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Volatility Shocks and Investment Behavior

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Abstract

We investigate how volatility shocks affect investors' risk-taking, risk perception and forecasts. We run artefactual field experiments with two participant pools (finance professionals and students), differing in (i) the direction of the shock (down, up, or a neutral case) and (ii) the presentation format of the time series (prices or returns). Professionals' investments are negatively associated with the price change and performance of the stock and their perceived risk increases to a similar extent following shocks of all directions. Students' risk perception, in contrast, is more closely related to the frequency of negative returns rather than an increase in volatility.

JEL: C91, G11, G41
Keywords: Risk taking, risk perception, experimental finance, finance professionals, volatility shocks

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1 Introduction

Nassim Nicolas Taleb (2007) famously coined the term “black swan” to describe rare and unpredictable outlier events, which have an extreme impact. Applied to financial markets, such tail events, such as a major crash, can wipe out years of accumulated returns and can influence people’s beliefs, perceptions, and behavior for a long time (e.g., Cogley & Sargent, 2008; Graham & Narasimhan, 2005; Guiso et al., 2018; Malmendier & Nagel, 2011). It is indeed the big price surges and crashes that most vividly come to mind when thinking of financial markets; these events can have long-lasting effects on the outcome of an investment, as it may take years to make up a substantial loss, for instance. Often, mainstream finance theory, however, assumes stationary, normally distributed asset returns (e.g., Black & Scholes, 1973, in the context of option pricing). This is at odds with empirical observation. First, return distributions are leptokurtic, i.e., they have “fat tails” as tail events occur considerably more often than a normal distribution would suggest. And, second, return volatility (the standard deviation of returns) varies over time as “normal,” tranquil times are interrupted by high-volatility clusters (e.g., Andersen & Bollerslev, 1997; Alizadeh et al., 2002; Mandelbrot & Hudson, 2008):[1] Negative tail events are often followed by positive tail events and together constitute periods of high volatility on financial markets.[2]

In this study we investigate investors’ reactions to *volatility shocks*—i.e., to changes in an asset’s underlying return distribution (a shift in volatility, in particular). Our approach differs from previous, related work by inducing shocks to asset return volatility, in contrast to shocks to one asset returns, as is common in investment experiments. We thus incorporate periods of high volatility, which are characterized by very high (positive *and* negative) returns. In a novel experimental setup applying a 2×3 factorial treatment design, we vary the presentation format (returns or prices) and the “direction” of the shock (mostly positive returns, mostly negative returns, or a neutral case). Hence, we examine whether and how different types of volatility shocks affect how investors (i) take risk, (ii) perceive risk, and (iii) forecast prices and returns.

[1]In addition to empirical research, a number of theoretical models applying time-varying volatility have appeared. Heston (1993), for example, provides a stochastic volatility model in the context of option pricing.

[2]To illustrate this proposition, consider the S&P 500 stock index in the last six decades. The largest daily returns in this time period all occurred after the index suffered record-high losses on the previous days. The S&P 500 surged by 9.10% on October 21, 1987 after having lost 20.5% two days earlier; it surged by 11.6% on October 13, 2008 after having lost 1.2% and 7.6% in the two previous days; and it surged by 9.3% on March 13, 2021 after having lost 9.5% and 4.9% on the two previous days, only to drop by another 12.0% on March 16.

Consider investment decisions, i.e., how much risk investors take, first. Classical finance theory suggests that an investor's optimal allocation between risky and risk-free assets is determined by her individual risk attitude (Tobin, 1958; Merton, 1969; Samuelson, 1969). With stable risk attitudes over time, an increase in an asset's risk—defined as an increase in volatility—should c.p. lead to a decrease in risk-taking and vice versa.

More recent contributions postulate that an investor's risk-taking is a function not only of her risk attitude and the asset's volatility, but of her perceived risk, her expected return, and her risk attitude (see Nosić & Weber, 2010, for example).[3] Crucially, investors' risk perception is not necessarily related to the variance of returns, but rather is driven by the frequency of negative returns (Holzmeister et al., 2020; Zeisberger, 2020). Following this intuition, a volatility shock would only affect risk-taking when it comes with a drop or a surge in returns, such that investors update their beliefs about the probability of positive/negative returns and, in turn, also their risk perception. In a related fashion, Corgnet et al. (2020) demonstrate that, under both Expected Utility Theory and Prospect Theory, investors who suffer losses due to a negative tail event increase their bids for a risky asset. With respect to the present study, these results would translate into investors increasing their risk-taking following a negative volatility shock and potentially decreasing their risk-taking following a positive volatility shock.

Besides an investor's risk attitude and her perceived risk, her future expected asset return is also a natural candidate in determining investment behavior. How do investors update their beliefs when faced with a volatility shock that comes with mostly positive returns, mostly negative returns, or a net-zero development? We conjecture that volatility per se does not affect investor's point predictions of future asset returns. Rather, investors would adapt to realized prices, and a sudden increase or decrease thus drives their expectations up or down, respectively. In comparing presentation formats—showing returns and eliciting return forecasts vs. showing prices and eliciting price forecasts—, previous studies suggest higher responses when asking for return forecasts (e.g., Glaser et al., 2019).

Taking all such factors into consideration, we propose a novel experimental setup to address the following research questions:

[3] Nosić & Weber (2010) decompose an investment decision as *Risk Taking* = f(*Perceived Return, Risk Attitude, Risk Perception*). Holzmeister et al. (2021) also provide a critical discussion on how the inter-relationship between risk attitude, risk-taking, and risk perception is conceptualized in experimental finance.

RQ1(a). Does a change in a stock's underlying return distribution (a shock to volatility) affect participants' investment behavior?

RQ1(b). Does a change in a stock's underlying return distribution (a shock to volatility) affect participants' perceptions about a stock's risk?

RQ1(c). Does a change in a stock's underlying return distribution (a shock to volatility) affect participants' expectations about its future price/return development?

RQ2. Do the behavioral patterns observed in RQ1 depend on the particular nature of the shock, i.e., whether a surge in volatility comes along with a price downturn, a price upturn, or with a price development where the net return is close to zero?

RQ3. Do the behavioral patterns observed in RQ1 depend on the presentation format, i.e., whether the stock development is presented as a return bar chart or as a price chart?

RQ4. Are there systematic differences between finance professionals and students on RQ1 to RQ3?

We recruit 202 finance professionals, predominantly working as portfolio and investment managers, financial advisors, and traders, as well as 282 students to participate. During the experiment, all participants are confronted with a series of portfolio decisions in an environment that is characterized by changes in the underlying return distribution with shifts (shocks) in volatility. Participants are sequentially presented with 100 daily returns of a risky stock, whose returns are based on historical data. Every 0.5 seconds, one return is realized and is added to the price or return chart. Every 20 return draws, i.e., five times in total, participants decide which percentage of their experimental wealth to invest in the risky stock, with the remainder being held in cash. In addition, we elicit participants' satisfaction, their beliefs about future prices or returns, and how risky they perceive the stock to be. To induce volatility shocks, one of the five periods consist of returns drawn from a different distribution with considerably higher volatility (i.e., from a volatility cluster in the historical data). In a 2×3 factorial treatment design, we vary the presentation format (returns or prices) and the "direction" of the shock (mostly positive returns, mostly negative returns, or a neutral case) to address our research questions. Experiments are uniquely well-suited for this purpose, as they allow for the direct observation of behavior and beliefs when inducing a volatility shock, while controlling all available information.

We find that finance professionals and students exhibit, for the most part, qualitatively similar reactions to volatility shocks, but also show some important differences. First, we show that investment propensity is negatively associated with the direction of the shock, and that students tend to invest less in general. Second, we observe that finance professionals' and students' investment satisfaction is positively correlated with the direction of the shock. Third, we find that finance professionals perceive all induced volatility shocks (no matter whether prices move up, down, or remain almost unchanged) to increase perceived risk to a similar extent. This differs from the students' results, as students perceive upward-trending shocks not to increase the stock's riskiness. Finally, whereas professionals do not show differences in forecasts between presentation formats, students exhibit more extreme price forecasts in the returns condition following net-zero and upward shocks.

With this study, we contribute to a number of research strands in financial decision-making. First, we add to the growing body of research on "learning from experience" (Hertwig et al., 2004). Comparing decisions from descriptions and decisions from experience, previous work identifies a description-experience gap in risky choice (for an overview, see Hertwig & Erev, 2009). In the context of financial investment decisions, Kaufmann et al. (2013) introduce a "risk-tool," combining experience sampling and distribution display, which leads to more risk-taking, more realistic expectations, and fewer biases such as overestimation of loss probabilities. Similarly, Bradbury et al. (2015) show that simulated experience—i.e., sampling a number of returns from a given distribution—improves people's calibration regarding a stock's risk and their investment decisions compared to decisions purely based on description. This line of literature abstracts from volatility shocks and assumes that the underlying return distribution does not change. Importantly, we extend this literature to a more commonly occurring setting in financial markets, where the underlying return distribution is generally not known and is subject to random, unexpected shocks. In contrast to "experience-sampling" from a known distribution, we thus let investors in the experiment "experience" a distribution over time by revealing financial returns sequentially as a time series of either returns or prices.

Second, this study relates to findings on the impact of the display format (showing returns or prices) and the framing of investment decisions in general. In a series of experiments with both students, general population samples, and finance professionals, Grosshans & Zeisberger (2018) and Schwaiger et al. (2019) demonstrate that the *sequence* of returns—i.e., the shape of a price path—has a systematic effect on investors' satisfaction. Participants prefer an initial downturn with a subsequent price increase (down-up stocks) to an initial surge with a subsequent price decrease (up-down stocks), given identical prices at the end. Moreover, Borsboom & Zeisberger (2020) identify salient features, such as a price paths' highs and lows, as well as short-term crashes as main drivers of risk perception and, in turn, of investment decisions.

A number of related studies addressing framing effects also compare return and price representations in charts and find that asking for return forecasts as opposed to price forecasts results in higher expectations, whereas showing participants historical returns instead of historical prices yields lower expectations (Glaser et al., 2007, 2019). With respect to the present study—analyzing investment behavior and beliefs after negative or positive shocks—one might expect differential effects for different presentation formats, as different characteristics are salient in return bar charts compared to price line charts. We extend this line of literature by analyzing behavioral reactions to crashes in combination with charts that develop over time in a dynamic environment. Hence, in our approach, we show how "experiencing" a crash or a positive shock (prominent examples include stock price reactions after earnings announcements, among others) changes investment behavior of finance professionals and laypeople (e.g., students).

Finally, we contribute to the growing literature on volatility and risk perception as outcome variables.[4] Huber & Huber (2019), Holzmeister et al. (2020), and Zeisberger (2020), for example, find that investors perceive return distributions as more risky when the probability of a loss is higher (while a higher variance in the underlying distributions does not play a major role). In particular, while we replicate previous findings on financial professionals and lay people of Holzmeister et al. (2020)—i.e., for whom a negative return or the probability of a loss tend to be driving risk perception—we also find clear differences. The authors report that professionals' and lay people's risk perception does not vary with volatility (i.e., the standard deviation of returns). We extend this line of literature by showing that professionals indeed associate shocks in volatility

[4] In recent years, a number of studies has looked into framing effects in risk perception and financial decision-making analysing, among other things, presenting return charts vs. presenting price charts; e.g., Weber et al. (2005), Diacon & Hasseldine (2007), Kaufmann et al. (2013), Ehm et al. (2014), and Huber & Huber (2019).

with higher perceived risk. The differences between our study and the one of Holzmeister et al. (2020), however, could potentially be driven by the different experimental frameworks.[5]

Considering portfolio allocations, Ehm et al. (2014) report that people tend to suffer from an inability to adapt their portfolios to different volatilities between stocks, i.e., they invest similar percentages into a risky stock regardless of the given return volatilities. However, the closest study to ours with regard to inducing volatility as a stimulus is the one by Payzan-LeNestour et al. (2016). The authors explore "variance after-effects," exposing participants to either low-variance or high-variance trajectories of a stock market index, which is represented as a dynamically moving line plot. They observe that perceived volatility is smaller after exposure to high volatility and vice versa, and propose variance as constituting an independent cognitive property distinct from sensory effects, which can distort risk perception. Similarly, making use of the neuroscience theory of efficient coding, Payzan-LeNestour et al. (2021) find that people systematically underestimate risk after prolonged exposure to high risk, as they seem to get accustomed to high volatility and consider it "normal." We contribute to this line of literature in a different experimental framework in a financial markets setting, examining situations with changing volatilities *within* a stock's historical returns. Importantly, our experimental design also allows one to distinguish investment behavior (i.e., risk taking) from risk perception as well as from price and return expectations. By exposing not only laypeople, but also highly experienced finance professionals to the experience of volatility shocks, we also address potential external validity concerns and add to the growing body of research on professionals' investment behavior, risk assessments, and return expectations (e.g., Haigh & List, 2005; Glaser et al., 2007; Kaustia & Knüpfer, 2008; Cohn et al., 2015; Huber et al., 2019; Holzmeister et al., 2020).

[5]The experimental frameworks differ in important aspects as Holzmeister et al. (2020) let participants assess different assets, each of which is shown with a histogram of the return distribution. In our study—as in real financial markets—participants do not know the distribution of the risky asset's returns ex ante. Moreover, they assess a given asset whose return distribution changes over time as we induce a volatility shock. A third crucial difference is the display mode in the experiment: Holzmeister et al. (2020) show histograms of returns, while we present price and return charts dynamically evolving over time. Hence, for future research and for the comparison of studies, it is important to distinguish whether one considers a dynamic or static setting and whether the return distribution is known/visible or unknown.

2 The Experiment

2.1 The Investment Task

In a controlled online experiment with a sample of financial professionals and a standard student sample, we sequentially present 100 daily returns of a risky stock, whose returns are based on historical data from the NASDAQ and DAX indices. Every 0.5 seconds, one of the 100 returns is realized and is added either to a return bar chart or to a price line chart, depending on the treatment. We model the volatility shock in the following way: DOWN, UP, and STRAIGHT refer to a downward-trending shock, an upward-trending shock, and a net-zero shock, respectively. The DOWN-shock is either the NASDAQ-crash from April to May of 2000 or the DAX-crash from September to October of 2008, the UP-shock contains the mirrored returns from the DOWN-shock,[6] and STRAIGHT contains a sample of returns from UP- and DOWN-returns selected to minimize the total period's absolute return with the same standard deviation as in the other two shock paths.[7] Returns in non-shock periods are taken from more tranquil times from the same index as the respective shock. Using two distinct time series for each of the three shocks (based on either NASDAQ or DAX returns) mitigates the risk of artifacts affecting our results and thus increases internal validity. All time series presented as price and return charts are shown in Figure B1 and Figure B2 in Online Appendix B.

Figure 1 shows the return distributions of the tranquil and turbulent periods for the three different shock (treatment) conditions (DOWN, STRAIGHT, UP), respectively. Figure 2 shows the representative sequence of action for one of the DOWN time series. In all time series we model a pre-shock phase in periods 1 and 2, the shock in the third period, and a post-shock phase in periods 4 and 5.

Every 20 return draws (every 20 trading days, referred to as one trading month in the experiment), i.e., five times in total, participants have to make a number of decisions, allowing us to elicit

[6] Naturally occurring examples of comparable UP-shocks on financial markets can be found in price developments after earnings announcements that exceed expectations or major technological breakthroughs, for example (e.g., the stocks of Tesla, an electric vehicle company, surged by 39.2% in one month after exceeding analysts expectations in October 2019, and the stocks of CureVac, a company developing vaccines against COVID-19, more than doubled in November 2020 after reporting successful results from a Phase I-II clinical trial.)

[7] The standard deviation of returns is 0.93 percent in non-shock periods vs. 4.99 percent in shock periods. This five-fold increase in volatility is comparable to recent extreme shocks on financial markets but also in line with more commonly occurring events. The CBOE Volatility Index (VIX) increased almost six-fold in March 2020, more than four-fold in October 2008, but also saw similar developments in August 2011, August 2015, and February 2018, for example.

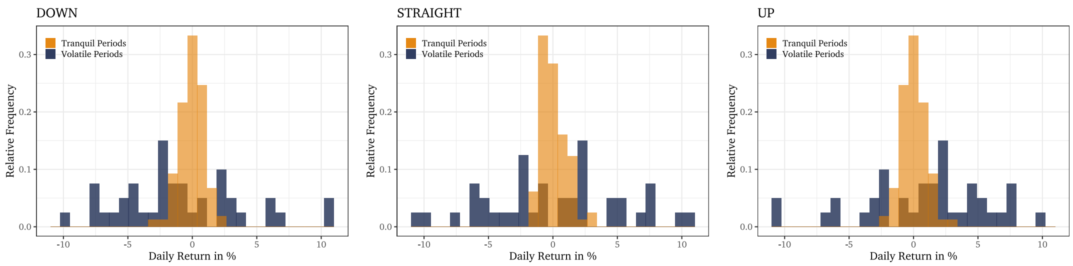


Figure 1: Histograms of daily returns of the time series used in the experiment for all three treatments. The returns from the volatile periods (blue) represent the shock period (period 3), and the returns from the calm (tranquil) periods (orange) were used in the periods preceding and following the shock.

the following variables (also see the experimental instructions in Online Appendix A for further details):[8]

- INVESTMENT: Percentage invested in the (risky) stock ("What percentage of your wealth do you want to invest in the risky stock in the next month?" [from 0% to 100%]).
- RECOMMENDATION: Trading recommendation for the stock ("If you were an analyst, would your recommendation for the stock be SELL, HOLD or BUY?" [Likert scale ranging from "strong sell" (1) to "strong buy" (5)]).
- SATISFACTION: Satisfaction with the stock ("Please state your satisfaction with the stock on a scale ranging from -3 to 3, where -3 indicates 'very unsatisfied' and 3 indicates 'very satisfied.' ").
- RISK PERCEPTION: Perception of the stock's risk ("How risky do you perceive this stock on the basis of its past returns?" [Likert scale ranging from "not risky at all" (1) to "very risky" (7)]).
- PRICE FORECAST ("What is your estimate of the most likely price at the end of next month?" [only if prices are displayed]).
- RETURN FORECAST ("What is your estimate of the most likely monthly return in the next month?" [only if returns are displayed]).

[8]In the experiment, we also elicited participant's optimistic and pessimistic forecast for the stock price (e.g., "What is your optimistic/pessimistic estimate for the price at the end of the next month? (only in 5% of cases the actual price will be above/below this price)") for price or return predictions. To keep the paper short and concise, we report results for the recommendations and for the difference between a participant's optimistic and pessimistic forecasts in the Online Appendix only.

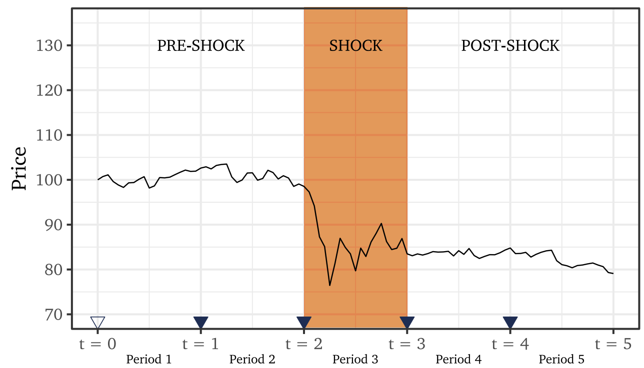


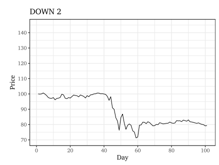
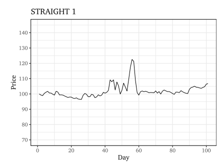
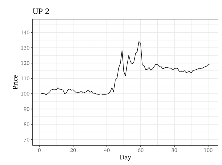
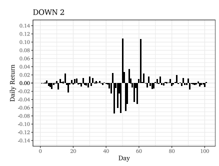
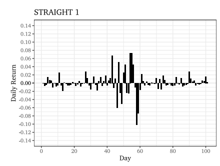
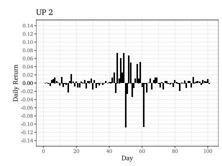
Figure 2: Sample sequence of action in one of the experimental time series used. The pre-shock period is the time up to $t = 2$, the shock happens in period 3, and the post-shock phase runs from periods 4 to 5. At $t = 1$, $t = 2$, $t = 3$, and $t = 4$, participants had to answer a number of questions in addition to deciding which percentage of their endowment to invest in the risky stock; at $t = 0$, participants only decide which percentage of their endowment to invest.

2.2 Treatments

In a 2 × 3 design, we vary the "presentation format" (RETURNS or PRICES) and the "shock" of the stock (mostly negative returns, mostly positive returns, or net-zero returns during the shock). In a between-subjects design, participants are randomly assigned to one of two presentation format conditions: participants are either presented with price line charts or with return bar charts. In addition, we randomly vary the second treatment variable, the underlying shock (DOWN, STRAIGHT, or UP), within subjects. Thus, each participant experiences all three paths (either in the return or the price chart condition) but in a random order. We restricted this randomization in order to avoid learning by participants seeing mirror-images of the same time series; i.e., if a participant is presented with the DOWN-series based on NASDAQ data, then she is presented with the UP-series based on DAX data, and vice versa.

Summing up the sequence of the experiment, each participant is presented with all three shock paths, DOWN, STRAIGHT, and UP, of the same presentation format in random order. In each path (i.e., for each stock), 100 returns are revealed over time, each lasting for 0.5 seconds, with decisions to make after every 20 price/return draws. Consequently, each participant makes five decisions per stock and, thus, 15 decisions overall. For a treatment overview, see Table 1.

Table 1: Between- and within-participants treatment structure with a 2×3 factorial design. The treatment variable "presentation format" was implemented such that participants were either presented with charts composed of PRICES or RETURNS. The treatment variable "shock" (DOWN, STRAIGHT, and UP) was implemented within-participants such that each participant experienced all three paths (either in the return or the price chart condition) but in a randomized order.

<table>
<tr><th></th><th></th><th colspan="3">Shock (within-participants)</th></tr>
<tr><th></th><th></th><th>DOWN</th><th>STRAIGHT</th><th>UP</th></tr>
<tr><td rowspan="2">Presentation format (between-participants)</td><td>PRICES</td><td>
</td><td>
</td><td>
</td></tr>
<tr><td>RETURNS</td><td>
</td><td>
</td><td>
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2.3 Experimental Procedure

We invited financial professionals from before.world, some of whom have already participated in different types of lab-in-the-field or online experiments (e.g., Kirchler et al., 2018; Schwaiger et al., 2019; Weitzel et al., 2020). In total, 202 financial professionals completed the experiment. Table C1 in the Online Appendix outlines demographic information and job functions of the experimental participants. On average, professionals were 37.9 years of age at the time of the experiment (SD = 8.5), the fraction of female participants among all professionals was 12.9 percent, and the fraction of professionals with a university degree was 89.6 percent. Moreover, approximately 30 percent of professionals selected investment- or portfolio management as their primary job description, followed by financial advice, and trading. In addition, 282 economics and business students from the Innsbruck EconLab's participant pool at the University of Innsbruck, recruited with hroot (Bock et al., 2014), completed the experiment. We treat the sample of finance professionals as the primary analysis and consider the student sample to be of secondary importance.

After the main experiment, we elicited participants' general and financial risk attitudes with two survey questions from the German Socio-Economic Panel (GSOEP; see Dohmen et al., 2011), their cognitive reflection abilities using two (not well-known) cognitive reflection test (CRT) questions from Toplak et al. (2014), and a number of demographics (age, gender, education, profession).

Table C1 in the Online Appendix outlines that professionals answered 1.38 CRT questions correctly, which is 0.32 questions more than students (Mann-Whitney U-test, $N = 484$, $p < 0.005$). Moreover, professionals' self-reported general and financial risk tolerances were significantly higher than the ones reported by students (General: 6.6 (professionals) vs. 5.7 (students), Mann-Whitney U-test, $N = 484$, $p < 0.005$; Financial: 6.8 vs. 4.5 , Mann Whitney U-test, $N = 484$, $p < 0.005$).

