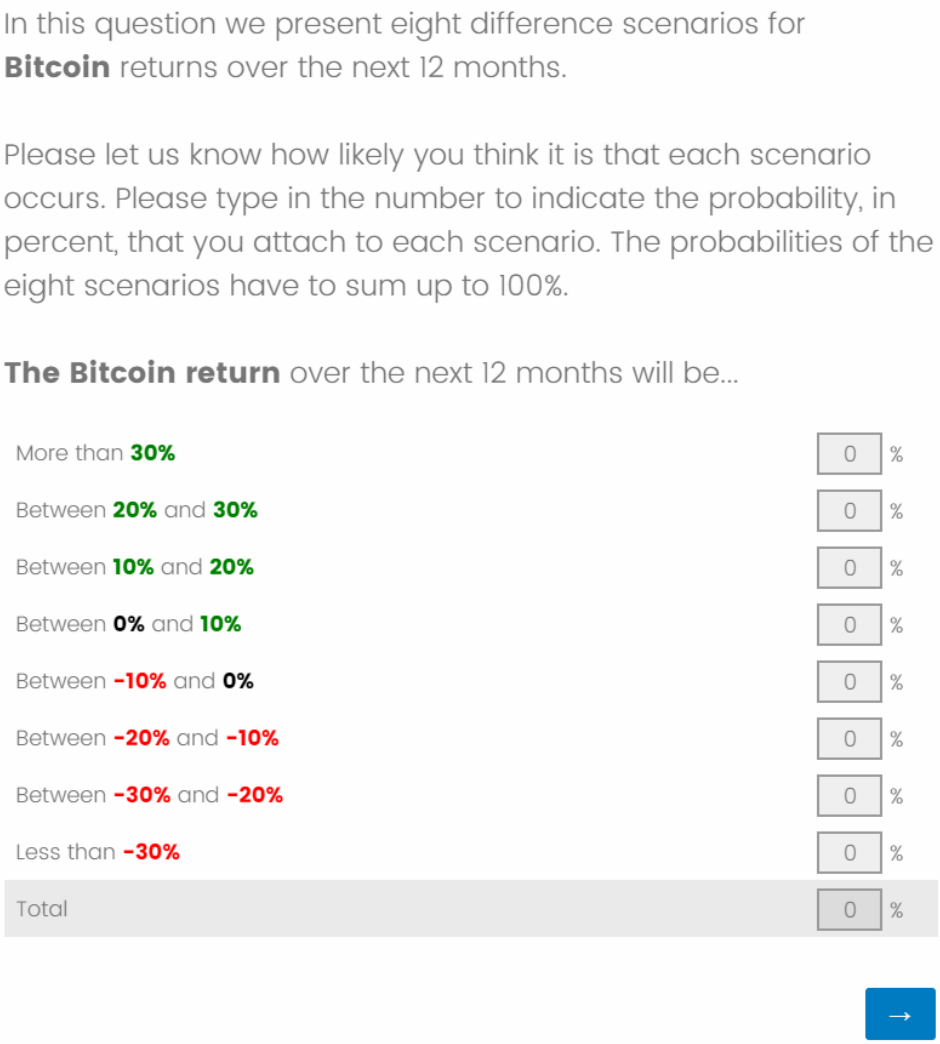
I am maximally willing to pay $ for a $25 crypto gift card.

→

A.15 Probabilistic beliefs: Stock market



A.16 Probabilistic beliefs: Bitcoin



A.17 Point beliefs: Return on own investments

If you invested $1,000 in the **stock market** tomorrow, what do you expect the return on your stock market investments to be to be over the next 12 months?

Enter a positive number for a positive return or a negative number for a negative return.

[ ] %

→

If you invested $1,000 in **cryptocurrencies** tomorrow, what do you expect the return on your stock market investments to be to be over the next 12 months?

Enter a positive number for a positive return or a negative number for a negative return.

[ ] %

→

A.18 Perceived study purpose