At the end of the experiment, one of the five periods (i.e., investment decisions) from one of the three paths was randomly selected for payment. A participant's percentage return from this randomly selected period multiplied by 3 was added to an endowment of EUR 20 for professionals.[9] Student participants' endowment was EUR 5. Financial professionals earned on average EUR 20.47 with a standard deviation of EUR 4.00 (5.45 and 0.84 for students, respectively) and minimum and maximum payments of EUR 8 and EUR 32 (2 and 8 for students). The median duration of the experiment was 20.4 minutes for professionals and 19.4 minutes for students.

About three months after we conducted this experiment, in March 2020, the COVID-19 pandemic unfolded and led to stock markets crashing around the world. We took the opportunity to repeat this experiment and to run a second wave with the identical experimental protocol but with a new sample of 113 finance professionals and 216 students from the same participant pools. In Huber et al. (2021), a companion paper to the present study, we examine how the experience of extreme events affects risk-taking behavior by investigating potential level-effects between the first wave conducted in December 2019 and reported in this study (WAVE 1 in the companion paper), and the second wave conducted in March 2020 during the naturally occurring stock market crash (WAVE 2). We briefly report on some results of WAVE 2 in Section 4, below, and we refer to the companion paper for further details.

3 Results

The results section is structured as follows. First, we examine how volatility shocks in the experiment affect both professionals' and students' investment behavior as well as related variables,

[9] That is, if a participant invested 70% of her wealth in the risky stock in the randomly selected month and the stock's return in this month was 15%, then the return from this month was 70% × 15% = 10.5%. The payment from the experiment was EUR 20 × (1 + 10.5% × 3) = EUR 26.30. Any money not invested generated neither profits nor losses, equivalent to a savings account with 0% interest. As overnight interest rates on deposits from households in the Euro area have been below 0.10% since 2016, we apply comparable 0% interest in the experiment for simplicity.

i.e., INVESTMENT, SATISFACTION, and RECOMMENDATION. Next, we look into the respective shocks' effects on how participants perceive risk (RISK PERCEPTION); finally, we look into how people's beliefs about future prices and returns are affected (PRICE FORECAST and RETURN FORECAST).

For each variable, we plot fitted values from ordinary least squares regressions with period dummies for $t \in \{2, 3, 4\}$ for the presentation formats RETURNS and PRICES, the experimental shocks DOWN, STRAIGHT, and UP, and the respective interaction terms. The experimental shock always occurred during period 3. We denote $t \in \{2, 3, 4\}$ in the regressions and figures as the end of the respective period, at which point participants entered their decisions (see Figure 2). $t = 2$ thus refers to the last decision before the shock, $t = 3$ refers to the first decision after the shock.

In addition, we run ordinary least squares regression analyses for each participant pool (financial professionals and students) and for both presentation formats (RETURNS and PRICES) separately, and we measure differences in the dependent variables (INVESTMENT, SATISFACTION, RECOMMENDATION, RISK PERCEPTION, PRICE FORECAST, and RETURN FORECAST) before and after the volatility shock. In particular, we run the following regression model(s):

$$y_{i,t} = \beta_0 + \beta_1 \text{ POST\_SHOCK} + \beta_2 \text{ PRE\_SHOCK} \times \text{DOWN} + \beta_3 \text{ POST\_SHOCK} \times \text{DOWN} + \beta_4 \text{ PRE\_SHOCK} \times \text{UP} + \beta_5 \text{ POST\_SHOCK} \times \text{UP}.$$

Here, $y_{i,t}$ is a generic placeholder representing the respective dependent variable described above for participant i in period t. POST_SHOCK is a dummy variable taking the value 1 for periods after the volatility shock (i.e., decisions at $t = 3$ and $t = 4$), zero otherwise, and PRE_SHOCK denotes a dummy variable taking the value 1 for periods before the shock (i.e., decisions at $t = 1$ and $t = 2$), zero otherwise. The interaction terms (e.g., POST_SHOCK × UP) measure the combined effects of the shock phase (i.e., before or after the shock) and the respective treatment (i.e., UP or DOWN). Hence, the effects of treatment STRAIGHT are incorporated in the dummy POST_SHOCK for decision at $t = 3$ and $t = 4$ after the shock and can directly be compared to the pre-shock decision at $t = 1$ and $t = 2$ in treatment STRAIGHT, measured with the constant. The pre- and post-shock effects of the other treatments are measured through the interaction terms. Moreover, we run all specifications with control variables such as a participant's risk attitude, CRT score, age, and gender. We cluster standard errors at the participant level and apply a 0.5%- and 5%-significance level, respectively, following Benjamin et al. (2018). We also run a number of additional model specifications with separate regressions for each path and binary dummy variables for each presentation format (PRICES and RETURNS) as outlined in the pre-registration. The respective results are identical in their qualitative nature but provide some additional insights about potentially differential effects when presenting return or price charts. To keep the paper focused and concise, we present these supplementary analyses in the Online Appendix but refer to the relevant figures when discussing the respective results in the main text.

3.1 Investment Behavior

We examine investment behavior first, for which Figure 3 and Table 2 show our main results. Figure 3 presents fitted values from regressions with period dummies for the presentation formats RETURNS (triangles) and PRICES (dots), and the shocks DOWN (blue), STRAIGHT (orange), and UP (red).[10] Table 2 shows the regression estimates with binary pre- and post-shock variables for each participant pool and each presentation format separately.

Result 1: Finance professionals' investment levels are negatively associated with the direction of the experimental shock. Students, in comparison, show lower investment levels in general, and change their investment behavior following the experimental shocks to a smaller degree.

Support: Professionals' fraction invested in the stock increases (decreases) statistically significantly after a negative (positive) experimental shock in both presentation formats. In particular, professionals invest between 5.0 and 6.5 percentage points more in the stock following a downward shock, and between 5.9 and 7.7 percentage points less following an upward shock, compared to the investment levels after a straight shock (see the first row in Figure 3 and columns 1 and 2 of Table 2, $p < 0.005$).

Result 1 points to a behavioral pattern that is in line with the disposition effect (Odean, 1998), indicating that professionals have a stronger preference for realizing winning rather than losing stocks. This also is consistent with a belief in mean reversion of prices, in line with Shefrin & Statman (1985) and Jiao (2017), for example.

[10] See also Figures B6 to B9 in the Online Appendix that outline more detailed time trends for all variables. The corresponding regression models with coefficient estimates and standard errors are provided in Tables C2 through C4 in the Online Appendix. For the fitted values presented in Figure 3, we use the specifications including all covariates.

Students, in contrast, do not change their investment behavior following a downward shock, but reduce their invested fraction statistically significantly following an upward shock in both presentation formats by 3.2 to 4.5 percentage points, compared to the levels in the condition STRAIGHT (see the first row in Figure 3 and columns 7 and 8 of Table 2, $p < 0.05$).

Importantly, we find no substantial differences in post-shock reactions between presentation formats, i.e., between presenting return bar charts and price line charts. While investment levels with RETURNS tend to be slightly above those with PRICES, this difference in post-shock investments is only statistically significant for finance professionals in Treatment DOWN (see Table C16 in the Online Appendix).

Our data also allow us to distinguish between investors' reactions, depending on how severely they were affected by the shock in terms of their wealth, following the framework put forward in a recent study by Corgnet et al. (2020) to examine investors' reactions to negative tail events. There, they demonstrate that, under Expected Utility Theory and Prospect Theory, investors who observe but do not suffer a tail event are more likely to *reduce* their auction bids for a risky asset, while those who suffer a tail event and thereby incur substantial losses subsequently *increase* their bids. As an exploratory test for this proposition, we compare participants' changes in investments in $t = 3$ (i.e., directly after the volatility shock) between those with below-median losses and those with above-median losses in Treatment DOWN, and between those with below-median gains and those with above-median gains in Treatment UP. As we can see from Figure 4, in line with Corgnet et al.'s (2020) results for negative tail events, participants who suffered more severe losses during the DOWN-crash indeed increased their risk-taking, as they subsequently invested roughly 10 percentage points more in the risky asset ($p < 0.01$, $N = 202$ for PROF and $N = 282$ for STUD, two-sided t-tests for each subject pool). Moreover, with our experimental setup we can run analogue analyses for reactions to price surges in UP: here, we find that those who experience above-median gains significantly decrease their investments compared to those with below-median gains ($p < 0.01$, two-sided t-tests for each subject pool).

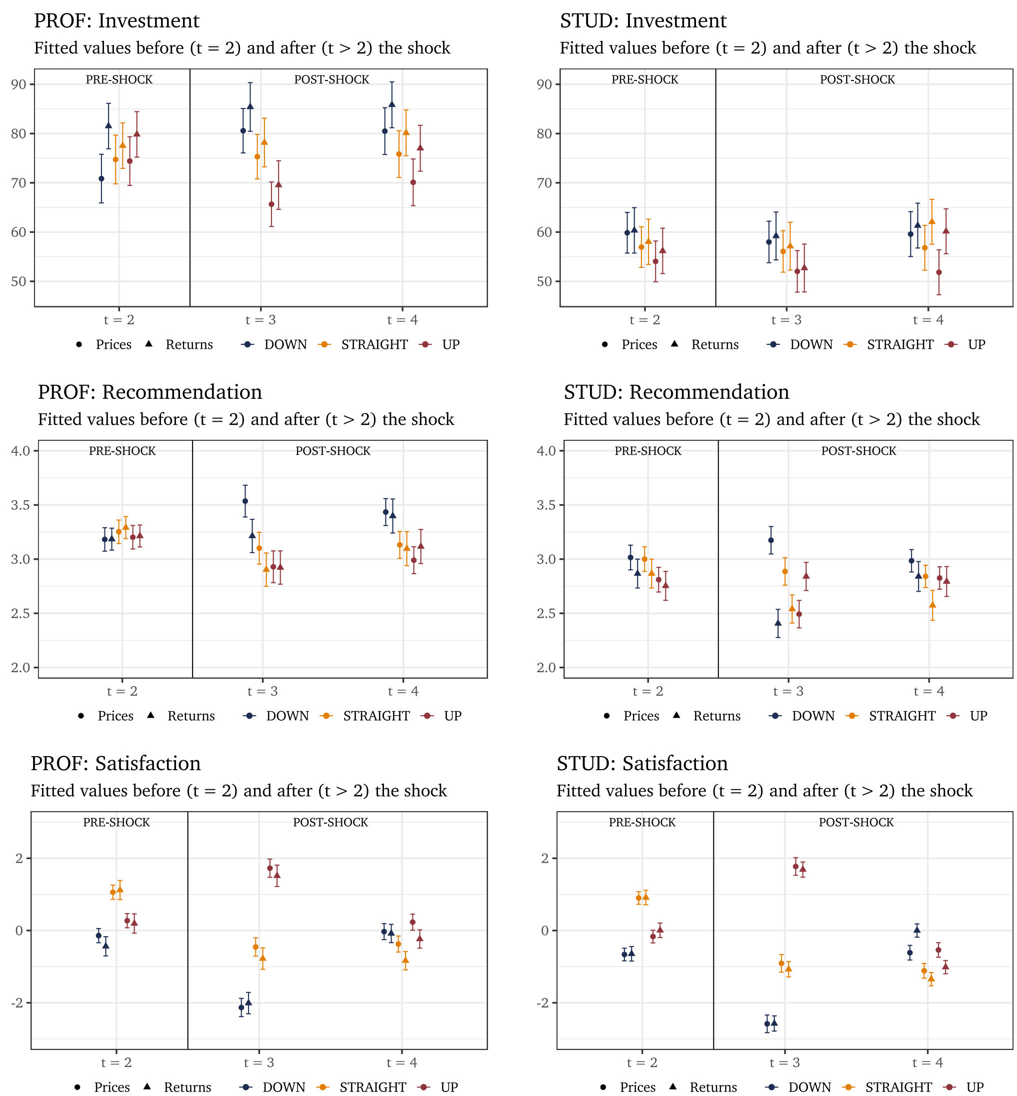

Figure 3: Fitted values of investment, recommendation, and satisfaction before ($t = 2$), at ($t = 3$), and one period after the shock ($t = 4$) for both presentation formats RETURNS (triangles) and PRICES (dots) and the shock types UP (blue), DOWN (red), and STRAIGHT (green). The corresponding regression models with coefficient estimates and standard errors are provided in Tables C2 through C4 in the Online Appendix. Fitted values are calculated, including all covariates. Return forecasts are converted into price forecasts for better comparability. The whiskers indicate the 95% confidence intervals.

Table 2: Ordinary least squares regressions on INVESTMENT, RECOMMENDATION, and SATISFACTION, for each participant pool (financial professionals and students) and each presentation format (RETURNS or PRICES). POST_SHOCK is a dummy variable taking the value 1 for periods after the volatility shock (i.e., $t = 3$ and $t = 4$), zero otherwise, and PRE_SHOCK stands for a dummy variable taking the value 1 for periods before the shock (i.e., $t = 1$ and $t = 2$), zero otherwise. The interaction terms (e.g., POST_SHOCK × UP) measure the combined effects of the shock phase (i.e., before or after the shock) and the respective treatment (i.e., UP or DOWN). All specifications are run with a participant's risk attitude, CRT score, age, and gender as control variables. Estimates with and without controls are shown in Tables C9 to C11 in the Online Appendix. Clustered standard errors at the participant-level are in parentheses. * and ** indicate the 5%- and 0.5%-significance levels, respectively.

	Investment		Recommendation		Satisfaction	
	Prices	Returns	Prices	Returns	Prices	Returns
Finance Professionals	(1)	(2)	(3)	(4)	(5)	(6)
POST_SHOCK	0.630	1.015	−0.106	−0.204**	−0.490**	−0.899**
	(1.395)	(1.415)	(0.062)	(0.070)	(0.075)	(0.117)
PRE_SHOCK × DOWN	−3.381	2.061	−0.020	0.029	−0.061	−0.147
	(1.881)	(1.343)	(0.052)	(0.045)	(0.069)	(0.080)
POST_SHOCK × DOWN	4.966**	6.462**	0.369**	0.306**	−0.673**	−0.245*
	(1.690)	(1.909)	(0.076)	(0.084)	(0.094)	(0.113)
PRE_SHOCK × UP	0.581	2.421	−0.035	−0.019	0.086	−0.099
	(1.479)	(1.555)	(0.048)	(0.051)	(0.061)	(0.086)
POST_SHOCK × UP	−7.694**	−5.874*	−0.157*	0.019	1.390**	1.450**
	(2.392)	(2.247)	(0.073)	(0.092)	(0.117)	(0.129)
Constant	36.104*	58.334**	3.106**	3.063**	−0.660	0.628
	(15.213)	(16.907)	(0.262)	(0.279)	(0.521)	(0.523)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,485	1,545	1,188	1,236	1,186	1,227
R^2	0.178	0.123	0.070	0.050	0.173	0.115
Adjusted R^2	0.172	0.117	0.062	0.042	0.165	0.108
Students	(7)	(8)	(9)	(10)	(11)	(12)
POST_SHOCK	0.988	0.542	−0.144*	−0.240**	−0.738**	−0.929**
	(1.287)	(1.325)	(0.060)	(0.064)	(0.096)	(0.080)
PRE_SHOCK × DOWN	2.844	0.351	−0.008	0.030	−0.161	−0.264**
	(1.457)	(1.451)	(0.059)	(0.053)	(0.082)	(0.085)
POST_SHOCK × DOWN	2.350	0.651	0.216**	0.067	−0.587**	−0.077
	(1.949)	(1.635)	(0.072)	(0.067)	(0.098)	(0.083)
PRE_SHOCK × UP	0.190	−1.945	−0.095	0.027	−0.037	−0.044
	(1.649)	(1.459)	(0.059)	(0.056)	(0.091)	(0.065)
POST_SHOCK × UP	−4.514*	−3.180*	−0.205*	0.260**	1.629**	1.533**
	(2.028)	(1.592)	(0.075)	(0.075)	(0.130)	(0.100)
Constant	13.916	41.026*	2.761**	2.551**	−0.911*	−0.501
	(13.977)	(17.081)	(0.167)	(0.308)	(0.371)	(0.476)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,980	2,250	1,584	1,800	1,580	1,794
R^2	0.168	0.141	0.037	0.031	0.167	0.107
Adjusted R^2	0.164	0.137	0.031	0.026	0.161	0.102

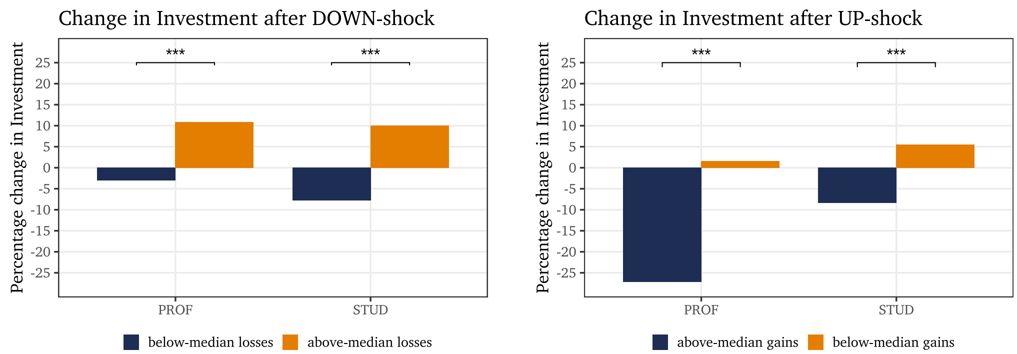

Figure 4: Change in INVESTMENT in $t = 3$ (i.e., directly after the volatility shock) in treatments DOWN (left panel) and UP (right panel) across subject pools (PROF and STUD), depending on above- and below-median losses and gains, respectively. Median losses after a DOWN-shock were 13.2%; median gains after an UP shock were 9.28%.

As a closely related variable to participants' own investment levels, we also examine their respective trading recommendations for other participants on a scale commonly used by analysts, ranging from "strong sell" (1) to "strong buy" (5). One can easily see from the second row of Figure 3 and columns 3 and 4 of Table 2 that, on average, the positions participants recommend correlate with their own investment behavior: as professionals increase their investment directly after a negative price shock, they also tend to shift their recommendation upwards towards recommending to "buy" and vice versa. Note, however, that, on average, professionals in our sample tend to recommend comparatively more risk-averse behavior after the shock: while they shift their recommendations towards "buy" after a downward shock and towards "sell" after an upward shock, they also move towards a "sell" recommendation in the neutral, net-zero shock—in contrast to their own investment behavior. This suggests a "cautious shift," i.e., more risk aversion when investing for others than when investing for oneself, which has also been found in the loss domain of risky gambles (e.g., Zhang et al., 2017). Also note that finance professionals, in particular, appear to be averse to directional recommendations for others, as most of these analyst recommendations are at or very close to recommending no positional change—that is, they tend to give a "hold" recommendation. More generally, these results relate to risky decision-making for others and to financial advice, in particular.[11]

[11] Polman & Wu (2020) provide a recent review and meta-analysis of the literature on decision-making for others in risky choices.

Next, we examine how the induced volatility shocks affect investors' satisfaction. Grosshans & Zeisberger (2018) and Schwaiger et al. (2019) report that price paths with up- and down-swings have a profound effect on satisfaction levels, a variable that might be an important factor in explaining subsequent investment decisions. Results are presented in the last row of Figure 3 and in columns 5 and 6 of Table 2.

Result 2: Finance professionals' investment satisfaction is positively correlated with the direction of the experimental shock, but drops to pre-shock levels in the final period. Students show qualitatively similar results.

Support: Professionals' satisfaction levels drop significantly after a downward shock (even after a shock of the category STRAIGHT) and increase significantly after an upward shock (see Figure 3 and columns 5 and 6 of Table 2; $p < 0.05$ for return charts in DOWN, $p < 0.005$ for all other treatments). For instance, compared to the pre-shock treatment phase, satisfaction levels drop by approximately 1.2 points (on the 7-point Likert scale) following a downward shock and increase by close to 1 point after an upward shock. Also note that satisfaction levels significantly decrease between 0.5 and 0.9 points in STRAIGHT (i.e., with increasing volatility but close to net-zero returns), suggesting that a surge in volatility decreases participants satisfaction levels although their wealth is not affected. One could argue that volatility, and, more generally, uncertainty, make participants feel uneasy and evoke discomfort even without monetary consequences. Moreover, we show that shifts in satisfaction are short-term, as satisfaction reaches approximately pre-shock levels again in $t = 4$. These findings similarly hold for both presentation formats and for the student sample (see Table C18 in the Online Appendix).

3.2 Risk Perception

Next to participants' investment behavior, we are interested in whether their risk perception shifts in light of the experimental shocks. Huber & Huber (2019), Holzmeister et al. (2020), and Zeisberger (2020) show that, in abstract settings, investor risk perception is correlated with the probability of a loss rather than with volatility per se. This leads us to expect an increase in risk perception only after a downward price shock (DOWN) but not after prices have increased (UP) or remained constant (STRAIGHT). Related to this notion, we conjecture that risk perception is differentially affected by shocks with different presentation formats: in return charts, volatility is very salient while the price change is not; in price charts, volatility is less salient while the price change is very prominent. Hence, we expect a potential effect of losses in the shock-period on participants' risk perception to be larger for price chart representations.

Result 3: Finance professionals perceive all volatility shocks in the experiment (i.e., DOWN, STRAIGHT, or UP) to increase risk similarly, independent of the presentation format. Students show partly similar patterns, but do not perceive an upward price or return shock to increase the riskiness of the stock.

Support: None of the interaction terms of the post-shock phase with the direction of the shock (DOWN, STRAIGHT, or UP) among finance professionals are statistically significant, pointing at no difference in risk perception between different directions of the experimental shock. Compared to pre-shock levels of risk perception, the experimental shocks increase risk perception by approximately one point on the 7-point Likert scale in all treatments ($p < 0.005$, see the first row in Figure 5 and columns 1 and 2 in Table 3). However, students show different levels of risk perception of the stock in a downward shock. Columns 7 and 8 in Table 3 indicate a statistically significantly lower (higher) risk perception of an upward (downward) shock in both presentation formats and in both waves compared to straight shocks ($p < 0.005$ for prices, $p < 0.05$ for returns). Thus, it seems that financial professionals' training and experience brings their risk assessments more in line with theory, which, measuring risk as volatility/standard deviation, detects volatility clusters as increasing volatility, irrespective of whether the overall price change is positive, negative, or close to zero.

Notably, we also report that participants' reactions to shocks of different types (directions) hold similarly for price and return charts in both participant pools, i.e., for finance professionals as well as for students (see the interaction term POST_SHOCK × RETURNS, testing for differences after the shock between the presentation formats in Table C19 in the Online Appendix).

3.3 Price and Return Forecasts

Finally, we look into how participants' expectations about future prices and returns adapt to the severe volatility shocks in the experiment. Results are presented in the second and third row of Figure 5 and in columns 3 to 6 of Table 3. Note that participants in treatment RETURNS were

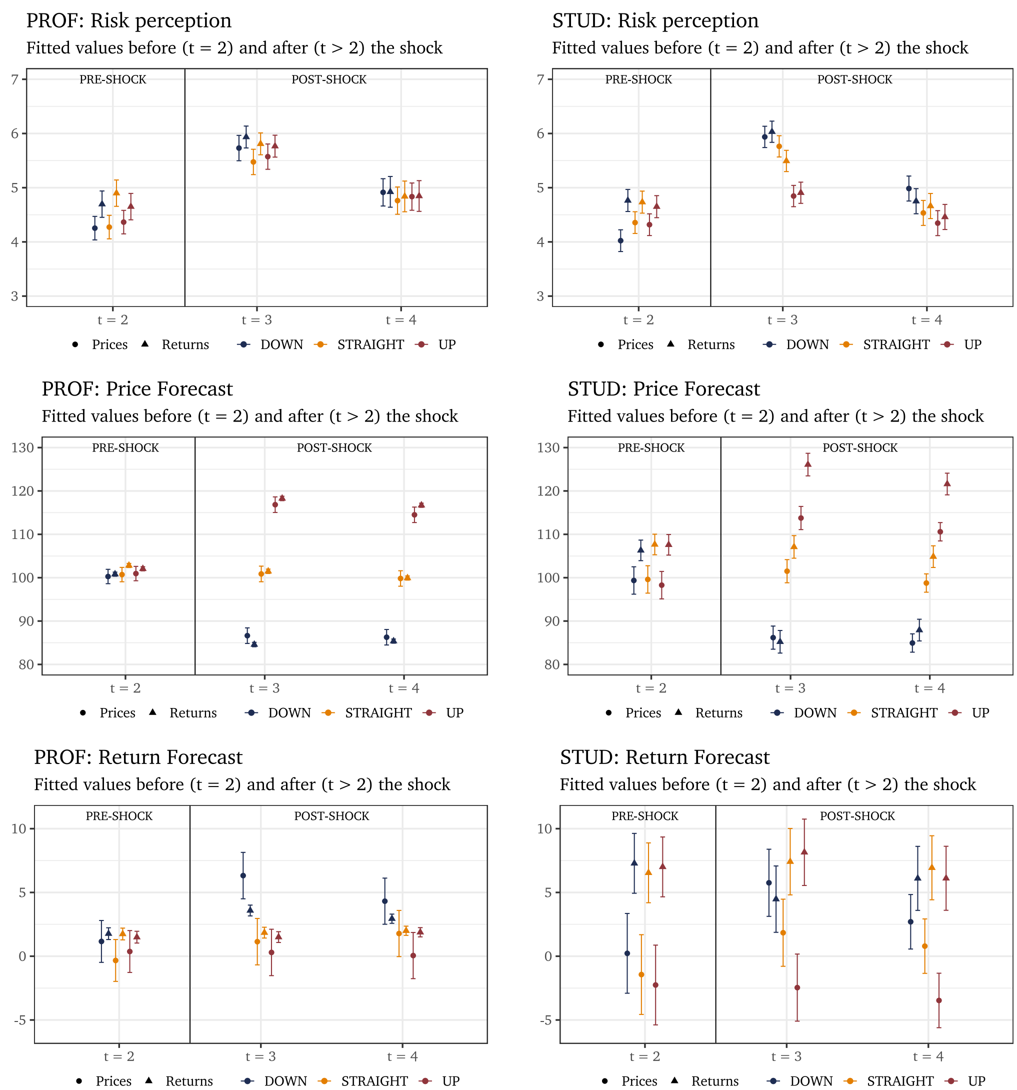

Figure 5: Fitted values of risk perception and price and return forecasts before ($t = 2$), at ($t = 3$), and one period after the shock ($t = 4$) for both presentation formats RETURNS (triangles) and PRICES (dots) and the shock types UP (blue), DOWN (red), and STRAIGHT (green). The corresponding regression models with coefficient estimates and standard errors are provided in Tables C5 through C7 in the Online Appendix. Fitted values are calculated, including all covariates. Return forecasts are converted into price forecasts for better comparability. The whiskers indicate the 95% confidence intervals.

Table 3: Ordinary least squares regressions on RISK PERCEPTION, PRICE FORECAST, and RETURN FORECAST, for each participant pool (financial professionals and students) and each presentation format (RETURNS or PRICES). POST_SHOCK is a dummy variable taking the value 1 for periods after the volatility shock (i.e., $t = 3$ and $t = 4$), zero otherwise, and PRE_SHOCK stands for a dummy variable taking the value 1 for periods before the shock (i.e., $t = 1$ and $t = 2$), zero otherwise. The interaction terms (e.g., POST_SHOCK × UP) measure the combined effects of the shock phase (i.e., before or after the shock) and the respective treatment (i.e., UP or DOWN). All specifications are run with a participant's risk attitude, CRT score, age, and gender as control variables. Estimates with and without controls are shown in Tables C12 to C14 in the Online Appendix. Clustered standard errors at the participant-level are in parentheses. * and ** indicate the 5%- and 0.5%-significance levels, respectively.

	Risk perception		Price forecast		Return forecast	
	Prices	Returns	Prices	Returns	Prices	Returns
Finance Professionals	(1)	(2)	(3)	(4)	(5)	(6)
POST_SHOCK	0.868**	0.518**	1.415	−0.161	1.697*	0.211
	(0.085)	(0.101)	(0.724)	(0.237)	(0.729)	(0.186)
PRE_SHOCK × DOWN	−0.064	−0.158	1.006	0.721**	0.448	0.044
	(0.096)	(0.113)	(0.874)	(0.166)	(0.881)	(0.141)
POST_SHOCK × DOWN	0.204	0.094	−13.892**	−15.722**	3.858*	1.341**
	(0.110)	(0.099)	(1.460)	(0.389)	(1.550)	(0.331)
PRE_SHOCK × UP	0.126	−0.113	1.632	0.589**	0.891	−0.211
	(0.092)	(0.098)	(1.204)	(0.164)	(1.231)	(0.151)
POST_SHOCK × UP	0.085	−0.026	15.325**	16.785**	−1.286	−0.232
	(0.092)	(0.104)	(0.837)	(0.338)	(0.691)	(0.222)
Constant	2.676**	4.387**	99.350**	98.732**	0.439	0.044
	(0.569)	(0.636)	(3.420)	(0.990)	(3.492)	(0.995)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,172	1,220	1,188	1,236	1,188	1,236
R^2	0.181	0.096	0.345	0.906	0.063	0.087
Adjusted R^2	0.174	0.089	0.340	0.905	0.055	0.080
Students	(7)	(8)	(9)	(10)	(11)	(12)
POST_SHOCK	0.683**	0.183*	1.681*	−0.0003	2.019*	0.300
	(0.093)	(0.088)	(0.741)	(0.455)	(0.747)	(0.437)
PRE_SHOCK × DOWN	−0.432**	−0.183*	0.984	1.081	0.423	0.390
	(0.114)	(0.083)	(1.140)	(0.678)	(1.142)	(0.673)
POST_SHOCK × DOWN	0.310**	0.310**	−14.575**	−19.406**	2.913*	−1.885**
	(0.098)	(0.090)	(1.039)	(0.620)	(1.069)	(0.576)
PRE_SHOCK × UP	−0.154	−0.171	−0.558	0.478	−1.362	−0.401
	(0.110)	(0.089)	(0.972)	(0.473)	(0.981)	(0.470)
POST_SHOCK × UP	−0.551**	−0.396**	12.042**	17.867**	−4.280**	−0.045
	(0.111)	(0.099)	(1.115)	(0.584)	(0.997)	(0.516)
Constant	4.188**	4.199**	93.048**	119.501**	−5.751	20.459*
	(0.683)	(0.563)	(8.098)	(9.964)	(8.203)	(10.113)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,560	1,776	1,584	1,800	1,584	1,800
R^2	0.123	0.043	0.238	0.354	0.063	0.064
Adjusted R^2	0.118	0.037	0.234	0.350	0.057	0.059

asked about future returns only, and participants in treatment PRICES where asked about future prices only. For consistency and comparability, we convert all forecasts to expectations about both returns and prices.

Result 4: Finance professionals' price forecasts are in the direction of the experimental shock and do not systematically differ between the presentation formats. Students exhibit similar patterns, but show more extreme predictions when returns are presented.

Support: We find that finance professionals exhibit significantly higher (lower) price forecasts after an upward (downward) experimental shock compared to price shocks, without clear directional movement of type STRAIGHT. In particular, professionals' price predictions following an upward shock are 15.3 higher than in the treatment with net-zero shocks, and 13.9 lower in the case of downward shocks when presenting price charts ($p < 0.005$; the respective values when presenting return charts are 15.7 and 16.8). Note that prices actually change by +16.0 with an upward shock and −17.6 with a downward shock. Thus, price expectations adapt well to changes in realized prices, but they under-react mildly in the downward case. A belief in (and hope for) a mean reversion of prices may be the most important factor for these predictions, also leading to increasing investments after a negative shock (and decreasing investments after a positive shock); see Figure 5 and columns 3 to 6 of Table 3.

Moreover, we show in Table C20 in the Online Appendix that professionals' reactions to shocks of different types do not differ between the presentation formats. Students, however, do exhibit differences in forecasts between prices and returns. Although the forecast patterns following upward and downward shocks are qualitatively similar to what we observe with professionals, students show more extreme behavior in the presentation format RETURNS. In $t = 2$, before the induced shock, predictions from return charts are significantly above those from price charts. While predictions from return charts do not move much after a downward shock, those from price charts increase significantly. Moreover, forecasts are significantly higher with returns than with prices after straight and upward shocks ($p < 0.005$, see Table C20 in the Online Appendix). This is largely in line with Glaser et al. (2007), who report higher (lower) forecasts in upward- (downward-) sloping time series when asking about future returns instead of asking about future prices. More generally, we corroborate the findings by Glaser et al. (2019) that asking for return forecasts as opposed to price forecasts results in higher expectations.[12]

4 Robustness and Replication: Evidence from WAVE 2

As stated in Section 2, we replicated the experiment in March 2020, at the peak of the COVID-19 stock market crash, and we briefly report on results from this WAVE 2 here. In the realm of the present study, this second wave, in principle, acts as a direct replication (Schmidt, 2009) of the original study, which we employ as an additional robustness check for the results and treatment differences reported above. This is a valuable exercise as the particular effects identified in this study could be a result of, for instance, the particular time period during which we conducted the experiment (see Nosek & Errington, 2020, for example): a tranquil, "bullish" boom period on financial markets. Risk taking (e.g., Cohn et al., 2015), risk perception (e.g., Payzan-LeNestour et al., 2021), but also participants' expectations have been shown to adapt and to be distorted when faced with more volatile, "bearish" bust markets.

Figures B10 and B11 as well as Tables C30 and C31 in the Online Appendix mirror the analyses discussed above, with the new data from WAVE 2. Overall, we largely replicate our initial results of WAVE 1.[13] With regard to participants' investment behavior, we find finance professionals to invest approximately 5 percentage points more in the experimental stock following a downward shock compared to following a straight shock in WAVE 1; the corresponding increase in WAVE 2 is 10 percentage points. If at all, participants' reactions to the volatility shocks in the investment game thus appear to be larger in the second wave. Students, however, only reduce their investments following an upward shock by 3.2 to 3.4 percentage points compared to the net-zero shock, but this finding is only statistically significant in WAVE 1. Next, consider investor satisfaction in WAVE 2. As

[12]Note that Glaser et al. (2019) also report that showing return charts leads to lower expectations in contrast to showing price charts. In the current study, we ask about returns when showing returns and ask about prices when showing prices. Treading carefully, one could interpret our result of higher expectations with returns as the "task effect" (asking for return/price forecasts) being stronger than the "stimuli effect" (showing return/price charts) in this particular framework.

[13]We observe that that finance professionals' investments in the experiment were 12 percent lower in March 2020 than in December 2019, although their price expectations had not changed, and although they considered the experimental asset less risky during the crash than before. See Huber et al. (2021) for the full study including all hypotheses, detailed analyses and discussions thereof.

in the original experiment, unsurprisingly both students and finance professionals become more (less) satisfied after an upward (downward) shock.

Examining participants' perception of the risky asset, our WAVE 2 results confirm the findings from above: the experimental shocks increase professionals' risk perception by approximately one point regardless of the presentation format and regardless of the direction of the price change. Students, however, lower their risk perception following an upward shock and increase it following a downward shock. Lastly, expectation adaptions following experimental shocks are also very similar between WAVE 1 and WAVE 2. Professionals' price forecasts are strongly correlated with the realized price change in all treatments but under-react mildly after downward shocks. For students, we observe qualitatively similar patterns but an over-reaction to shocks when presenting return charts.

Thus, we conclude that the behavioral patterns observed with experimental shocks appear to be robust, both for the finance professionals and the students.

5 Conclusion

In this study, we presented results from a novel artefactual field experiment with 202 finance professionals and 282 students from economics and business to investigate participants' reactions to volatility shocks, i.e., to a change in the underlying return distribution in an investment experiment with sequential price and return realizations.

Our key findings from this experiment are that (1) investment propensity among finance professionals is negatively associated with the direction of the shock (consistent with Prospect Theory and with a belief in mean reversion of prices) and that (2) students tend to invest less in a risky stock in general. Moreover, (3) finance professionals' trading recommendations for others are largely in line with their own investment behavior, albeit they tend to be more cautious with the recommendations, pointing to prudence as investment advisors. Next, we showed that (4) finance professionals' and students' investment satisfaction is positively correlated with the direction of the shock in both presentation formats. Here, we find that satisfaction shifts are short-term, as they reach pre-shock levels already one period after the shock. Next, we found that (5) finance professionals perceived shocks of different directions to increase risk in similar ways. (6) Students differed in one important aspect from the decisions of professionals: they did not perceive upwardly-trending shocks to increase the riskiness of the stock, but considered higher levels of risk primarily with downwardly-trending or straight shocks. Finally, we reported that (7) finance professionals' price or return forecasts were in the direction of the shock. Whereas professionals did not show differences in forecasts between presentation formats, students showed more extreme price forecasts in the returns condition following straight and upward shocks.

Considering real-world implications, it is comforting to see that finance professionals—in contrast to students—saw that a volatility cluster points to increased risk, even in cases in which the main direction of price changes is positive, i.e., when prices rise. It is crucial for financial advisors to understand and interpret risks and shifts in volatility correctly, in order to adapt clients' portfolios and to give appropriate expert advice. While we did report some differences between finance professionals and students, most patterns are very similar between these two participant pools.

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Online Appendix to
Volatility Shocks and Investment Behavior

Christoph Huber, Jürgen Huber, Michael Kirchler[†]

A Instructions of the Experiment

Dear participant,

Thank you very much for accepting our invitation to take part in this short online experiment. It takes approximately 15 minutes. The experiment has real monetary incentives and the payoff will vary depending on your decisions.

All data will be anonymous and no individual results will be disclosed publicly or to other participants of the experiment.

Please do not use your mobile phone or tablet—visibility is much better on a computer screen.
The experiment is open for the upcoming 4 weeks. If the maximum number of participants has been reached before this deadline, we will close the experiment.

Thank you very much for your contribution to science and good luck in the experiment!

——————— (new page) ———————

The Experiment

The following experiment consists of three parts. In each of the three parts, you will make investment decisions in a financial market. In each part, you have to decide in each of five months/rounds, which percentage of your wealth you want to invest in the risky stock shown in this part. The wealth not invested is held in cash.

The risky stocks' returns in all parts are based on a distribution of returns from actual historical data of large stock indices from the last 20 years. During this time, the stock indices' development was characterized by fluctuations. The distribution of daily returns for the risky stocks corresponds to earning an average daily return of 0.03% (that corresponds to an average yearly return of 6.44%) with a standard deviation of daily returns of 2.36%.
Here are some examples on the likelihood of various price fluctuations:

- In 50 out of 100 cases, the daily return is between -0.60% and 0.73%.
- In 90 out of 100 cases, the daily return is between -2.77% and 2.77%.
- In 95 out of 100 cases, the daily return is between -6.06% and 6.32%.

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Procedure

Each of the three parts consists of five months. At the start of each month you can invest between 0% and

[†]All materials of the experiment (e.g., source codes, data files) are publicly available in the Open Science Framework (OSF) repository osf.io/9chg8.

100% of your wealth in the respective risky stock. If you invest less than 100% of your wealth in the risky stock, the amount not invested in the risky stock is held in cash.

Each month consists of 20 trading days and therefore contains 20 daily returns. Every 0.5 seconds, one daily return from the distribution described above is realized and displayed on the screen.

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Payment

At the end of the experiment, one of the five months from one of the three parts will be randomly selected to determine your payment. Your percentage return from this randomly selected month times three is then added to an endowment of EUR 20.

Example: If you invest 70% of your wealth in the risky stock in the randomly selected month and the stock's return in this month is 15%, then your return from this month will be $70\% \times 15\% = 10.5\%$. Your payment from this experiment is then EUR $20 \times (1 + 10.5\% \times 3) =$ EUR 26.30.

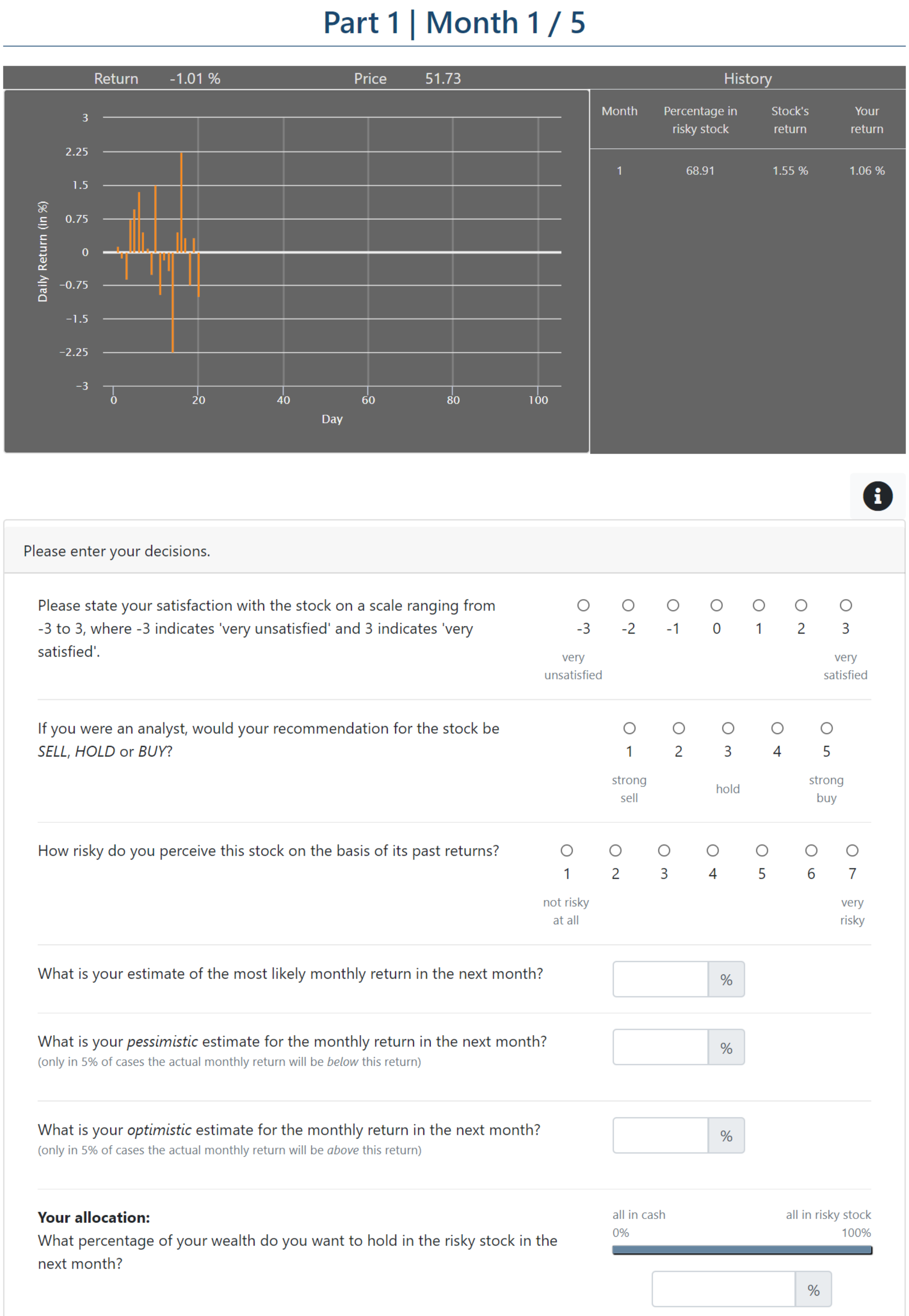

Figure A1: Screenshot of the decision screen with a RETURN chart.

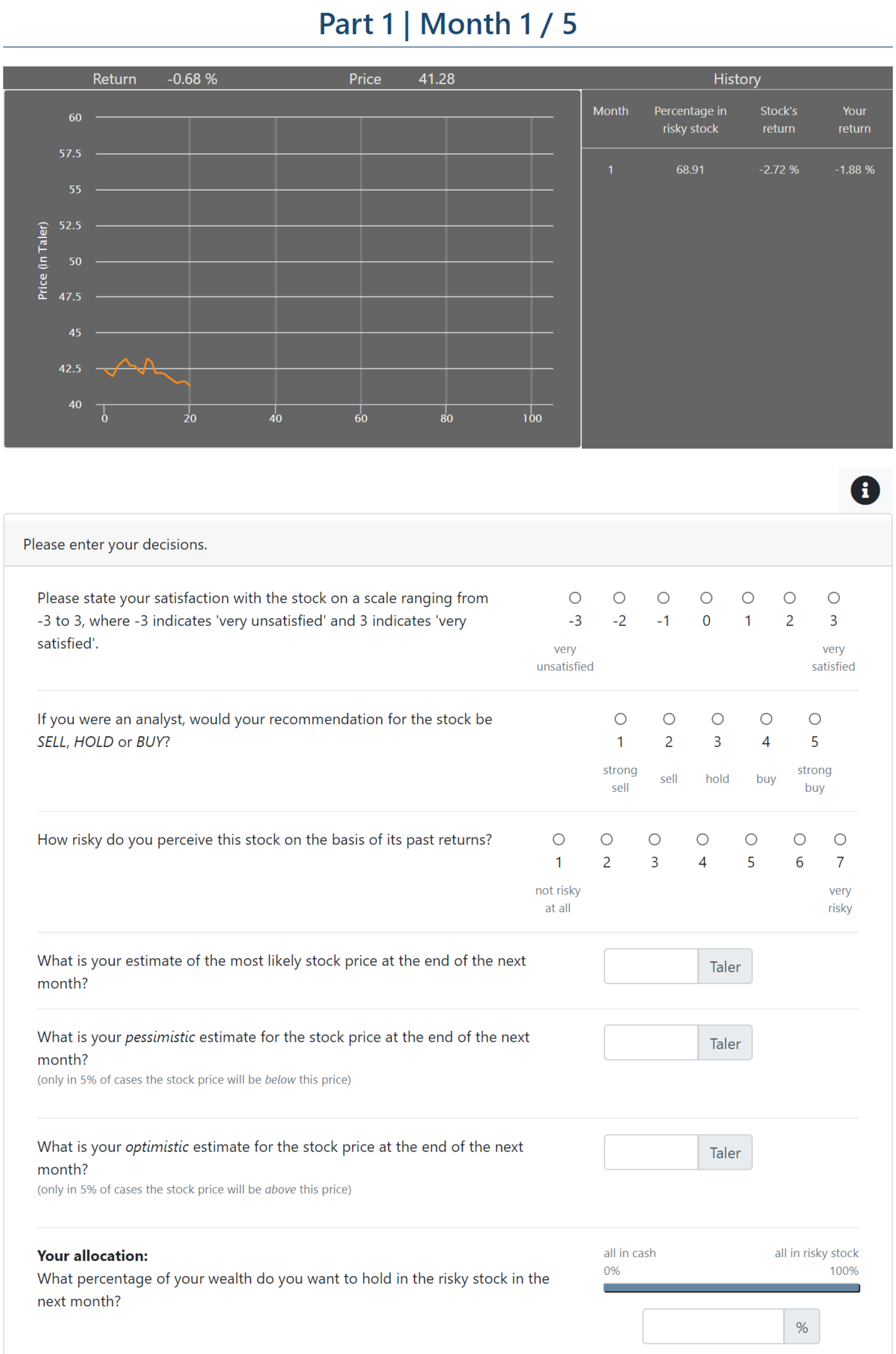

Figure A2: Screenshot of the decision screen with a PRICE chart.

B Additional Figures

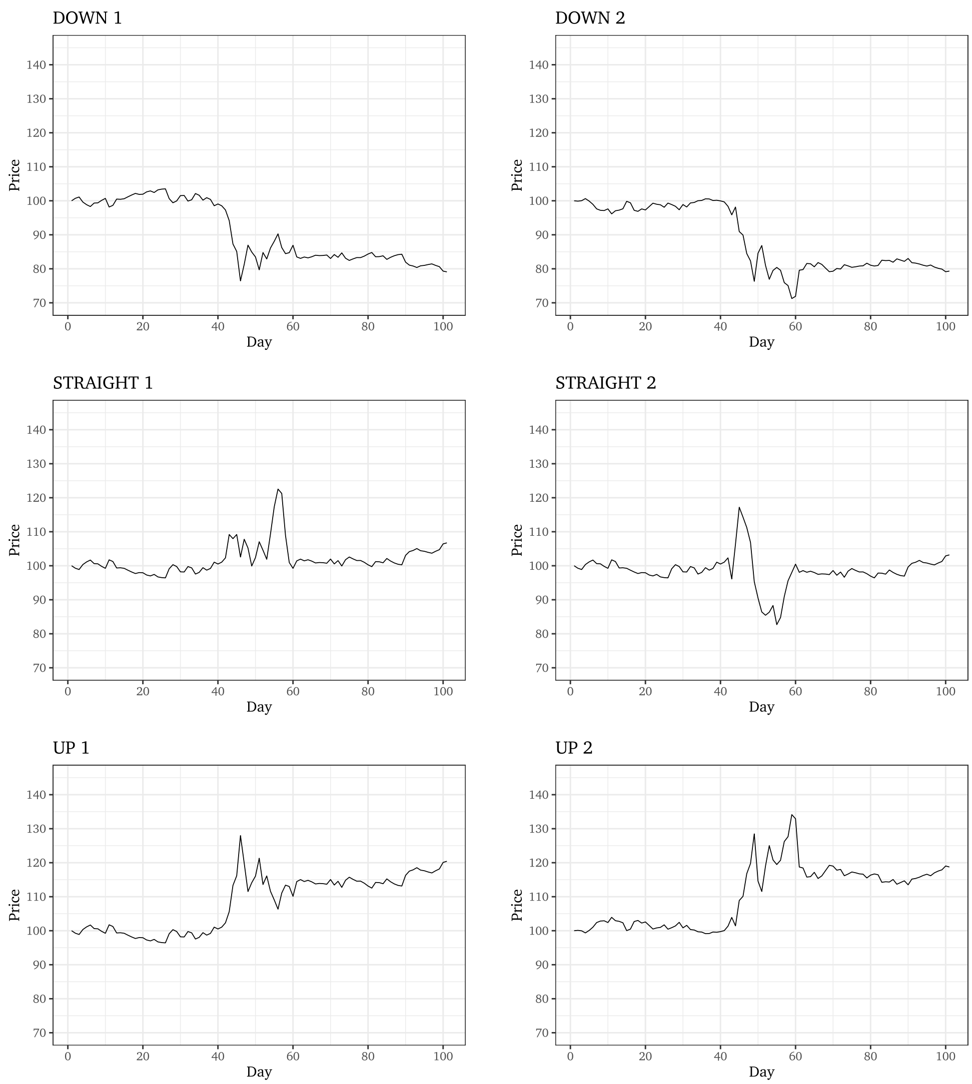

Figure B1: Price Charts. Overview over the six price paths run in the experiment. The shocks are modeled in period three. Each participant is presented with each of the path-types DOWN, STRAIGHT, and UP in random order in such a way that a participant either sees DOWN 1 and UP 2 or vice versa.

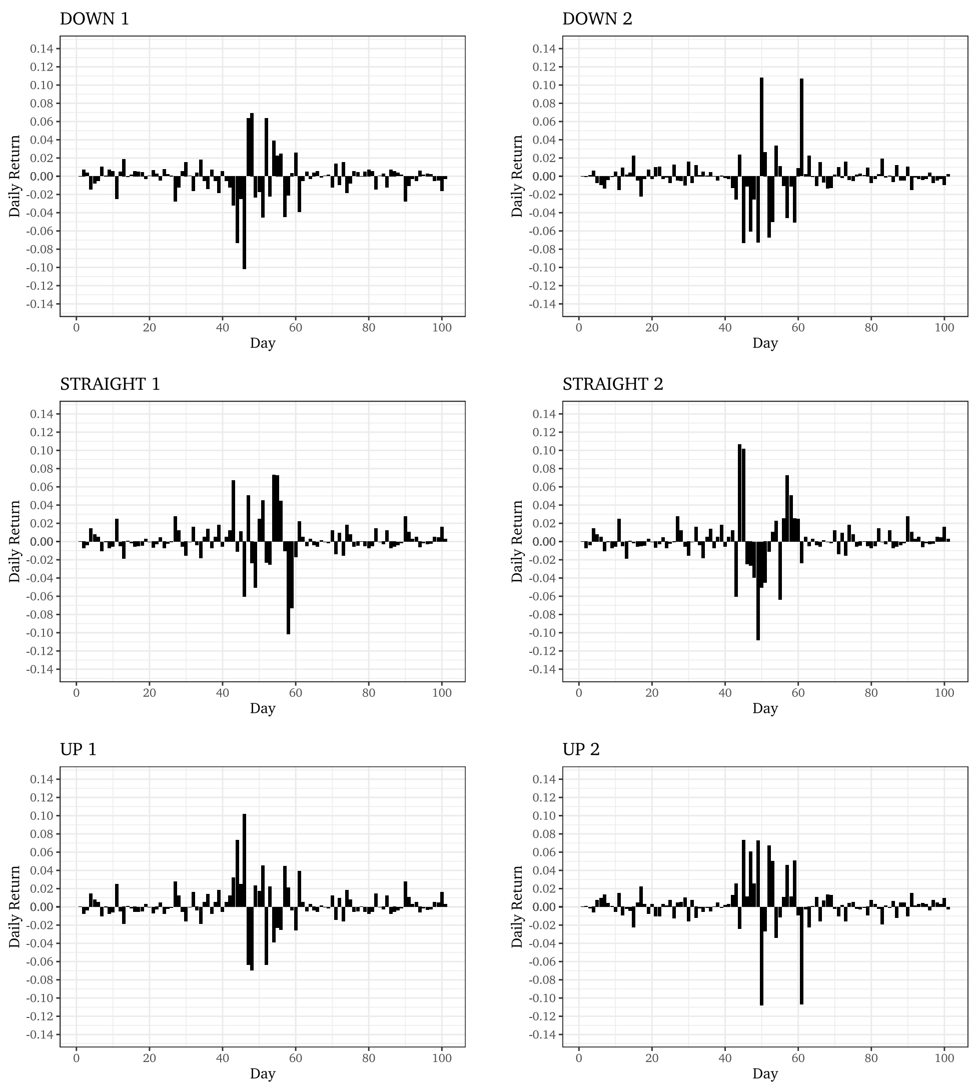

Figure B2: Return Charts. Overview over the six return paths run in the experiment. The shocks are modeled in period three. Each participant is presented with each of the path-types DOWN, STRAIGHT, and UP in random order in such a way that a participant either sees DOWN 1 and UP 2 or vice versa.

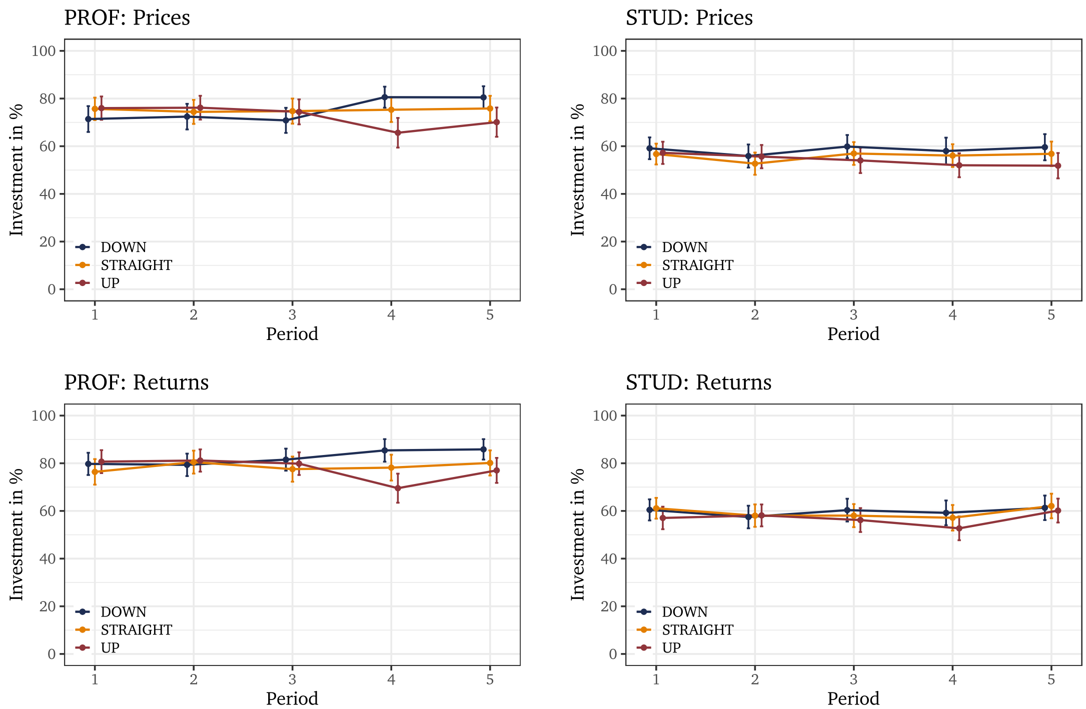

Figure B3: INVESTMENT: percentage invested over time for DOWN, STRAIGHT, UP volatility shocks. The whiskers indicate the 95% confidence intervals. Results for the professionals (PROF) are shown in the left column, those of the students (STUD) in the right column.

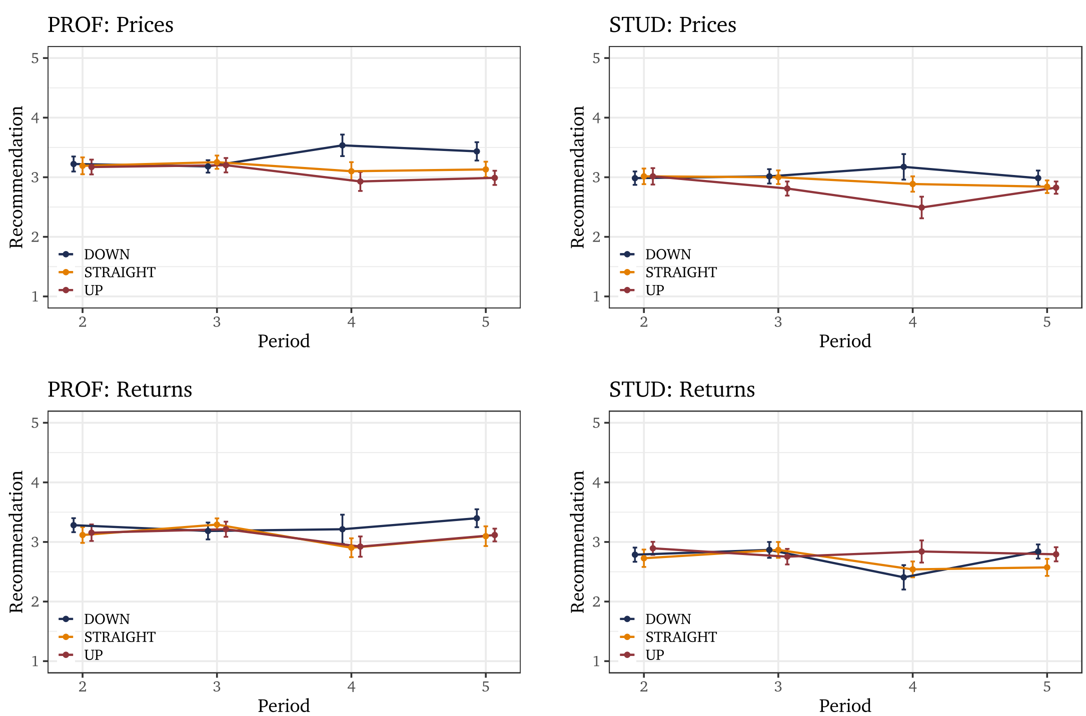

Figure B4: RECOMMENDATION (1: strong sell; 5: strong buy) over time for DOWN, STRAIGHT, UP volatility shocks. The whiskers indicate the 95% confidence intervals. Results for the professionals (PROF) are shown in the left column, those of the students (STUD) in the right column.

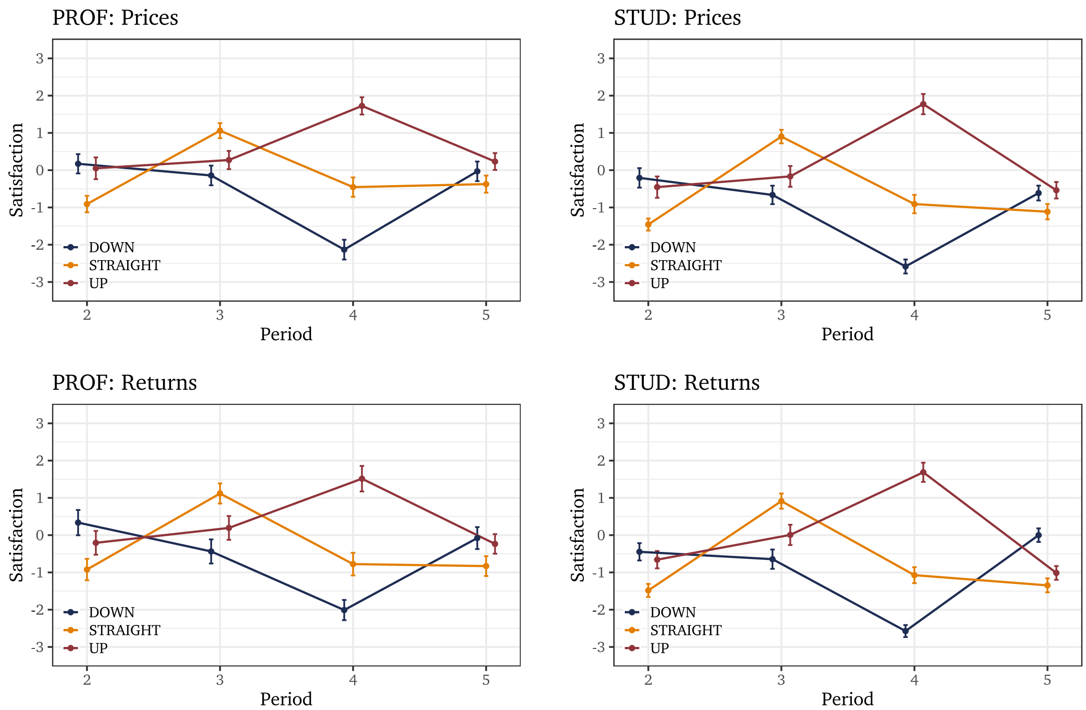

Figure B5: SATISFACTION over time for DOWN, STRAIGHT, UP volatility shocks. The whiskers indicate the 95% confidence intervals. Results for the professionals (PROF) are shown in the left column, those of the students (STUD) in the right column.

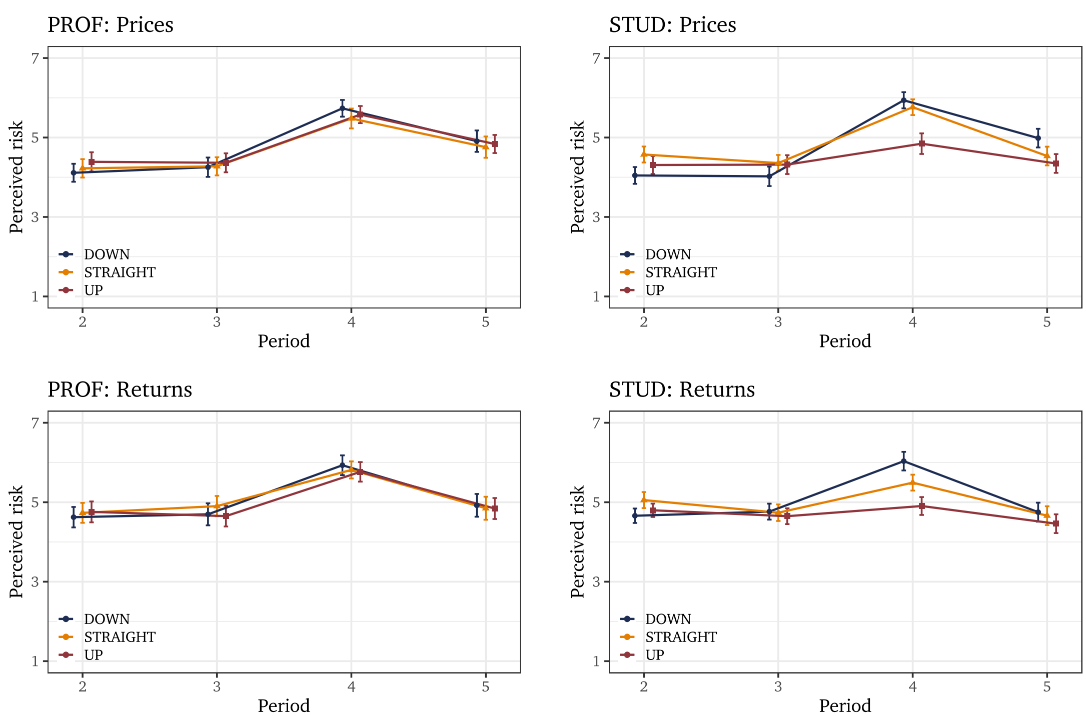

Figure B6: RISK PERCEPTION: perceived risk over time for DOWN, STRAIGHT, UP volatility shocks. The whiskers indicate the 95% confidence intervals. Results for the professionals (PROF) are shown in the left column, those of the students (STUD) in the right column.

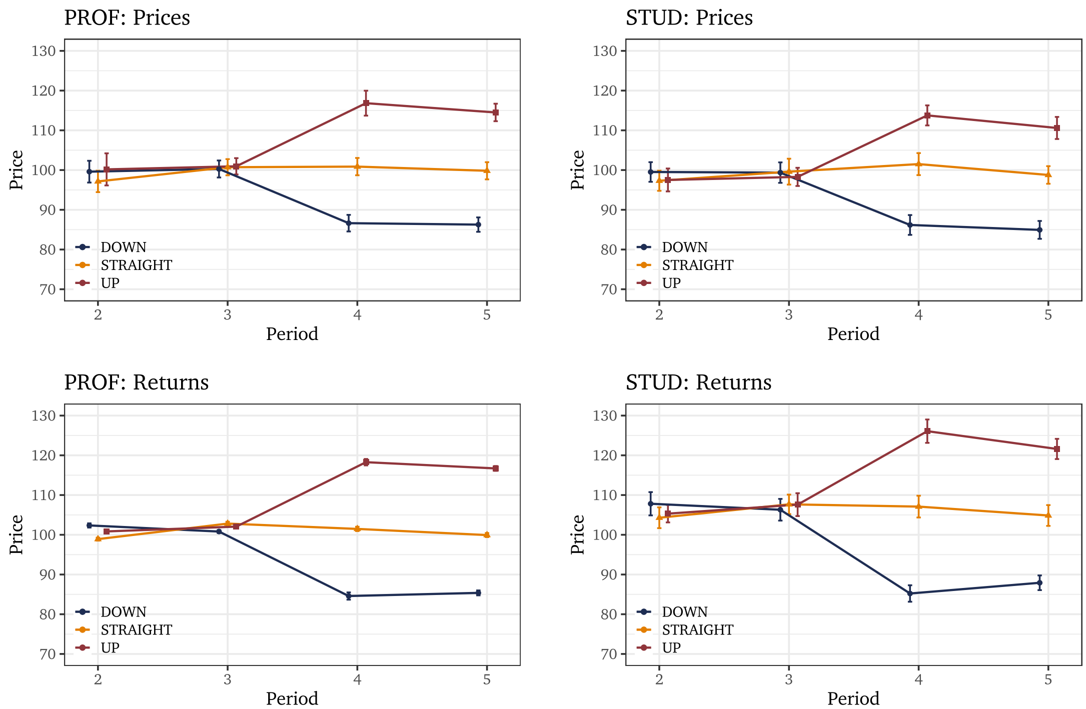

Figure B7: PRICE FORECAST over time for DOWN, STRAIGHT, UP volatility shocks. The whiskers indicate the 95% confidence intervals. Results for the professionals (PROF) are shown in the left column, those of the students (STUD) in the right column.

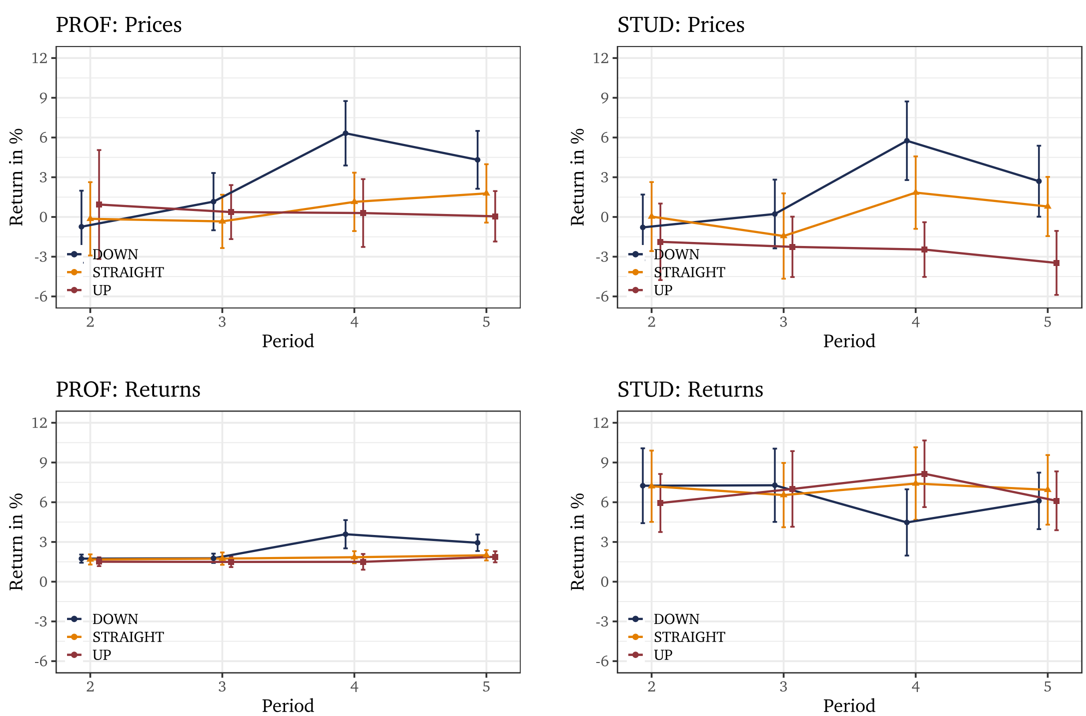

Figure B8: PRICE FORECAST over time for DOWN, STRAIGHT, UP volatility shocks. The whiskers indicate the 95% confidence intervals. Results for the professionals (PROF) are shown in the left column, those of the students (STUD) in the right column.

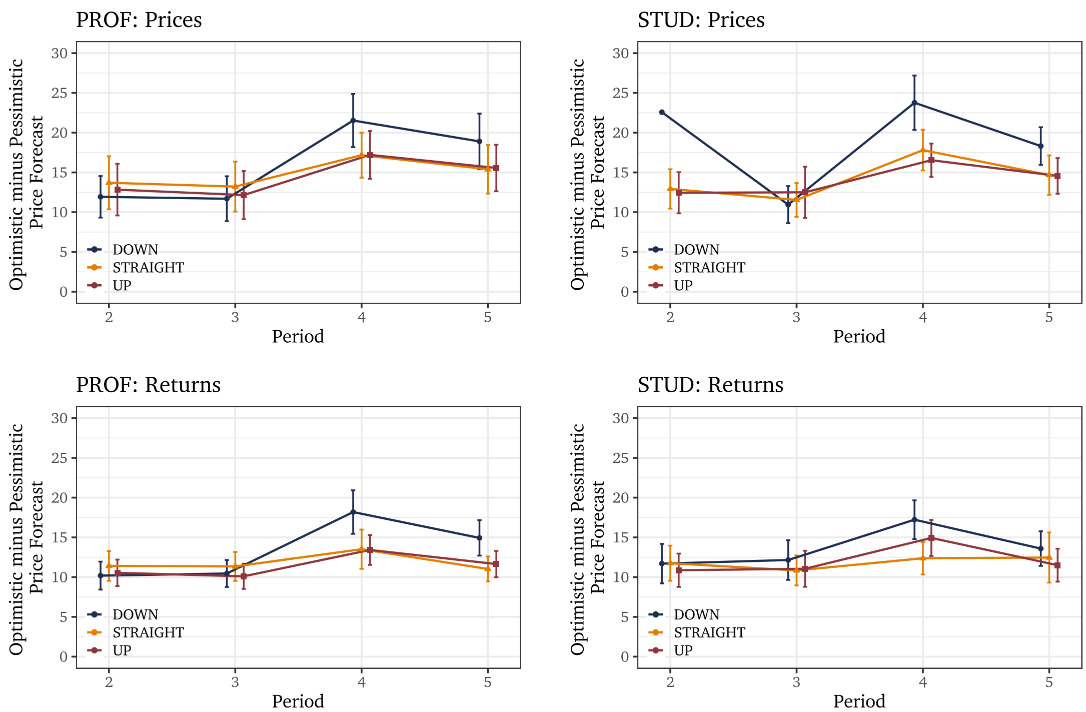

Figure B9: Optimistic minus Pessimistic Forecast: Average difference between the 95^{th} quantile and the 5^{th} quantile (divided by the stock price (return) forecast) over time for DOWN, STRAIGHT, UP volatility shocks. Price forecasts measure the expected price level in Taler (experimental currency unit). Results for the professionals (PROF) are shown in the left column, those of the students (STUD) in the right column.

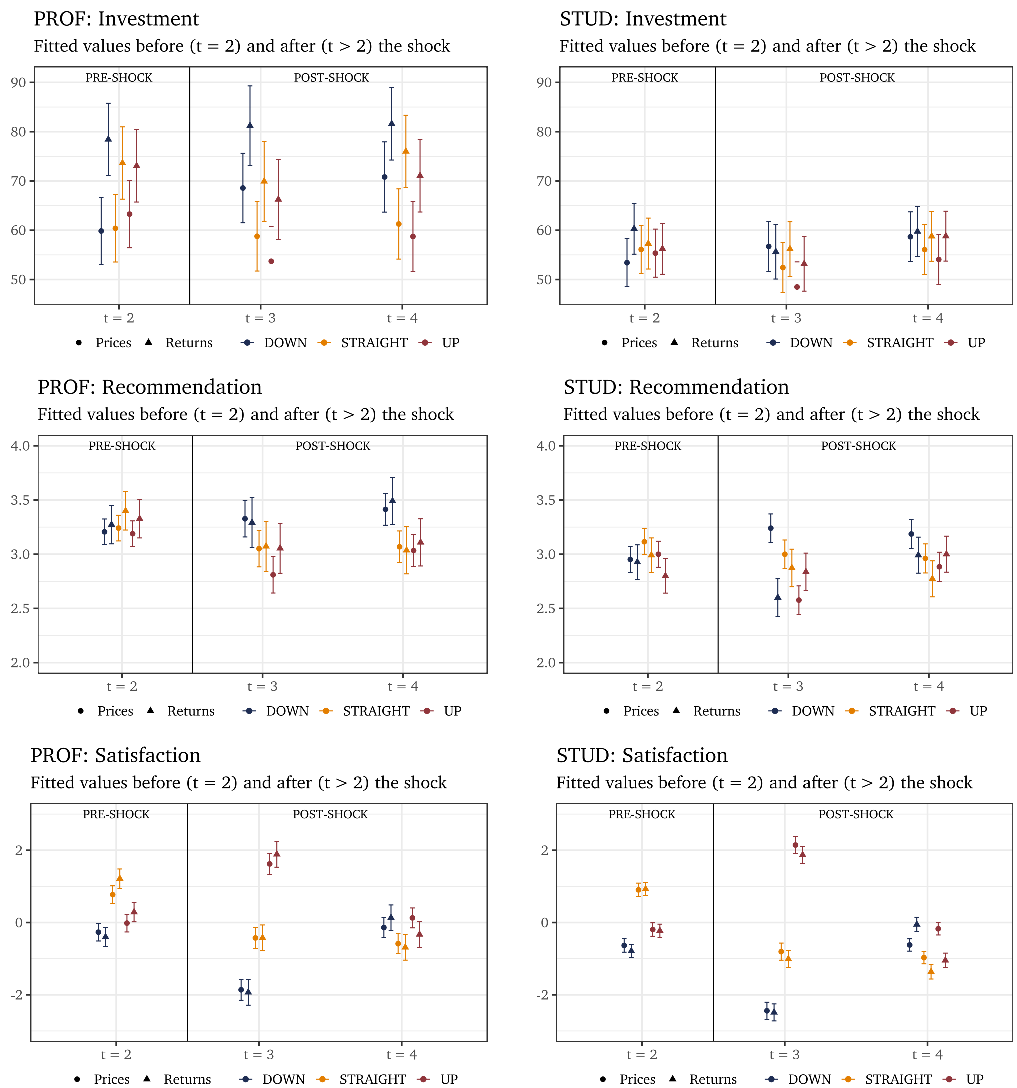

Figure B10: WAVE 2. Fitted values of investment, recommendation, and satisfaction before ($t = 2$), at ($t = 3$), and one period after the shock ($t = 4$) for both presentation formats RETURNS (triangles) and PRICES (dots) and the shock types UP (blue), DOWN (red), and STRAIGHT (green). Fitted values are calculated, including all covariates. Return forecasts are converted into price forecasts for better comparability. The whiskers indicate the 95% confidence intervals.

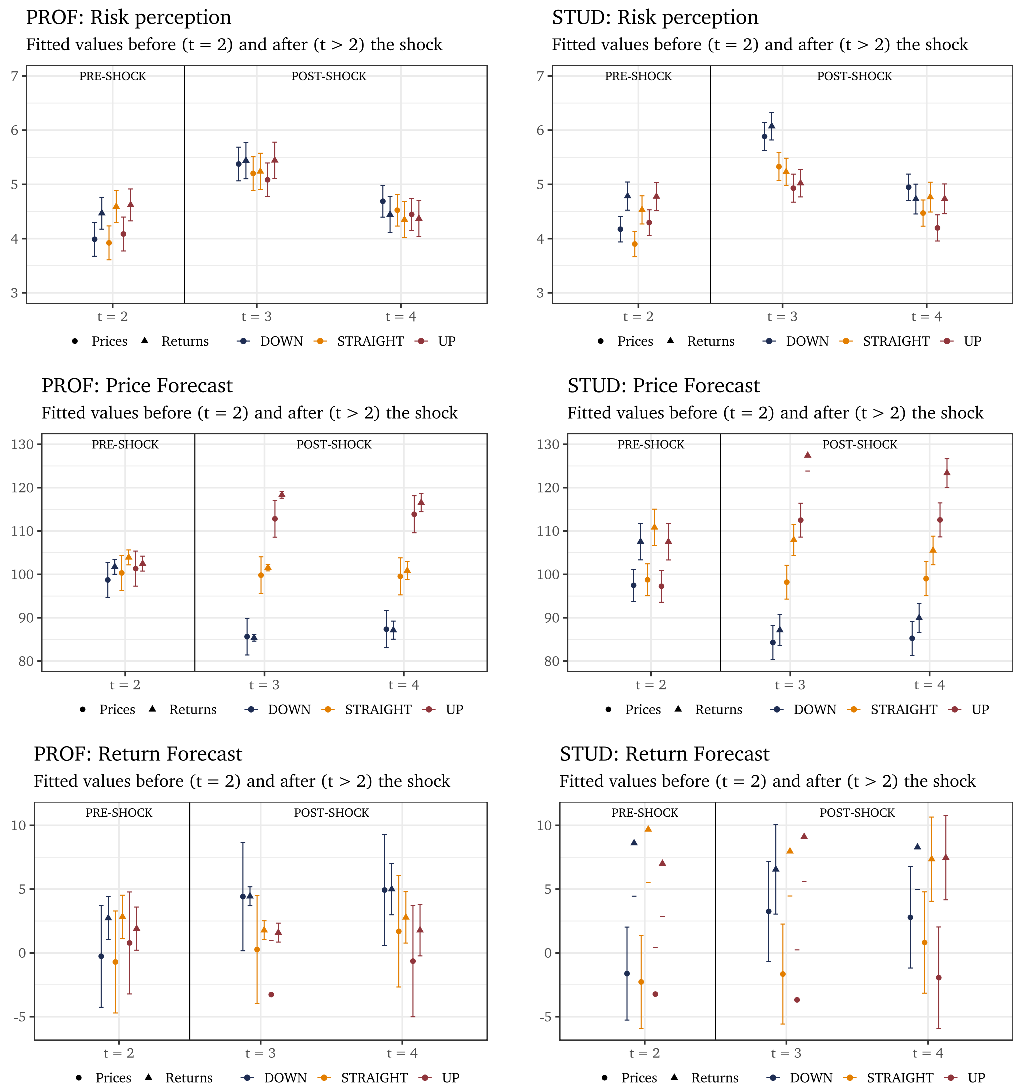

Figure B11: WAVE 2. Fitted values of risk perception and price and return forecasts before ($t = 2$), at ($t = 3$), and one period after the shock ($t = 4$) for both presentation formats RETURNS (triangles) and PRICES (dots) and the shock types UP (blue), DOWN (red), and STRAIGHT (green). Fitted values are calculated, including all covariates. Return forecasts are converted into price forecasts for better comparability. The whiskers indicate the 95% confidence intervals.

C Additional Tables

Table C1: Demographic statistics of financial professionals (left column) and student participants (right column). "Risk tolerance (general)" measures participants' risk taking by using the general risk question from the German Socio-Economic Panel on a Likert-scale from 0 ("not willing to take risk") to 10 ("very willing to take risk")—(GSOEP; see Dohmen et al., 2011); "Risk tolerance (financial)" measures participants' risk taking in financial matters taken from GSOEP as well; "CRT2" measures how many out of two cognitive reflection test (CRT) questions from Toplak et al. (2014) were answered correctly (Question 1: "If John can drink one barrel of water in 6 days, and Mary can drink one barrel of water in 12 days, how long would it take them to drink one barrel of water together?" Question 2: "Jerry received both the 15th highest and the 15th lowest mark in the class. How many students are in the class?"); "Investment in financial products" indicates the fraction of participants that have invested in financial products during the past five years. Values in column "t" indicate the respective test statistics from t-tests between WAVE 1 (December 2019) and WAVE 2 (March 2020); none of the differences between WAVE 1 and WAVE 2 are statistically significant at the 5% level.

	Financial Professionals					Students				
	WAVE 1		WAVE 2			WAVE 1		WAVE 2		
Variable	Mean	(s.d.)	Mean	(s.d.)	t	Mean	(s.d.)	Mean	(s.d.)	t
Age	37.90	(8.49)	39.23	(9.49)	1.24	22.70	(3.06)	23.19	(3.34)	1.70
Female	0.13		0.18		1.08	0.46		0.49		0.57
Risk tolerance (general)	7.60	(2.03)	7.35	(2.20)	1.01	6.69	(2.42)	6.59	(2.34)	0.47
Risk tolerance (financial)	7.77	(2.06)	7.61	(2.17)	0.65	5.54	(2.44)	5.45	(2.51)	0.38
CRT2	1.38	(0.75)	1.27	(0.71)	1.30	1.06	(0.80)	1.06	(0.86)	0.06
Investment in fin. prod.						0.33		0.33		
Highest lev. of education:										
Compulsory school	0.00		0.01			0.01		0.01		
Apprenticeship	0.00		0.03			0.00		0.00		
Technical college	0.01		0.00			0.02		0.02		
High school	0.07		0.16			0.55		0.46		
University	0.90		0.78			0.40		0.47		
Prefer not to say	0.01		0.03			0.01		0.04		
Job function:										
Chief-Level Executive	0.02		0.01							
Consultant	0.09		0.14							
Financial Advisor	0.12		0.08							
Fund Manager	0.06		0.04							
Investment Management	0.10		0.12							
Portfolio Manager	0.19		0.15							
Research Analyst	0.05		0.06							
Trader	0.10		0.14							
Other	0.26		0.26							
	$N = 202$		$N = 113$			$N = 282$		$N = 216$		

Table C2: Ordinary least squares regressions on INVESTMENT for each participant pool (financial professionals and students) and each presentation format (RETURNS or PRICES). t indicates time period and UP and DOWN stand for the direction of the shock in the respective treatment. $t = 2$ and the STRAIGHT path act as the reference categories. Controls include a participant's risk tolerance, CRT score, age, and gender. Clustered standard errors on the participant-level are in parentheses. * and ** indicate the 5%- and the 0.5%-significance levels, respectively.

	Dependent variable: INVESTMENT							
	Financial Professionals				Students			
	PRICES		RETURNS		PRICES		RETURNS	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$t = 1$	−0.324	−0.324	2.947	2.947	−4.259*	−4.259*	0.006	0.006
	(2.080)	(2.084)	(2.263)	(2.268)	(1.620)	(1.623)	(1.922)	(1.925)
$t = 3$	0.575	0.575	0.630	0.630	−0.876	−0.876	−0.901	−0.901
	(2.110)	(2.114)	(1.633)	(1.637)	(1.298)	(1.300)	(1.965)	(1.968)
$t = 4$	1.104	1.104	2.601	2.601	−0.140	−0.140	4.046*	4.046*
	(2.551)	(2.557)	(2.036)	(2.041)	(1.732)	(1.734)	(2.012)	(2.015)
$t = 2 \times$ DOWN	−3.877	−3.877	3.985*	3.985*	2.913	2.913	2.311	2.311
	(2.880)	(2.886)	(1.997)	(2.001)	(1.839)	(1.842)	(2.296)	(2.299)
$t = 1 \times$ DOWN	−1.990	−1.990	−1.147	−1.147	3.205	3.205	−0.585	−0.585
	(2.699)	(2.705)	(2.005)	(2.010)	(2.101)	(2.104)	(2.244)	(2.247)
$t = 3 \times$ DOWN	5.273**	5.273**	7.229*	7.229*	1.919	1.919	2.066	2.066
	(1.836)	(1.840)	(2.584)	(2.590)	(2.503)	(2.507)	(2.429)	(2.432)
$t = 4 \times$ DOWN	4.659*	4.659*	5.694*	5.694*	2.781	2.781	−0.764	−0.764
	(2.227)	(2.232)	(2.210)	(2.215)	(2.107)	(2.110)	(1.882)	(1.885)
$t = 2 \times$ UP	−0.315	−0.315	2.296	2.296	−2.900	−2.900	−1.857	−1.857
	(2.269)	(2.274)	(2.538)	(2.543)	(2.521)	(2.525)	(2.289)	(2.292)
$t = 1 \times$ UP	1.757	1.757	0.670	0.670	2.959	2.959	0.087	0.087
	(2.366)	(2.371)	(1.856)	(1.860)	(2.343)	(2.346)	(1.870)	(1.873)
$t = 3 \times$ UP	−9.656**	−9.656**	−8.624*	−8.624*	−4.054	−4.054	−4.434*	−4.434*
	(2.743)	(2.749)	(3.158)	(3.164)	(2.259)	(2.262)	(2.251)	(2.255)
$t = 4 \times$ UP	−5.732*	−5.732*	−3.124	−3.124	−4.973*	−4.973*	−1.926	−1.926
	(2.686)	(2.692)	(2.559)	(2.564)	(2.351)	(2.354)	(1.819)	(1.821)
Constant	74.727**	35.968*	77.539**	61.851**	56.946**	11.364	58.034**	42.416*
	(2.669)	(15.529)	(2.669)	(16.582)	(2.425)	(14.122)	(2.460)	(18.402)
Controls	No	Yes	No	Yes	No	Yes	No	Yes
Observations	1,188	1,188	1,236	1,236	1,584	1,584	1,800	1,800
R^2	0.023	0.185	0.024	0.131	0.008	0.176	0.006	0.156
Adjusted R^2	0.013	0.174	0.015	0.119	0.001	0.167	0.00003	0.148

Table C3: Ordinary least squares regressions on RECOMMENDATION for each participant pool (financial professionals and students) and each presentation format (RETURNS or PRICES). t indicates time period and UP and DOWN stand for the direction of the shock in the respective treatment. $t = 2$ and the STRAIGHT path act as the reference categories. Controls include a participant's risk tolerance, CRT score, age, and gender. Clustered standard errors on the participant-level are in parentheses. * and ** indicate the 5%- and the 0.5%-significance levels, respectively.

	Dependent variable: RECOMMENDATION							
	Financial Professionals				Students			
	PRICES		RETURNS		PRICES		RETURNS	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$t = 1$	−0.061	−0.061	−0.175*	−0.175*	0.015	0.015	−0.140	−0.140
	(0.076)	(0.076)	(0.066)	(0.066)	(0.086)	(0.086)	(0.100)	(0.100)
$t = 3$	−0.152*	−0.152*	−0.388**	−0.388**	−0.114	−0.114	−0.327**	−0.327**
	(0.077)	(0.077)	(0.087)	(0.087)	(0.085)	(0.085)	(0.092)	(0.092)
$t = 4$	−0.121	−0.121	−0.194*	−0.194*	−0.159*	−0.159*	−0.293**	−0.293**
	(0.073)	(0.073)	(0.088)	(0.088)	(0.081)	(0.081)	(0.092)	(0.092)
$t = 2 \times$ DOWN	−0.071	−0.071	−0.107	−0.107	0.015	0.015	0.000	0.000
	(0.071)	(0.071)	(0.071)	(0.071)	(0.086)	(0.086)	(0.091)	(0.091)
$t = 1 \times$ DOWN	0.030	0.030	0.165*	0.165*	−0.030	−0.030	0.060	0.060
	(0.077)	(0.077)	(0.076)	(0.076)	(0.086)	(0.086)	(0.084)	(0.085)
$t = 3 \times$ DOWN	0.434**	0.434**	0.311*	0.311*	0.288*	0.288*	−0.133	−0.133
	(0.097)	(0.097)	(0.122)	(0.122)	(0.113)	(0.114)	(0.103)	(0.104)
$t = 4 \times$ DOWN	0.303**	0.303**	0.301**	0.301**	0.144*	0.144*	0.267**	0.267**
	(0.091)	(0.091)	(0.094)	(0.094)	(0.067)	(0.067)	(0.084)	(0.084)
$t = 2 \times$ UP	−0.051	−0.051	−0.078	−0.078	−0.189*	−0.189*	−0.113	−0.113
	(0.065)	(0.065)	(0.070)	(0.070)	(0.080)	(0.080)	(0.088)	(0.088)
$t = 1 \times$ UP	−0.020	−0.020	0.039	0.039	0.000	0.000	0.167*	0.167*
	(0.074)	(0.074)	(0.068)	(0.068)	(0.086)	(0.086)	(0.077)	(0.077)
$t = 3 \times$ UP	−0.172	−0.172	0.019	0.019	−0.394**	−0.394**	0.300*	0.300*
	(0.104)	(0.104)	(0.116)	(0.116)	(0.124)	(0.125)	(0.122)	(0.122)
$t = 4 \times$ UP	−0.141	−0.141	0.019	0.019	−0.015	−0.015	0.220**	0.220**
	(0.076)	(0.077)	(0.093)	(0.093)	(0.059)	(0.059)	(0.078)	(0.078)
Constant	3.253**	3.137**	3.291**	3.151**	3.000**	2.754**	2.867**	2.621**
	(0.057)	(0.264)	(0.053)	(0.285)	(0.058)	(0.165)	(0.068)	(0.309)
Controls	No	Yes	No	Yes	No	Yes	No	Yes
Observations	1,188	1,188	1,236	1,236	1,584	1,584	1,800	1,800
R^2	0.051	0.072	0.031	0.060	0.041	0.050	0.027	0.043
Adjusted R^2	0.043	0.059	0.022	0.048	0.034	0.040	0.021	0.035

Table C4: Ordinary least squares regressions on SATISFACTION for each participant pool (financial professionals and students) and each presentation format (RETURNS or PRICES). t indicates time period and UP and DOWN stand for the direction of the shock in the respective treatment. $t = 2$ and the STRAIGHT path act as the reference categories. Controls include a participant's risk tolerance, CRT score, age, and gender. Clustered standard errors on the participant-level are in parentheses. * and ** indicate the 5%- and the 0.5%-significance levels, respectively.

	Dependent variable: SATISFACTION							
	Financial Professionals				Students			
	PRICES		RETURNS		PRICES		RETURNS	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$t = 1$	−1.970**	−1.970**	−2.040**	−2.042**	−2.360**	−2.359**	−2.397**	−2.397**
	(0.138)	(0.138)	(0.197)	(0.197)	(0.135)	(0.135)	(0.133)	(0.133)
$t = 3$	−1.515**	−1.515**	−1.894**	−1.896**	−1.811**	−1.811**	−1.987**	−1.987**
	(0.132)	(0.133)	(0.190)	(0.190)	(0.147)	(0.147)	(0.123)	(0.124)
$t = 4$	−1.434**	−1.434**	−1.948**	−1.955**	−2.016**	−2.017**	−2.260**	−2.260**
	(0.122)	(0.122)	(0.181)	(0.181)	(0.138)	(0.138)	(0.129)	(0.129)
$t = 2 \times$ DOWN	−1.202**	−1.202**	−1.555**	−1.556**	−1.566**	−1.565**	−1.558**	−1.558**
	(0.152)	(0.152)	(0.210)	(0.211)	(0.160)	(0.161)	(0.151)	(0.151)
$t = 1 \times$ DOWN	1.081**	1.081**	1.259**	1.261**	1.252**	1.252**	1.037**	1.037**
	(0.154)	(0.155)	(0.204)	(0.204)	(0.157)	(0.157)	(0.145)	(0.145)
$t = 3 \times$ DOWN	−1.677**	−1.677**	−1.233**	−1.233**	−1.674**	−1.674**	−1.500**	−1.500**
	(0.146)	(0.146)	(0.154)	(0.154)	(0.134)	(0.134)	(0.132)	(0.133)
$t = 4 \times$ DOWN	0.343*	0.342*	0.752**	0.753**	0.501**	0.502**	1.347**	1.347**
	(0.137)	(0.137)	(0.163)	(0.164)	(0.132)	(0.132)	(0.115)	(0.115)
$t = 2 \times$ UP	−0.788**	−0.788**	−0.923**	−0.925**	−1.068**	−1.068**	−0.907**	−0.907**
	(0.139)	(0.140)	(0.172)	(0.172)	(0.165)	(0.165)	(0.144)	(0.144)
$t = 1 \times$ UP	0.960**	0.960**	0.716**	0.716**	1.003**	1.003**	0.826**	0.825**
	(0.157)	(0.158)	(0.169)	(0.170)	(0.169)	(0.169)	(0.134)	(0.134)
$t = 3 \times$ UP	2.179**	2.181**	2.291**	2.291**	2.682**	2.682**	2.760**	2.761**
	(0.165)	(0.165)	(0.220)	(0.220)	(0.198)	(0.198)	(0.158)	(0.158)
$t = 4 \times$ UP	0.606**	0.606**	0.595**	0.601**	0.577**	0.578**	0.333**	0.333**
	(0.132)	(0.132)	(0.139)	(0.139)	(0.128)	(0.128)	(0.108)	(0.108)
Constant	1.061**	0.320	1.118**	1.645**	0.902**	0.260	0.913**	0.652
	(0.102)	(0.532)	(0.137)	(0.519)	(0.092)	(0.396)	(0.103)	(0.477)
Controls	No	Yes	No	Yes	No	Yes	No	Yes
Observations	1,186	1,186	1,227	1,227	1,580	1,580	1,794	1,794
R^2	0.353	0.361	0.258	0.270	0.378	0.384	0.393	0.394
Adjusted R^2	0.347	0.353	0.251	0.261	0.374	0.377	0.389	0.389

Table C5: Ordinary least squares regressions on RISK PERCEPTION for each participant pool (financial professionals and students) and each presentation format (RETURNS or PRICES). t indicates time period and UP and DOWN stand for the direction of the shock in the respective treatment. $t = 2$ and the STRAIGHT path act as the reference categories. Controls include a participant's risk tolerance, CRT score, age, and gender. Clustered standard errors on the participant-level are in parentheses. * and ** indicate the 5%- and the 0.5%-significance levels, respectively.

	Dependent variable: RISK PERCEPTION							
	Financial Professionals				Students			
	PRICES		RETURNS		PRICES		RETURNS	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$t = 1$	−0.051	−0.046	−0.169	−0.162	0.216*	0.218*	0.318**	0.322**
	(0.081)	(0.082)	(0.092)	(0.093)	(0.095)	(0.095)	(0.108)	(0.107)
$t = 3$	1.204**	1.201**	0.912**	0.916**	1.407**	1.407**	0.757**	0.760**
	(0.119)	(0.120)	(0.116)	(0.116)	(0.113)	(0.114)	(0.101)	(0.101)
$t = 4$	0.482**	0.487**	−0.053	−0.056	0.178	0.178	−0.074	−0.073
	(0.106)	(0.106)	(0.143)	(0.144)	(0.128)	(0.128)	(0.131)	(0.131)
$t = 2 \times$ DOWN	−0.023	−0.019	−0.206	−0.203	−0.334*	−0.333*	0.027	0.029
	(0.109)	(0.110)	(0.144)	(0.144)	(0.145)	(0.145)	(0.116)	(0.116)
$t = 1 \times$ DOWN	−0.112	−0.111	−0.109	−0.113	−0.527**	−0.528**	−0.394**	−0.396**
	(0.113)	(0.113)	(0.122)	(0.123)	(0.126)	(0.126)	(0.113)	(0.113)
$t = 3 \times$ DOWN	0.256*	0.257*	0.118	0.121	0.175	0.174	0.541**	0.540**
	(0.127)	(0.127)	(0.108)	(0.108)	(0.121)	(0.121)	(0.120)	(0.120)
$t = 4 \times$ DOWN	0.150	0.155	0.073	0.081	0.450**	0.450**	0.088	0.089
	(0.135)	(0.134)	(0.128)	(0.130)	(0.119)	(0.119)	(0.108)	(0.108)
$t = 2 \times$ UP	0.088	0.093	−0.251*	−0.247*	−0.039	−0.038	−0.088	−0.085
	(0.114)	(0.115)	(0.124)	(0.125)	(0.124)	(0.124)	(0.117)	(0.117)
$t = 1 \times$ UP	0.163	0.159	0.025	0.022	−0.265*	−0.267*	−0.257*	−0.259*
	(0.104)	(0.104)	(0.114)	(0.115)	(0.133)	(0.133)	(0.114)	(0.114)
$t = 3 \times$ UP	0.098	0.101	−0.049	−0.048	−0.918**	−0.917**	−0.588**	−0.588**
	(0.116)	(0.116)	(0.113)	(0.113)	(0.137)	(0.138)	(0.125)	(0.125)
$t = 4 \times$ UP	0.079	0.076	−0.007	0.005	−0.188	−0.189	−0.202	−0.201
	(0.103)	(0.102)	(0.131)	(0.133)	(0.127)	(0.127)	(0.125)	(0.125)
Constant	4.276**	2.717**	4.902**	4.470**	4.357**	4.080**	4.736**	4.032**
	(0.115)	(0.577)	(0.129)	(0.644)	(0.103)	(0.692)	(0.106)	(0.567)
Controls	No	Yes	No	Yes	No	Yes	No	Yes
Observations	1,172	1,172	1,220	1,220	1,560	1,560	1,776	1,776
R^2	0.179	0.223	0.113	0.157	0.174	0.179	0.093	0.102
Adjusted R^2	0.171	0.213	0.105	0.146	0.168	0.171	0.088	0.094

Table C6: Ordinary least squares regressions on PRICE FORECAST for each participant pool (financial professionals and students) and each presentation format (RETURNS or PRICES). t indicates time period and UP and DOWN stand for the direction of the shock in the respective treatment. $t = 2$ and the STRAIGHT path act as the reference categories. Controls include a participant's risk tolerance, CRT score, age, and gender. Clustered standard errors on the participant-level are in parentheses. * and ** indicate the 5%- and the 0.5%-significance levels, respectively.

	Dependent variable: PRICE FORECAST							
	Financial Professionals				Students			
	PRICES		RETURNS		PRICES		RETURNS	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$t = 1$	−3.576**	−3.576**	−3.904**	−3.904**	−2.293	−2.293	−3.373**	−3.373**
	(0.814)	(0.815)	(0.270)	(0.271)	(1.387)	(1.389)	(0.703)	(0.704)
$t = 3$	0.151	0.151	−1.339**	−1.339**	1.901	1.901	−0.567	−0.567
	(0.487)	(0.488)	(0.351)	(0.352)	(1.275)	(1.277)	(0.646)	(0.647)
$t = 4$	−0.897	−0.897	−2.887**	−2.887**	−0.831	−0.831	−2.806**	−2.806**
	(0.577)	(0.579)	(0.287)	(0.288)	(1.240)	(1.242)	(0.737)	(0.738)
$t = 2 \times$ DOWN	−0.444	−0.444	−1.999**	−1.999**	−0.241	−0.241	−1.361	−1.361
	(1.312)	(1.314)	(0.217)	(0.218)	(1.521)	(1.523)	(0.812)	(0.813)
$t = 1 \times$ DOWN	2.455**	2.455**	3.442**	3.442**	2.210	2.210	3.524**	3.524**
	(0.730)	(0.732)	(0.269)	(0.270)	(1.437)	(1.440)	(0.889)	(0.890)
$t = 3 \times$ DOWN	−14.235**	−14.235**	−16.892**	−16.892**	−15.321**	−15.321**	−21.874**	−21.874**
	(1.530)	(1.533)	(0.505)	(0.506)	(1.391)	(1.393)	(0.909)	(0.910)
$t = 4 \times$ DOWN	−13.548**	−13.548**	−14.552**	−14.552**	−13.829**	−13.829**	−16.938**	−16.938**
	(1.532)	(1.535)	(0.385)	(0.386)	(1.123)	(1.125)	(0.721)	(0.722)
$t = 2 \times$ UP	0.234	0.234	−0.757**	−0.757**	−1.319	−1.319	−0.076	−0.076
	(0.502)	(0.503)	(0.255)	(0.256)	(1.303)	(1.305)	(0.540)	(0.541)
$t = 1 \times$ UP	3.031	3.031	1.935**	1.935**	0.203	0.203	1.031	1.031
	(2.154)	(2.159)	(0.283)	(0.283)	(1.358)	(1.360)	(0.706)	(0.707)
$t = 3 \times$ UP	15.969**	15.969**	16.796**	16.796**	12.259**	12.259**	18.987**	18.987**
	(1.243)	(1.246)	(0.431)	(0.432)	(1.571)	(1.574)	(0.830)	(0.831)
$t = 4 \times$ UP	14.681**	14.681**	16.774**	16.774**	11.825**	11.825**	16.746**	16.746**
	(0.681)	(0.682)	(0.319)	(0.320)	(1.286)	(1.289)	(0.721)	(0.722)
Constant	100.716**	101.138**	102.815**	100.684**	99.599**	94.194**	107.662**	121.188**
	(1.030)	(3.447)	(0.238)	(0.999)	(1.652)	(8.283)	(1.246)	(9.897)
Controls	No	Yes	No	Yes	No	Yes	No	Yes
Observations	1,188	1,188	1,236	1,236	1,584	1,584	1,800	1,800
R^2	0.316	0.349	0.911	0.917	0.211	0.242	0.319	0.360
Adjusted R^2	0.309	0.340	0.911	0.916	0.205	0.234	0.315	0.354

Table C7: Ordinary least squares regressions on RETURN FORECAST for each participant pool (financial professionals and students) and each presentation format (RETURNS or PRICES). t indicates time period and UP and DOWN stand for the direction of the shock in the respective treatment. $t = 2$ and the STRAIGHT path act as the reference categories. Controls include a participant's risk tolerance, CRT score, age, and gender. Clustered standard errors on the participant-level are in parentheses. * and ** indicate the 5%- and the 0.5%-significance levels, respectively.

	Dependent variable: RETURN FORECAST							
	Financial Professionals				Students			
	PRICES		RETURNS		PRICES		RETURNS	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$t = 1$	0.192	0.192	−0.064	−0.064	1.469	1.469	0.668	0.668
	(0.841)	(0.842)	(0.271)	(0.272)	(1.385)	(1.387)	(0.717)	(0.718)
$t = 3$	1.474**	1.474**	0.105	0.105	3.278*	3.278*	0.872	0.872
	(0.491)	(0.492)	(0.331)	(0.332)	(1.272)	(1.274)	(0.623)	(0.624)
$t = 4$	2.112**	2.112**	0.252	0.252	2.229	2.229	0.395	0.395
	(0.561)	(0.562)	(0.253)	(0.254)	(1.236)	(1.238)	(0.697)	(0.698)
$t = 2 \times$ DOWN	1.492	1.492	0.025	0.025	1.663	1.663	0.742	0.742
	(1.316)	(1.318)	(0.215)	(0.216)	(1.517)	(1.519)	(0.815)	(0.816)
$t = 1 \times$ DOWN	−0.596	−0.596	0.062	0.062	−0.816	−0.816	0.039	0.039
	(0.743)	(0.745)	(0.178)	(0.178)	(1.462)	(1.465)	(0.845)	(0.846)
$t = 3 \times$ DOWN	5.180**	5.180**	1.736**	1.736**	3.916*	3.916*	−2.937**	−2.937**
	(1.624)	(1.627)	(0.533)	(0.535)	(1.432)	(1.434)	(0.968)	(0.969)
$t = 4 \times$ DOWN	2.536	2.536	0.945**	0.945**	1.910	1.910	−0.833	−0.833
	(1.651)	(1.655)	(0.269)	(0.270)	(1.207)	(1.209)	(0.638)	(0.639)
$t = 2 \times$ UP	0.702	0.702	−0.250	−0.250	−0.818	−0.818	0.464	0.464
	(0.501)	(0.502)	(0.246)	(0.247)	(1.287)	(1.289)	(0.534)	(0.534)
$t = 1 \times$ UP	1.081	1.081	−0.171	−0.171	−1.906	−1.906	−1.266	−1.266
	(2.214)	(2.219)	(0.214)	(0.215)	(1.370)	(1.372)	(0.691)	(0.692)
$t = 3 \times$ UP	−0.844	−0.844	−0.349	−0.349	−4.301**	−4.301**	0.736	0.736
	(1.019)	(1.021)	(0.320)	(0.320)	(1.429)	(1.431)	(0.743)	(0.744)
$t = 4 \times$ UP	−1.727*	−1.727*	−0.116	−0.116	−4.259**	−4.259**	−0.826	−0.826
	(0.624)	(0.625)	(0.211)	(0.211)	(1.161)	(1.163)	(0.688)	(0.689)
Constant	−0.334	0.342	1.743**	0.076	−1.439	−6.485	6.540**	20.125*
	(1.020)	(3.527)	(0.235)	(1.007)	(1.635)	(8.385)	(1.233)	(10.036)
Controls	No	Yes	No	Yes	No	Yes	No	Yes
Observations	1,188	1,188	1,236	1,236	1,584	1,584	1,800	1,800
R^2	0.024	0.065	0.050	0.091	0.026	0.065	0.003	0.065
Adjusted R^2	0.015	0.052	0.042	0.079	0.019	0.056	-0.003	0.057

Table C8: Ordinary least squares regressions on Optimistic minus Pessimistic Forecasts for each participant pool (financial professionals and students) and each presentation format (RETURNS or PRICES). t indicates time period and UP and DOWN stand for the direction of the shock in the respective treatment. $t = 2$ and the STRAIGHT path act as the reference categories. Controls include a participant's risk tolerance, CRT score, age, and gender. Clustered standard errors on the participant-level are in parentheses. * and ** indicate the 5%- and the 0.5%-significance levels, respectively.

	Dependent variable: Optimistic minus Pessimistic Forecast							
	Financial Professionals				Students			
	PRICES		RETURNS		PRICES		RETURNS	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$t = 1$	0.482	0.482	0.068	0.068	1.387	1.387	0.908	0.908
	(0.550)	(0.552)	(0.272)	(0.273)	(0.905)	(0.906)	(0.770)	(0.771)
$t = 3$	3.951**	3.951**	2.168*	2.168*	6.263**	6.263**	1.533*	1.533*
	(0.832)	(0.834)	(0.794)	(0.796)	(0.741)	(0.742)	(0.647)	(0.648)
$t = 4$	2.179*	2.179*	−0.319	−0.319	3.128**	3.128**	1.620	1.620
	(0.844)	(0.846)	(0.474)	(0.475)	(0.848)	(0.850)	(1.160)	(1.161)
$t = 2 \times$ DOWN	−1.526*	−1.526*	−0.889	−0.889	−0.593	−0.593	1.308	1.308
	(0.710)	(0.712)	(0.583)	(0.584)	(0.899)	(0.901)	(0.867)	(0.868)
$t = 1 \times$ DOWN	−1.767	−1.767	−1.222*	−1.222*	9.648	9.648	−0.051	−0.051
	(0.963)	(0.965)	(0.573)	(0.575)	(10.143)	(10.159)	(1.050)	(1.052)
$t = 3 \times$ DOWN	4.360**	4.360**	4.673**	4.673**	5.959**	5.959**	4.849**	4.849**
	(0.980)	(0.982)	(1.117)	(1.119)	(1.283)	(1.285)	(0.918)	(0.919)
$t = 4 \times$ DOWN	3.506**	3.506**	3.907**	3.907**	3.644**	3.644**	1.126	1.126
	(0.902)	(0.904)	(0.759)	(0.760)	(1.076)	(1.078)	(1.029)	(1.030)
$t = 2 \times$ UP	−1.068	−1.068	−1.243*	−1.243*	0.958	0.958	0.209	0.209
	(0.728)	(0.730)	(0.599)	(0.600)	(1.222)	(1.224)	(0.749)	(0.750)
$t = 1 \times$ UP	−0.865	−0.865	−0.872	−0.872	−0.489	−0.489	−0.886	−0.886
	(0.878)	(0.880)	(0.571)	(0.572)	(1.255)	(1.257)	(0.899)	(0.900)
$t = 3 \times$ UP	0.039	0.039	−0.094	−0.094	−1.268	−1.268	2.555**	2.555**
	(0.859)	(0.861)	(1.048)	(1.050)	(0.988)	(0.990)	(0.764)	(0.765)
$t = 4 \times$ UP	0.164	0.164	0.618	0.618	−0.108	−0.108	−0.960	−0.960
	(0.702)	(0.704)	(0.769)	(0.771)	(0.905)	(0.906)	(1.142)	(1.144)
Constant	13.215**	10.574	11.347**	−1.888	11.541**	13.874	10.844**	17.628*
	(1.589)	(8.349)	(0.920)	(5.777)	(1.075)	(8.792)	(0.957)	(8.163)
Controls	No	Yes	No	Yes	No	Yes	No	Yes
Observations	1,188	1,188	1,236	1,236	1,584	1,584	1,800	1,800
R^2	0.036	0.079	0.051	0.098	0.011	0.014	0.016	0.048
Adjusted R^2	0.027	0.066	0.043	0.086	0.004	0.004	0.010	0.039

Table C9: Ordinary least squares regressions on INVESTMENT for each participant pool (financial professionals and students) and each presentation format (RETURNS or PRICES). POST_SHOCK is a dummy variable taking the value 1 for periods after the volatility shock (i.e., $t = 3$ and $t = 4$), zero otherwise, and PRE_SHOCK stands for a dummy variable taking the value 1 for periods before the shock (i.e., $t = 1$ and $t = 2$), zero otherwise. The interaction terms (e.g., POST_SHOCK × UP) measure the combined effects of the shock phase (i.e., before or after the shock) and the respective treatment (i.e., UP or DOWN). Controls include a participant's risk tolerance, CRT score, age, and gender. Clustered standard errors on the participant-level are in parentheses. * and ** indicate the 5%- and the 0.5%-significance levels, respectively.

	Dependent variable: INVESTMENT							
	Financial Professionals				Students			
	PRICES		RETURNS		PRICES		RETURNS	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
POST_SHOCK	0.630	0.630	1.015	1.015	0.988	0.988	0.542	0.542
	(1.393)	(1.395)	(1.412)	(1.415)	(1.286)	(1.287)	(1.323)	(1.325)
PRE_SHOCK × DOWN	−3.381	−3.381	2.061	2.061	2.844	2.844	0.351	0.351
	(1.878)	(1.881)	(1.341)	(1.343)	(1.455)	(1.457)	(1.449)	(1.451)
POST_SHOCK × DOWN	4.966**	4.966**	6.462**	6.462**	2.350	2.350	0.651	0.651
	(1.687)	(1.690)	(1.906)	(1.909)	(1.946)	(1.949)	(1.633)	(1.635)
PRE_SHOCK × UP	0.581	0.581	2.421	2.421	0.190	0.190	−1.945	−1.945
	(1.476)	(1.479)	(1.553)	(1.555)	(1.647)	(1.649)	(1.458)	(1.459)
POST_SHOCK × UP	−7.694**	−7.694**	−5.874*	−5.874*	−4.514*	−4.514*	−3.180*	−3.180*
	(2.388)	(2.392)	(2.243)	(2.247)	(2.026)	(2.028)	(1.590)	(1.592)
Constant	74.937**	36.104*	78.140**	58.334**	55.451**	13.916	59.065**	41.026*
	(2.271)	(15.213)	(2.274)	(16.907)	(2.115)	(13.977)	(2.088)	(17.081)
Controls	No	Yes	No	Yes	No	Yes	No	Yes
Observations	1,485	1,485	1,545	1,545	1,980	1,980	2,250	2,250
R^2	0.018	0.178	0.016	0.123	0.005	0.168	0.002	0.141
Adjusted R^2	0.015	0.172	0.013	0.117	0.003	0.164	-0.0003	0.137

Table C10: Ordinary least squares regressions on RECOMMENDATION for each participant pool (financial professionals and students) and each presentation format (RETURNS or PRICES). POST_SHOCK is a dummy variable taking the value 1 for periods after the volatility shock (i.e., $t = 3$ and $t = 4$), zero otherwise, and PRE_SHOCK stands for a dummy variable taking the value 1 for periods before the shock (i.e., $t = 1$ and $t = 2$), zero otherwise. The interaction terms (e.g., POST_SHOCK × UP) measure the combined effects of the shock phase (i.e., before or after the shock) and the respective treatment (i.e., UP or DOWN). Controls include a participant's risk tolerance, CRT score, age, and gender. Clustered standard errors on the participant-level are in parentheses. * and ** indicate the 5%- and the 0.5%-significance levels, respectively.

	Dependent variable: RECOMMENDATION							
	Financial Professionals				Students			
	PRICES		RETURNS		PRICES		RETURNS	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
POST_SHOCK	−0.106	−0.106	−0.204**	−0.204**	−0.144*	−0.144*	−0.240**	−0.240**
	(0.062)	(0.062)	(0.070)	(0.070)	(0.060)	(0.060)	(0.064)	(0.064)
PRE_SHOCK × DOWN	−0.020	−0.020	0.029	0.029	−0.008	−0.008	0.030	0.030
	(0.052)	(0.052)	(0.045)	(0.045)	(0.059)	(0.059)	(0.053)	(0.053)
POST_SHOCK × DOWN	0.369**	0.369**	0.306**	0.306**	0.216**	0.216**	0.067	0.067
	(0.076)	(0.076)	(0.084)	(0.084)	(0.072)	(0.072)	(0.067)	(0.067)
PRE_SHOCK × UP	−0.035	−0.035	−0.019	−0.019	−0.095	−0.095	0.027	0.027
	(0.048)	(0.048)	(0.051)	(0.051)	(0.059)	(0.059)	(0.056)	(0.056)
POST_SHOCK × UP	−0.157*	−0.157*	0.019	0.019	−0.205*	−0.205*	0.260**	0.260**
	(0.073)	(0.073)	(0.092)	(0.092)	(0.074)	(0.075)	(0.075)	(0.075)
Constant	3.222**	3.106**	3.204**	3.063**	3.008**	2.761**	2.797**	2.551**
	(0.052)	(0.262)	(0.051)	(0.279)	(0.045)	(0.167)	(0.050)	(0.308)
Controls	No	Yes	No	Yes	No	Yes	No	Yes
Observations	1,188	1,188	1,236	1,236	1,584	1,584	1,800	1,800
R^2	0.050	0.070	0.020	0.050	0.028	0.037	0.015	0.031
Adjusted R^2	0.046	0.062	0.016	0.042	0.025	0.031	0.012	0.026

Table C11: Ordinary least squares regressions on SATISFACTION for each participant pool (financial professionals and students) and each presentation format (RETURNS or PRICES). POST_SHOCK is a dummy variable taking the value 1 for periods after the volatility shock (i.e., $t = 3$ and $t = 4$), zero otherwise, and PRE_SHOCK stands for a dummy variable taking the value 1 for periods before the shock (i.e., $t = 1$ and $t = 2$), zero otherwise. The interaction terms (e.g., POST_SHOCK × UP) measure the combined effects of the shock phase (i.e., before or after the shock) and the respective treatment (i.e., UP or DOWN). Controls include a participant's risk tolerance, CRT score, age, and gender. Clustered standard errors on the participant-level are in parentheses. * and ** indicate the 5%- and the 0.5%-significance levels, respectively.

	Dependent variable: SATISFACTION							
	Financial Professionals				Students			
	PRICES		RETURNS		PRICES		RETURNS	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
POST_SHOCK	−0.490**	−0.490**	−0.896**	−0.899**	−0.738**	−0.738**	−0.929**	−0.929**
	(0.075)	(0.075)	(0.117)	(0.117)	(0.096)	(0.096)	(0.080)	(0.080)
PRE_SHOCK × DOWN	−0.061	−0.061	−0.147	−0.147	−0.161*	−0.161	−0.264**	−0.264**
	(0.069)	(0.069)	(0.080)	(0.080)	(0.082)	(0.082)	(0.085)	(0.085)
POST_SHOCK × DOWN	−0.672**	−0.673**	−0.246*	−0.245*	−0.587**	−0.587**	−0.077	−0.077
	(0.094)	(0.094)	(0.112)	(0.113)	(0.098)	(0.098)	(0.083)	(0.083)
PRE_SHOCK × UP	0.086	0.086	−0.098	−0.099	−0.037	−0.037	−0.043	−0.044
	(0.061)	(0.061)	(0.086)	(0.086)	(0.091)	(0.091)	(0.064)	(0.065)
POST_SHOCK × UP	1.389**	1.390**	1.447**	1.450**	1.629**	1.629**	1.533**	1.533**
	(0.117)	(0.117)	(0.129)	(0.129)	(0.130)	(0.130)	(0.100)	(0.100)
Constant	0.076	−0.660	0.093	0.628	−0.274**	−0.911*	−0.281**	−0.501
	(0.082)	(0.521)	(0.101)	(0.523)	(0.056)	(0.371)	(0.070)	(0.476)
Controls	No	Yes	No	Yes	No	Yes	No	Yes
Observations	1,186	1,186	1,227	1,227	1,580	1,580	1,794	1,794
R^2	0.164	0.173	0.103	0.115	0.161	0.167	0.106	0.107
Adjusted R^2	0.160	0.165	0.099	0.108	0.159	0.161	0.103	0.102

Table C12: Ordinary least squares regressions on RISK PERCEPTION for each participant pool (financial professionals and students) and each presentation format (RETURNS or PRICES). POST_SHOCK is a dummy variable taking the value 1 for periods after the volatility shock (i.e., $t = 3$ and $t = 4$), zero otherwise, and PRE_SHOCK stands for a dummy variable taking the value 1 for periods before the shock (i.e., $t = 1$ and $t = 2$), zero otherwise. The interaction terms (e.g., POST_SHOCK × UP) measure the combined effects of the shock phase (i.e., before or after the shock) and the respective treatment (i.e., UP or DOWN). Controls include a participant's risk tolerance, CRT score, age, and gender. Clustered standard errors on the participant-level are in parentheses. * and ** indicate the 5%- and the 0.5%-significance levels, respectively.

	Dependent variable: RISK PERCEPTION							
	Financial Professionals				Students			
	PRICES		RETURNS		PRICES		RETURNS	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
POST_SHOCK	0.870**	0.868**	0.521**	0.518**	0.683**	0.683**	0.183*	0.183*
	(0.085)	(0.085)	(0.100)	(0.101)	(0.093)	(0.093)	(0.088)	(0.088)
PRE_SHOCK × DOWN	−0.067	−0.064	−0.158	−0.158	−0.431**	−0.432**	−0.184*	−0.183*
	(0.095)	(0.096)	(0.113)	(0.113)	(0.114)	(0.114)	(0.083)	(0.083)
POST_SHOCK × DOWN	0.201	0.204	0.088	0.094	0.311**	0.310**	0.310**	0.310**
	(0.112)	(0.110)	(0.099)	(0.099)	(0.098)	(0.098)	(0.090)	(0.090)
PRE_SHOCK × UP	0.126	0.126	−0.114	−0.113	−0.153	−0.154	−0.172	−0.171
	(0.092)	(0.092)	(0.097)	(0.098)	(0.110)	(0.110)	(0.088)	(0.089)
POST_SHOCK × UP	0.085	0.085	−0.033	−0.026	−0.551**	−0.551**	−0.398**	−0.396**
	(0.093)	(0.092)	(0.103)	(0.104)	(0.111)	(0.111)	(0.099)	(0.099)
Constant	4.250**	2.676**	4.818**	4.387**	4.465**	4.188**	4.895**	4.199**
	(0.109)	(0.569)	(0.120)	(0.636)	(0.091)	(0.683)	(0.089)	(0.563)
Controls	No	Yes	No	Yes	No	Yes	No	Yes
Observations	1,172	1,172	1,220	1,220	1,560	1,560	1,776	1,776
R^2	0.136	0.181	0.053	0.096	0.118	0.123	0.034	0.043
Adjusted R^2	0.132	0.174	0.049	0.089	0.115	0.118	0.031	0.037

Table C13: Ordinary least squares regressions on PRICE FORECAST for each participant pool (financial professionals and students) and each presentation format (RETURNS or PRICES). POST_SHOCK is a dummy variable taking the value 1 for periods after the volatility shock (i.e., $t = 3$ and $t = 4$), zero otherwise, and PRE_SHOCK stands for a dummy variable taking the value 1 for periods before the shock (i.e., $t = 1$ and $t = 2$), zero otherwise. The interaction terms (e.g., POST_SHOCK × UP) measure the combined effects of the shock phase (i.e., before or after the shock) and the respective treatment (i.e., UP or DOWN). Controls include a participant's risk tolerance, CRT score, age, and gender. Clustered standard errors on the participant-level are in parentheses. * and ** indicate the 5%- and the 0.5%-significance levels, respectively.

	Dependent variable: PRICE FORECAST							
	Financial Professionals				Students			
	PRICES		RETURNS		PRICES		RETURNS	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
POST_SHOCK	1.415	1.415	−0.161	−0.161	1.681*	1.681*	−0.0003	−0.0003
	(0.722)	(0.724)	(0.236)	(0.237)	(0.740)	(0.741)	(0.454)	(0.455)
PRE_SHOCK × DOWN	1.006	1.006	0.721**	0.721**	0.984	0.984	1.081	1.081
	(0.872)	(0.874)	(0.165)	(0.166)	(1.138)	(1.140)	(0.677)	(0.678)
POST_SHOCK × DOWN	−13.892**	−13.892**	−15.722**	−15.722**	−14.575**	−14.575**	−19.406**	−19.406**
	(1.457)	(1.460)	(0.388)	(0.389)	(1.037)	(1.039)	(0.619)	(0.620)
PRE_SHOCK × UP	1.632	1.632	0.589**	0.589**	−0.558	−0.558	0.478	0.478
	(1.202)	(1.204)	(0.163)	(0.164)	(0.971)	(0.972)	(0.472)	(0.473)
POST_SHOCK × UP	15.325**	15.325**	16.785**	16.785**	12.042**	12.042**	17.867**	17.867**
	(0.835)	(0.837)	(0.338)	(0.338)	(1.114)	(1.115)	(0.583)	(0.584)
Constant	98.928**	99.350**	100.863**	98.732**	98.453**	93.048**	105.975**	119.501**
	(1.135)	(3.420)	(0.167)	(0.990)	(1.305)	(8.098)	(1.237)	(9.964)
Controls	No	Yes	No	Yes	No	Yes	No	Yes
Observations	1,188	1,188	1,236	1,236	1,584	1,584	1,800	1,800
R^2	0.312	0.345	0.901	0.906	0.207	0.238	0.314	0.354
Adjusted R^2	0.309	0.340	0.901	0.905	0.205	0.234	0.312	0.350

Table C14: Ordinary least squares regressions on RETURN FORECAST for each participant pool (financial professionals and students) and each presentation format (RETURNS or PRICES). POST_SHOCK is a dummy variable taking the value 1 for periods after the volatility shock (i.e., $t = 3$ and $t = 4$), zero otherwise, and PRE_SHOCK stands for a dummy variable taking the value 1 for periods before the shock (i.e., $t = 1$ and $t = 2$), zero otherwise. The interaction terms (e.g., POST_SHOCK × UP) measure the combined effects of the shock phase (i.e., before or after the shock) and the respective treatment (i.e., UP or DOWN). Controls include a participant's risk tolerance, CRT score, age, and gender. Clustered standard errors on the participant-level are in parentheses. * and ** indicate the 5%- and the 0.5%-significance levels, respectively.

	Dependent variable: RETURN FORECAST							
	Financial Professionals				Students			
	PRICES		RETURNS		PRICES		RETURNS	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
POST_SHOCK	1.697*	1.697*	0.211	0.211	2.019*	2.019*	0.300	0.300
	(0.728)	(0.729)	(0.186)	(0.186)	(0.746)	(0.747)	(0.437)	(0.437)
PRE_SHOCK × DOWN	0.448	0.448	0.044	0.044	0.423	0.423	0.390	0.390
	(0.880)	(0.881)	(0.141)	(0.141)	(1.140)	(1.142)	(0.672)	(0.673)
POST_SHOCK × DOWN	3.858*	3.858*	1.341**	1.341**	2.913*	2.913*	−1.885**	−1.885**
	(1.547)	(1.550)	(0.330)	(0.331)	(1.067)	(1.069)	(0.575)	(0.576)
PRE_SHOCK × UP	0.891	0.891	−0.211	−0.211	−1.362	−1.362	−0.401	−0.401
	(1.228)	(1.231)	(0.150)	(0.151)	(0.980)	(0.981)	(0.470)	(0.470)
POST_SHOCK × UP	−1.286	−1.286	−0.232	−0.232	−4.280**	−4.280**	−0.045	−0.045
	(0.690)	(0.691)	(0.221)	(0.222)	(0.996)	(0.997)	(0.515)	(0.516)
Constant	−0.237	0.439	1.711**	0.044	−0.704	−5.751	6.874**	20.459*
	(1.149)	(3.492)	(0.168)	(0.995)	(1.313)	(8.203)	(1.249)	(10.113)
Controls	No	Yes	No	Yes	No	Yes	No	Yes
Observations	1,188	1,188	1,236	1,236	1,584	1,584	1,800	1,800
R^2	0.022	0.063	0.047	0.087	0.024	0.063	0.002	0.064
Adjusted R^2	0.018	0.055	0.043	0.080	0.020	0.057	-0.001	0.059

Table C15: Ordinary least squares regressions on Optimistic minus Pessimistic Forecasts for each participant pool (financial professionals and students) and each presentation format (RETURNS or PRICES). POST_SHOCK is a dummy variable taking the value 1 for periods after the volatility shock (i.e., $t = 3$ and $t = 4$), zero otherwise, and PRE_SHOCK stands for a dummy variable taking the value 1 for periods before the shock (i.e., $t = 1$ and $t = 2$), zero otherwise. The interaction terms (e.g., POST_SHOCK × UP) measure the combined effects of the shock phase (i.e., before or after the shock) and the respective treatment (i.e., UP or DOWN). Controls include a participant's risk tolerance, CRT score, age, and gender. Clustered standard errors on the participant-level are in parentheses. * and ** indicate the 5%- and the 0.5%-significance levels, respectively.

	Dependent variable: Optimistic minus Pessimistic Forecast							
	Financial Professionals				Students			
	PRICES		RETURNS		PRICES		RETURNS	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
POST_SHOCK	2.824**	2.824**	0.891	0.891	4.002**	4.002**	1.123	1.123
	(0.768)	(0.769)	(0.508)	(0.509)	(0.699)	(0.700)	(0.826)	(0.827)
PRE_SHOCK × DOWN	−1.647*	−1.647*	−1.055	−1.055	4.528	4.528	0.629	0.629
	(0.761)	(0.762)	(0.551)	(0.552)	(5.296)	(5.304)	(0.825)	(0.826)
POST_SHOCK × DOWN	3.933**	3.933**	4.290**	4.290**	4.802**	4.802**	2.987**	2.987**
	(0.830)	(0.832)	(0.815)	(0.816)	(1.004)	(1.005)	(0.790)	(0.791)
PRE_SHOCK × UP	−0.966	−0.966	−1.058	−1.058	0.234	0.234	−0.338	−0.338
	(0.733)	(0.735)	(0.556)	(0.557)	(1.107)	(1.108)	(0.715)	(0.716)
POST_SHOCK × UP	0.102	0.102	0.262	0.262	−0.688	−0.688	0.798	0.798
	(0.662)	(0.664)	(0.808)	(0.810)	(0.800)	(0.801)	(0.743)	(0.744)
Constant	13.456**	10.815	11.381**	−1.854	12.234**	14.567	11.298**	18.082*
	(1.611)	(8.285)	(0.922)	(5.781)	(1.074)	(8.681)	(0.966)	(8.185)
Controls	No	Yes	No	Yes	No	Yes	No	Yes
Observations	1,188	1,188	1,236	1,236	1,584	1,584	1,800	1,800
R^2	0.034	0.077	0.043	0.090	0.006	0.009	0.010	0.043
Adjusted R^2	0.030	0.069	0.039	0.082	0.003	0.002	0.008	0.037

Table C16: Ordinary least squares regressions on INVESTMENT for each participant pool (financial professionals and students) and each shock type. POST_SHOCK is a dummy variable taking the value 1 for periods after the volatility shock (i.e., decision at $t = 3$ and $t = 4$), zero otherwise, and PRE_SHOCK stands for a dummy variable taking the value 1 for periods before the shock (i.e., decision at $t = 1$ and $t = 2$), zero otherwise. The interaction terms (e.g., POST_SHOCK × RETURNS) measure the combined effects of the shock phase (i.e., before or after the shock) and the respective treatment (i.e., RETURNS). PRE_SHOCK and the presentation format PRICES act as the reference categories. Controls include a participant's risk tolerance, CRT score, age, and gender. Clustered standard errors on the participant-level are in parentheses. * and ** indicate the 5%- and the 0.5%-significance levels, respectively.

	Dependent variable: INVESTMENT											
	Financial Professionals						Students					
	DOWN		STRAIGHT		UP		DOWN		STRAIGHT		UP	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
POST_SHOCK	8.977**	8.977**	0.630	0.630	−7.645**	−7.645**	0.494	0.494	0.988	0.988	−3.715*	−3.715*
	(1.779)	(1.784)	(1.389)	(1.393)	(2.124)	(2.130)	(1.644)	(1.647)	(1.283)	(1.285)	(1.842)	(1.845)
PRE_SHOCK × RETURNS	8.645*	9.696**	3.202	4.203	5.042	6.052*	1.121	0.156	3.614	2.640	1.479	0.749
	(3.145)	(2.880)	(3.205)	(3.036)	(3.063)	(2.872)	(3.040)	(2.728)	(2.967)	(2.707)	(3.045)	(2.769)
POST_SHOCK × RETURNS	5.083	6.134*	3.587	4.588	5.407	6.416	1.469	0.505	3.168	2.195	4.502	3.772
	(2.987)	(2.794)	(3.485)	(3.308)	(3.900)	(3.706)	(3.602)	(3.119)	(3.406)	(3.066)	(3.405)	(3.081)
Constant	71.556**	41.395**	74.937**	43.183**	75.518**	46.997**	58.295**	25.293*	55.451**	29.916*	55.640**	20.027
	(2.255)	(10.705)	(2.264)	(11.444)	(2.283)	(12.062)	(2.210)	(12.589)	(2.111)	(11.093)	(2.207)	(11.968)
Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	1,010	1,010	1,010	1,010	1,010	1,010	1,410	1,410	1,410	1,410	1,410	1,410
R^2	0.042	0.176	0.004	0.134	0.027	0.134	0.001	0.171	0.004	0.150	0.004	0.134
Adjusted R^2	0.039	0.169	0.001	0.127	0.024	0.127	-0.002	0.166	0.002	0.145	0.002	0.129

Table C17: Ordinary least squares regressions on RECOMMENDATION for each participant pool (financial professionals and students) and each shock type (DOWN, STRAIGHT, and UP). POST_SHOCK is a dummy variable taking the value 1 for periods after the volatility shock (i.e., decision at $t = 3$ and $t = 4$), zero otherwise, and PRE_SHOCK stands for a dummy variable taking the value 1 for periods before the shock (i.e., decision at $t = 1$ and $t = 2$), zero otherwise. The interaction terms (e.g., POST_SHOCK × RETURNS) measure the combined effects of the shock phase (i.e., before or after the shock) and the respective treatment (i.e., RETURNS). PRE_SHOCK and the presentation format PRICES act as the reference categories. Controls include a participant's risk tolerance, CRT score, age, and gender. Clustered standard errors on the participant-level are in parentheses. * and ** indicate the 5%- and the 0.5%-significance levels, respectively.

	Dependent variable: RECOMMENDATION											
	Financial Professionals						Students					
	DOWN		STRAIGHT		UP		DOWN		STRAIGHT		UP	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
POST_SHOCK	0.283**	0.283**	−0.106	−0.106	−0.227**	−0.227**	0.080	0.080	−0.144*	−0.144*	−0.254**	−0.254**
	(0.066)	(0.066)	(0.062)	(0.062)	(0.060)	(0.060)	(0.074)	(0.074)	(0.060)	(0.060)	(0.066)	(0.066)
PRE_SHOCK × RETURNS	0.031	0.037	−0.018	−0.007	−0.002	0.011	−0.173*	−0.185**	−0.211**	−0.213**	−0.090	−0.088
	(0.069)	(0.069)	(0.072)	(0.071)	(0.072)	(0.071)	(0.063)	(0.065)	(0.068)	(0.069)	(0.063)	(0.063)
POST_SHOCK × RETURNS	−0.179	−0.173	−0.116	−0.105	0.060	0.073	−0.456**	−0.467**	−0.307**	−0.309**	0.158*	0.159*
	(0.113)	(0.113)	(0.097)	(0.096)	(0.085)	(0.083)	(0.100)	(0.094)	(0.076)	(0.075)	(0.075)	(0.075)
Constant	3.202**	2.933**	3.222**	3.040**	3.187**	3.196**	3.000**	2.629**	3.008**	2.709**	2.913**	2.839**
	(0.049)	(0.296)	(0.052)	(0.223)	(0.045)	(0.192)	(0.042)	(0.245)	(0.045)	(0.243)	(0.044)	(0.244)
Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	808	808	808	808	808	808	1,128	1,128	1,128	1,128	1,128	1,128
R^2	0.018	0.034	0.016	0.044	0.021	0.058	0.037	0.083	0.041	0.052	0.011	0.012
Adjusted R^2	0.014	0.024	0.012	0.034	0.017	0.049	0.034	0.077	0.039	0.045	0.008	0.005

Table C18: Ordinary least squares regressions on SATISFACTION for each participant pool (financial professionals and students) and each shock type (DOWN, STRAIGHT, and UP). POST_SHOCK is a dummy variable taking the value 1 for periods after the volatility shock (i.e., decision at $t = 3$ and $t = 4$), zero otherwise, and PRE_SHOCK stands for a dummy variable taking the value 1 for periods before the shock (i.e., decision at $t = 1$ and $t = 2$), zero otherwise. The interaction terms (e.g., POST_SHOCK×RETURNS) measure the combined effects of the shock phase (i.e., before or after the shock) and the respective treatment (i.e., RETURNS). PRE_SHOCK and the presentation format PRICES act as the reference categories. Controls include a participant's risk tolerance, CRT score, age, and gender. Clustered standard errors on the participant-level are in parentheses. * and ** indicate the 5%- and the 0.5%-significance levels, respectively.

	Dependent variable: SATISFACTION											
	Financial Professionals						Students					
	DOWN		STRAIGHT		UP		DOWN		STRAIGHT		UP	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
POST_SHOCK	−1.101**	−1.102**	−0.490**	−0.490**	0.813**	0.813**	−1.163**	−1.163**	−0.738**	−0.738**	0.928**	0.928**
	(0.076)	(0.076)	(0.075)	(0.075)	(0.086)	(0.086)	(0.091)	(0.091)	(0.096)	(0.096)	(0.095)	(0.096)
PRE_SHOCK × RETURNS	−0.069	−0.062	0.017	0.022	−0.166	−0.147	−0.110	−0.095	−0.007	−0.004	−0.014	−0.023
	(0.116)	(0.121)	(0.130)	(0.136)	(0.125)	(0.126)	(0.098)	(0.099)	(0.090)	(0.091)	(0.101)	(0.102)
POST_SHOCK × RETURNS	0.038	0.045	−0.389*	−0.385*	−0.331*	−0.310*	0.312**	0.327**	−0.199	−0.195	−0.294*	−0.302*
	(0.155)	(0.160)	(0.166)	(0.174)	(0.138)	(0.140)	(0.097)	(0.096)	(0.129)	(0.129)	(0.124)	(0.123)
Constant	0.015	−0.155	0.076	−0.167	0.162*	0.238	−0.435**	−0.681*	−0.274**	−0.707	−0.311**	−1.074**
	(0.072)	(0.450)	(0.081)	(0.456)	(0.074)	(0.350)	(0.066)	(0.315)	(0.056)	(0.432)	(0.077)	(0.365)
Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	804	804	804	804	805	805	1,125	1,125	1,125	1,125	1,124	1,124
R^2	0.094	0.098	0.060	0.065	0.059	0.067	0.089	0.092	0.079	0.081	0.050	0.058
Adjusted R^2	0.091	0.089	0.057	0.056	0.056	0.058	0.087	0.085	0.076	0.075	0.047	0.051

Table C19: Ordinary least squares regressions on RISK PERCEPTION for each participant pool (financial professionals and students) and each shock type (DOWN, STRAIGHT, and UP). POST_SHOCK is a dummy variable taking the value 1 for periods after the volatility shock (i.e., decision at $t = 3$ and $t = 4$), zero otherwise, and PRE_SHOCK stands for a dummy variable taking the value 1 for periods before the shock (i.e., decision at $t = 1$ and $t = 2$), zero otherwise. The interaction terms (e.g., POST_SHOCK × RETURNS) measure the combined effects of the shock phase (i.e., before or after the shock) and the respective treatment (i.e., RETURNS). PRE_SHOCK and the presentation format PRICES act as the reference categories. Controls include a participant's risk tolerance, CRT score, age, and gender. Clustered standard errors on the participant-level are in parentheses. * and ** indicate the 5%- and the 0.5%-significance levels, respectively.

	Dependent variable: RISK PERCEPTION											
	Financial Professionals						Students					
	DOWN		STRAIGHT		UP		DOWN		STRAIGHT		UP	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
POST_SHOCK	1.139**	1.136**	0.870**	0.870**	0.829**	0.828**	1.425**	1.426**	0.683**	0.683**	0.285*	0.288*
	(0.115)	(0.115)	(0.085)	(0.085)	(0.095)	(0.095)	(0.102)	(0.102)	(0.092)	(0.093)	(0.103)	(0.103)
PRE_SHOCK × RETURNS	0.477**	0.463*	0.568**	0.533**	0.328	0.292	0.677**	0.673**	0.430**	0.429**	0.410**	0.434**
	(0.167)	(0.166)	(0.161)	(0.160)	(0.168)	(0.168)	(0.129)	(0.129)	(0.127)	(0.128)	(0.131)	(0.132)
POST_SHOCK × RETURNS	0.105	0.096	0.218	0.179	0.100	0.068	−0.072	−0.076	−0.071	−0.071	0.082	0.105
	(0.155)	(0.154)	(0.156)	(0.155)	(0.147)	(0.145)	(0.133)	(0.133)	(0.127)	(0.128)	(0.142)	(0.141)
Constant	4.183**	3.197**	4.250**	3.194**	4.376**	2.888**	4.034**	3.638**	4.465**	4.088**	4.313**	3.682**
	(0.110)	(0.488)	(0.108)	(0.467)	(0.115)	(0.509)	(0.102)	(0.546)	(0.091)	(0.502)	(0.105)	(0.541)
Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	800	800	791	791	801	801	1,115	1,115	1,113	1,113	1,108	1,108
R^2	0.128	0.157	0.092	0.114	0.081	0.119	0.147	0.150	0.037	0.045	0.014	0.025
Adjusted R^2	0.125	0.148	0.089	0.105	0.077	0.110	0.145	0.144	0.035	0.038	0.011	0.018

Table C20: Ordinary least squares regressions on DIFF_PRICES for each participant pool (financial professionals and students) and each shock type (DOWN, STRAIGHT, and UP). POST_SHOCK is a dummy variable taking the value 1 for periods after the volatility shock (i.e., decision at $t = 3$ and t = 4), zero otherwise, and PRE_SHOCK stands for a dummy variable taking the value 1 for periods before the shock (i.e., decision at $t = 1$ and t = 2), zero otherwise. The interaction terms (e.g., POST_SHOCK×RETURNS) measure the combined effects of the shock phase (i.e., before or after the shock) and the respective treatment (i.e., RETURNS). PRE_SHOCK and the presentation format PRICES act as the reference categories. Controls include a participant's risk tolerance, CRT score, age, and gender. Clustered standard errors on the participant-level are in parentheses. * and ** indicate the 5%- and the 0.5%-significance levels, respectively.

	Dependent variable: PRICE FORECAST											
	Financial Professionals						Students					
	DOWN		STRAIGHT		UP		DOWN		STRAIGHT		UP	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
POST_SHOCK	−13.482**	−13.482**	1.415*	1.415	15.108**	15.108**	−13.878**	−13.878**	1.681*	1.681*	14.281**	14.281**
	(0.828)	(0.830)	(0.720)	(0.723)	(1.016)	(1.019)	(1.167)	(1.170)	(0.739)	(0.740)	(0.944)	(0.946)
PRE_SHOCK × RETURNS	1.650	1.738	1.934	2.314	0.891	1.106	7.620**	7.318**	7.522**	7.097**	8.558**	8.171**
	(1.159)	(1.302)	(1.144)	(1.365)	(1.366)	(1.617)	(1.756)	(1.684)	(1.795)	(1.714)	(1.722)	(1.618)
POST_SHOCK × RETURNS	−1.472	−1.384	0.358	0.738	1.819	2.034	1.010	0.709	5.841**	5.415**	11.666**	11.279**
	(0.987)	(1.080)	(1.090)	(1.290)	(1.309)	(1.530)	(1.453)	(1.375)	(1.705)	(1.595)	(1.814)	(1.699)
Constant	99.934**	100.471**	98.928**	99.221**	100.560**	99.445**	99.437**	101.015**	98.453**	108.440**	97.895**	100.284**
	(1.146)	(1.631)	(1.132)	(1.852)	(1.356)	(2.383)	(1.064)	(6.232)	(1.302)	(7.716)	(1.176)	(7.468)
Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	808	808	808	808	808	808	1,128	1,128	1,128	1,128	1,128	1,128
R^2	0.466	0.474	0.008	0.079	0.351	0.377	0.278	0.296	0.043	0.071	0.260	0.277
Adjusted R^2	0.464	0.469	0.005	0.069	0.349	0.370	0.276	0.291	0.040	0.064	0.258	0.272

Table C21: Ordinary least squares regressions on RETURN FORECAST for each participant pool (financial professionals and students) and each shock type (DOWN, STRAIGHT, and UP). POST_SHOCK is a dummy variable taking the value 1 for periods after the volatility shock (i.e., decision at $t = 3$ and $t = 4$), zero otherwise, and PRE_SHOCK stands for a dummy variable taking the value 1 for periods before the shock (i.e., decision at $t = 1$ and $t = 2$), zero otherwise. The interaction terms (e.g., POST_SHOCK × RETURNS) measure the combined effects of the shock phase (i.e., before or after the shock) and the respective treatment (i.e., RETURNS). PRE_SHOCK and the presentation format PRICES act as the reference categories. Controls include a participant's risk tolerance, CRT score, age, and gender. Clustered standard errors on the participant-level are in parentheses. * and ** indicate the 5%- and the 0.5%-significance levels, respectively.

	Dependent variable: RETURN FORECAST											
	Financial Professionals						Students					
	DOWN		STRAIGHT		UP		DOWN		STRAIGHT		UP	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
POST_SHOCK	5.106**	5.106**	1.697*	1.697*	−0.481	−0.481	4.509**	4.509**	2.019*	2.019*	−0.899	−0.899
	(0.843)	(0.845)	(0.725)	(0.728)	(0.973)	(0.976)	(1.300)	(1.303)	(0.744)	(0.746)	(0.873)	(0.875)
PRE_SHOCK × RETURNS	1.544	1.615	1.948	2.315	0.846	1.069	7.545**	7.197**	7.578**	7.145**	8.539**	8.168**
	(1.155)	(1.312)	(1.157)	(1.382)	(1.378)	(1.615)	(1.751)	(1.677)	(1.808)	(1.728)	(1.723)	(1.621)
POST_SHOCK × RETURNS	−2.055	−1.983	0.462	0.829	1.516	1.739	1.061	0.712	5.859**	5.426**	10.094**	9.723**
	(1.149)	(1.257)	(1.096)	(1.300)	(1.075)	(1.301)	(1.721)	(1.629)	(1.703)	(1.591)	(1.550)	(1.440)
Constant	0.211	0.210	−0.237	0.398	0.654	0.184	−0.281	2.610	−0.704	8.763	−2.066	0.043
	(1.145)	(1.592)	(1.145)	(1.805)	(1.370)	(2.170)	(1.069)	(6.758)	(1.310)	(7.774)	(1.177)	(6.918)
Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	808	808	808	808	808	808	1,128	1,128	1,128	1,128	1,128	1,128
R^2	0.044	0.059	0.011	0.083	0.004	0.040	0.029	0.055	0.044	0.072	0.092	0.115
Adjusted R^2	0.041	0.049	0.007	0.073	0.0002	0.031	0.027	0.048	0.041	0.066	0.089	0.108

Table C22: Ordinary least squares regressions on Optimistic minus Pessimistic Forecasts for each participant pool (financial professionals and students) and each shock type (DOWN, STRAIGHT, and UP). POST_SHOCK is a dummy variable taking the value 1 for periods after the volatility shock (i.e., decision at $t = 3$ and $t = 4$), zero otherwise, and PRE_SHOCK stands for a dummy variable taking the value 1 for periods before the shock (i.e., decision at $t = 1$ and $t = 2$), zero otherwise. The interaction terms (e.g., POST_SHOCK × RETURNS) measure the combined effects of the shock phase (i.e., before or after the shock) and the respective treatment (i.e., RETURNS). PRE_SHOCK and the presentation format PRICES act as the reference categories. Controls include a participant's risk tolerance, CRT score, age, and gender. Clustered standard errors on the participant-level are in parentheses. * and ** indicate the 5%- and the 0.5%-significance levels, respectively.

	Dependent variable: Optimistic minus Pessimistic Forecast											
	Financial Professionals						Students					
	DOWN		STRAIGHT		UP		DOWN		STRAIGHT		UP	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
POST_SHOCK	8.403**	8.403**	2.824**	2.824**	3.892**	3.892**	4.276	4.276	4.002**	4.002**	3.079**	3.079**
	(0.779)	(0.781)	(0.766)	(0.768)	(0.688)	(0.690)	(5.306)	(5.318)	(0.697)	(0.699)	(0.748)	(0.750)
PRE_SHOCK × RETURNS	−1.484	−1.469	−2.075	−2.092	−2.167	−2.199	−4.835	−4.832	−0.936	−1.219	−1.509	−1.755
	(1.600)	(1.586)	(1.851)	(1.847)	(1.763)	(1.787)	(5.912)	(5.716)	(1.442)	(1.428)	(1.796)	(1.807)
POST_SHOCK × RETURNS	−3.652	−3.636	−4.009*	−4.026*	−3.848*	−3.880*	−5.630**	−5.627**	−3.815*	−4.098*	−2.329	−2.575
	(2.074)	(2.046)	(1.733)	(1.720)	(1.692)	(1.725)	(1.782)	(1.792)	(1.745)	(1.739)	(1.481)	(1.482)
Constant	11.809**	2.946	13.456**	6.725	12.490**	6.328	16.762**	16.043*	12.234**	20.342**	12.469**	16.093*
	(1.349)	(5.250)	(1.607)	(5.603)	(1.566)	(4.772)	(5.781)	(7.472)	(1.072)	(5.392)	(1.436)	(6.766)
Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	808	808	808	808	808	808	1,128	1,128	1,128	1,128	1,128	1,128
R^2	0.079	0.114	0.020	0.054	0.030	0.056	0.005	0.014	0.016	0.030	0.013	0.024
Adjusted R^2	0.075	0.105	0.016	0.044	0.027	0.046	0.003	0.007	0.014	0.023	0.011	0.017

Table C23: Ordinary least squares regressions on INVESTMENT for each participant pool (financial professionals and students) and each shock type (DOWN, STRAIGHT, and UP). POST_SHOCK is a dummy variable taking the value 1 for periods after the volatility shock (i.e., decision at $t = 3$ and t = 4), zero otherwise, and PRE_SHOCK stands for a dummy variable taking the value 1 for periods before the shock (i.e., decision at $t = 1$ and t = 2), zero otherwise. The interaction terms (e.g., POST_SHOCK×RETURNS) measure the combined effects of the shock phase (i.e., before or after the shock) and the respective treatment (i.e., RETURNS). PRE_SHOCK and the presentation format PRICES act as the reference categories. Controls include a participant's risk tolerance, CRT score, age, and gender. Clustered standard errors on the participant-level are in parentheses. * and ** indicate the 5%- and the 0.5%-significance levels, respectively.

	Dependent variable: INVESTMENT											
	Financial Professionals						Students					
	DOWN		STRAIGHT		UP		DOWN		STRAIGHT		UP	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$t = 1$	1.563	1.563	−0.324	−0.324	1.749	1.749	−3.967*	−3.967*	−4.259*	−4.259*	1.600	1.600
	(1.521)	(1.526)	(2.074)	(2.080)	(2.252)	(2.260)	(1.616)	(1.620)	(1.617)	(1.620)	(1.979)	(1.983)
$t = 3$	9.725**	9.725**	0.575	0.575	−8.766**	−8.766**	−1.870	−1.870	−0.876	−0.876	−2.030	−2.030
	(2.172)	(2.179)	(2.104)	(2.110)	(2.709)	(2.717)	(2.143)	(2.148)	(1.295)	(1.298)	(2.571)	(2.577)
$t = 4$	9.640**	9.640**	1.104	1.104	−4.313	−4.313	−0.272	−0.272	−0.140	−0.140	−2.213	−2.213
	(2.523)	(2.531)	(2.544)	(2.552)	(2.879)	(2.888)	(1.812)	(1.816)	(1.727)	(1.731)	(2.343)	(2.348)
$t = 2 \times$ RETURNS	10.673**	11.842**	2.811	4.063	5.423	6.498	0.485	−0.480	1.088	0.129	2.131	1.320
	(3.537)	(3.246)	(3.765)	(3.609)	(3.574)	(3.493)	(3.447)	(3.079)	(3.447)	(3.219)	(3.703)	(3.540)
$t = 1 \times$ RETURNS	6.926	8.094*	6.082	7.334*	4.994	6.069	1.564	0.598	5.353	4.394	2.481	1.670
	(3.609)	(3.395)	(3.521)	(3.363)	(3.454)	(3.218)	(3.430)	(3.218)	(3.357)	(3.118)	(3.398)	(3.075)
$t = 3 \times$ RETURNS	4.823	5.991	2.866	4.118	3.898	4.973	1.210	0.245	1.063	0.104	0.683	−0.128
	(3.265)	(3.077)	(3.771)	(3.614)	(4.400)	(4.271)	(3.870)	(3.366)	(3.635)	(3.338)	(3.588)	(3.303)
$t = 4 \times$ RETURNS	5.344	6.512*	4.308	5.560	6.916	7.991*	1.729	0.763	5.273	4.314	8.320*	7.510*
	(3.203)	(3.031)	(3.778)	(3.622)	(4.078)	(3.855)	(3.810)	(3.406)	(3.684)	(3.351)	(3.703)	(3.395)
Constant	70.850**	43.078**	74.727**	46.219**	74.412**	46.628**	59.859**	24.220	56.946**	29.430*	54.046**	19.543
	(2.658)	(11.063)	(2.662)	(11.476)	(2.645)	(12.323)	(2.452)	(12.980)	(2.419)	(11.956)	(2.690)	(12.825)
Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	808	808	808	808	808	808	1,128	1,128	1,128	1,128	1,128	1,128
R^2	0.043	0.180	0.007	0.142	0.033	0.138	0.003	0.185	0.007	0.159	0.009	0.143
Adjusted R^2	0.034	0.167	-0.001	0.129	0.024	0.125	-0.003	0.176	0.0005	0.150	0.003	0.133

Table C24: Ordinary least squares regressions on RECOMMENDATION for each participant pool (financial professionals and students) and each shock type (DOWN, STRAIGHT, and UP). POST_SHOCK is a dummy variable taking the value 1 for periods after the volatility shock (i.e., decision at $t = 3$ and $t = 4$), zero otherwise, and PRE_SHOCK stands for a dummy variable taking the value 1 for periods before the shock (i.e., decision at $t = 1$ and $t = 2$), zero otherwise. The interaction terms (e.g., POST_SHOCK × RETURNS) measure the combined effects of the shock phase (i.e., before or after the shock) and the respective treatment (i.e., RETURNS). PRE_SHOCK and the presentation format PRICES act as the reference categories. Controls include a participant's risk tolerance, CRT score, age, and gender. Clustered standard errors on the participant-level are in parentheses. * and ** indicate the 5%- and the 0.5%-significance levels, respectively.

	Dependent variable: RECOMMENDATION											
	Financial Professionals						Students					
	DOWN		STRAIGHT		UP		DOWN		STRAIGHT		UP	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$t = 1$	0.040	0.040	−0.061	−0.061	−0.030	−0.030	−0.030	−0.030	0.015	0.015	0.205*	0.205*
	(0.064)	(0.064)	(0.076)	(0.076)	(0.084)	(0.085)	(0.082)	(0.082)	(0.085)	(0.086)	(0.096)	(0.096)
$t = 3$	0.354**	0.354**	−0.152*	−0.152*	−0.273**	−0.273**	0.159	0.159	−0.114	−0.114	−0.318**	−0.318**
	(0.089)	(0.089)	(0.077)	(0.077)	(0.082)	(0.083)	(0.106)	(0.107)	(0.085)	(0.085)	(0.111)	(0.111)
$t = 4$	0.253**	0.253**	−0.121	−0.121	−0.212**	−0.212**	−0.030	−0.030	−0.159*	−0.159*	0.015	0.015
	(0.077)	(0.077)	(0.072)	(0.073)	(0.069)	(0.070)	(0.079)	(0.079)	(0.080)	(0.081)	(0.073)	(0.073)
$t = 2$ × RETURNS	0.003	0.009	0.039	0.050	0.012	0.025	−0.148	−0.160	−0.133	−0.135	−0.057	−0.056
	(0.089)	(0.087)	(0.077)	(0.077)	(0.089)	(0.089)	(0.091)	(0.091)	(0.089)	(0.091)	(0.089)	(0.089)
$t = 1$ × RETURNS	0.059	0.066	−0.075	−0.064	−0.016	−0.003	−0.198*	−0.209*	−0.288**	−0.290**	−0.122	−0.120
	(0.087)	(0.089)	(0.098)	(0.096)	(0.094)	(0.092)	(0.083)	(0.086)	(0.099)	(0.099)	(0.089)	(0.090)
$t = 3$ × RETURNS	−0.322*	−0.315*	−0.198	−0.187	−0.007	0.006	−0.768**	−0.779**	−0.346**	−0.348**	0.348*	0.349*
	(0.153)	(0.153)	(0.111)	(0.110)	(0.118)	(0.117)	(0.150)	(0.143)	(0.094)	(0.093)	(0.132)	(0.131)
$t = 4$ × RETURNS	−0.036	−0.030	−0.034	−0.023	0.127	0.140	−0.145	−0.156	−0.268**	−0.269**	−0.032	−0.031
	(0.109)	(0.109)	(0.106)	(0.105)	(0.081)	(0.079)	(0.088)	(0.088)	(0.090)	(0.089)	(0.080)	(0.081)
Constant	3.182**	2.913**	3.253**	3.070**	3.202**	3.211**	3.015**	2.644**	3.000**	2.702**	2.811**	2.737**
	(0.053)	(0.299)	(0.056)	(0.225)	(0.061)	(0.193)	(0.061)	(0.250)	(0.058)	(0.248)	(0.060)	(0.244)
Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	808	808	808	808	808	808	1,128	1,128	1,128	1,128	1,128	1,128
R^2	0.023	0.039	0.025	0.053	0.027	0.064	0.055	0.101	0.044	0.054	0.026	0.027
Adjusted R^2	0.015	0.025	0.016	0.039	0.019	0.050	0.049	0.091	0.038	0.044	0.019	0.016

Table C25: Ordinary least squares regressions on SATISFACTION for each participant pool (financial professionals and students) and each shock type (DOWN, STRAIGHT, and UP). POST_SHOCK is a dummy variable taking the value 1 for periods after the volatility shock (i.e., decision at $t = 3$ and t = 4), zero otherwise, and PRE_SHOCK stands for a dummy variable taking the value 1 for periods before the shock (i.e., decision at $t = 1$ and t = 2), zero otherwise. The interaction terms (e.g., POST_SHOCK×RETURNS) measure the combined effects of the shock phase (i.e., before or after the shock) and the respective treatment (i.e., RETURNS). PRE_SHOCK and the presentation format PRICES act as the reference categories. Controls include a participant's risk tolerance, CRT score, age, and gender. Clustered standard errors on the participant-level are in parentheses. * and ** indicate the 5%- and the 0.5%-significance levels, respectively.

	Dependent variable: SATISFACTION											
	Financial Professionals						Students					
	DOWN		STRAIGHT		UP		DOWN		STRAIGHT		UP	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$t = 1$	0.313	0.313	−1.970**	−1.970**	−0.222	−0.222	0.458*	0.457*	−2.360**	−2.360**	−0.288	−0.288
	(0.221)	(0.221)	(0.138)	(0.138)	(0.229)	(0.229)	(0.220)	(0.221)	(0.134)	(0.135)	(0.242)	(0.242)
$t = 3$	−1.990**	−1.990**	−1.515**	−1.515**	1.452**	1.451**	−1.919**	−1.920**	−1.811**	−1.811**	1.939**	1.939**
	(0.150)	(0.150)	(0.132)	(0.133)	(0.174)	(0.174)	(0.149)	(0.149)	(0.147)	(0.147)	(0.191)	(0.191)
$t = 4$	0.111	0.111	−1.434**	−1.434**	−0.040	−0.040	0.050	0.050	−2.016**	−2.017**	−0.371*	−0.371*
	(0.161)	(0.161)	(0.121)	(0.122)	(0.151)	(0.151)	(0.156)	(0.157)	(0.138)	(0.138)	(0.162)	(0.163)
$t = 2 \times$ RETURNS	−0.295	−0.288	0.057	0.064	−0.079	−0.059	0.020	0.034	0.012	0.015	0.173	0.165
	(0.211)	(0.215)	(0.170)	(0.174)	(0.203)	(0.207)	(0.182)	(0.182)	(0.138)	(0.139)	(0.198)	(0.198)
$t = 1 \times$ RETURNS	0.165	0.172	−0.013	−0.008	−0.256	−0.237	−0.241	−0.225	−0.025	−0.022	−0.203	−0.212
	(0.215)	(0.218)	(0.183)	(0.189)	(0.219)	(0.217)	(0.177)	(0.178)	(0.121)	(0.122)	(0.187)	(0.188)
$t = 3 \times$ RETURNS	0.122	0.129	−0.322	−0.317	−0.210	−0.190	0.010	0.025	−0.164	−0.161	−0.086	−0.090
	(0.192)	(0.197)	(0.202)	(0.209)	(0.209)	(0.210)	(0.125)	(0.124)	(0.165)	(0.166)	(0.190)	(0.186)
$t = 4 \times$ RETURNS	−0.048	−0.041	−0.456*	−0.453*	−0.468*	−0.448*	0.614**	0.628**	−0.232	−0.228	−0.475**	−0.484**
	(0.199)	(0.204)	(0.177)	(0.184)	(0.175)	(0.178)	(0.137)	(0.137)	(0.141)	(0.141)	(0.146)	(0.148)
Constant	−0.141	−0.324	1.061**	0.819	0.273*	0.339	−0.664**	−0.911*	0.902**	0.464	−0.167	−0.982*
	(0.133)	(0.463)	(0.102)	(0.471)	(0.124)	(0.360)	(0.125)	(0.333)	(0.092)	(0.449)	(0.141)	(0.393)
Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	804	804	804	804	805	805	1,125	1,125	1,125	1,125	1,124	1,124
R^2	0.284	0.287	0.277	0.282	0.195	0.203	0.350	0.352	0.389	0.391	0.305	0.314
Adjusted R^2	0.278	0.276	0.271	0.271	0.188	0.190	0.345	0.345	0.385	0.385	0.301	0.306

Table C26: Ordinary least squares regressions on RISK PERCEPTION for each participant pool (financial professionals and students) and each shock type (DOWN, STRAIGHT, and UP). POST_SHOCK is a dummy variable taking the value 1 for periods after the volatility shock (i.e., decision at $t = 3$ and t = 4), zero otherwise, and PRE_SHOCK stands for a dummy variable taking the value 1 for periods before the shock (i.e., decision at $t = 1$ and t = 2), zero otherwise. The interaction terms (e.g., POST_SHOCK × RETURNS) measure the combined effects of the shock phase (i.e., before or after the shock) and the respective treatment (i.e., RETURNS). PRE_SHOCK and the presentation format PRICES act as the reference categories. Controls include a participant's risk tolerance, CRT score, age, and gender. Clustered standard errors on the participant-level are in parentheses. * and ** indicate the 5%- and the 0.5%-significance levels, respectively.

	Dependent variable: RISK PERCEPTION											
	Financial Professionals						Students					
	DOWN		STRAIGHT		UP		DOWN		STRAIGHT		UP	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$t = 1$	−0.140	−0.137	−0.051	−0.051	0.024	0.021	0.023	0.023	0.216*	0.218*	−0.010	−0.011
	(0.090)	(0.089)	(0.081)	(0.082)	(0.078)	(0.078)	(0.108)	(0.108)	(0.095)	(0.095)	(0.104)	(0.104)
$t = 3$	1.482**	1.478**	1.204**	1.201**	1.214**	1.212**	1.915**	1.916**	1.407**	1.406**	0.527**	0.529**
	(0.134)	(0.134)	(0.119)	(0.120)	(0.110)	(0.111)	(0.127)	(0.127)	(0.113)	(0.113)	(0.127)	(0.127)
$t = 4$	0.656**	0.659**	0.482**	0.486**	0.473**	0.469**	0.962**	0.963**	0.178	0.179	0.029	0.031
	(0.154)	(0.154)	(0.106)	(0.106)	(0.108)	(0.107)	(0.144)	(0.144)	(0.128)	(0.128)	(0.130)	(0.130)
$t = 2$ × RETURNS	0.444*	0.431*	0.626**	0.591**	0.287	0.249	0.741**	0.737**	0.380*	0.379*	0.331*	0.355*
	(0.187)	(0.187)	(0.173)	(0.171)	(0.179)	(0.178)	(0.160)	(0.159)	(0.148)	(0.149)	(0.157)	(0.157)
$t = 1$ × RETURNS	0.512**	0.495**	0.508**	0.475*	0.370*	0.335	0.615**	0.609**	0.482**	0.481**	0.490**	0.514**
	(0.173)	(0.171)	(0.172)	(0.172)	(0.181)	(0.180)	(0.141)	(0.142)	(0.144)	(0.145)	(0.143)	(0.144)
$t = 3$ × RETURNS	0.197	0.191	0.335*	0.300	0.187	0.153	0.096	0.093	−0.270	−0.270	0.060	0.083
	(0.165)	(0.163)	(0.166)	(0.165)	(0.165)	(0.161)	(0.157)	(0.158)	(0.143)	(0.144)	(0.174)	(0.173)
$t = 4$ × RETURNS	0.013	0.0003	0.091	0.047	0.005	−0.025	−0.235	−0.241	0.128	0.127	0.114	0.134
	(0.199)	(0.199)	(0.199)	(0.199)	(0.176)	(0.176)	(0.170)	(0.170)	(0.169)	(0.169)	(0.169)	(0.169)
Constant	4.253**	3.286**	4.276**	3.220**	4.364**	2.887**	4.023**	3.628**	4.357**	3.970**	4.318**	3.688**
	(0.123)	(0.497)	(0.115)	(0.471)	(0.121)	(0.512)	(0.124)	(0.546)	(0.103)	(0.509)	(0.120)	(0.545)
Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	800	800	791	791	801	801	1,115	1,115	1,113	1,113	1,108	1,108
R^2	0.183	0.211	0.144	0.166	0.131	0.169	0.221	0.224	0.118	0.126	0.030	0.041
Adjusted R^2	0.175	0.199	0.136	0.153	0.123	0.156	0.216	0.216	0.112	0.116	0.024	0.031

Table C27: Ordinary least squares regressions on PRICE FORECAST for each participant pool (financial professionals and students) and each shock type (DOWN, STRAIGHT, and UP). POST_SHOCK is a dummy variable taking the value 1 for periods after the volatility shock (i.e., decision at $t = 3$ and t = 4), zero otherwise, and PRE_SHOCK stands for a dummy variable taking the value 1 for periods before the shock (i.e., decision at $t = 1$ and t = 2), zero otherwise. The interaction terms (e.g., POST_SHOCK × RETURNS) measure the combined effects of the shock phase (i.e., before or after the shock) and the respective treatment (i.e., RETURNS). PRE_SHOCK and the presentation format PRICES act as the reference categories. Controls include a participant's risk tolerance, CRT score, age, and gender. Clustered standard errors on the participant-level are in parentheses. * and ** indicate the 5%- and the 0.5%-significance levels, respectively.

	Dependent variable: PRICE FORECAST											
	Financial Professionals						Students					
	DOWN		STRAIGHT		UP		DOWN		STRAIGHT		UP	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$t = 1$	−0.678	−0.678	−3.576**	−3.576**	−0.779	−0.779	0.158	0.158	−2.293	−2.293	−0.771	−0.771
	(0.941)	(0.944)	(0.811)	(0.814)	(1.752)	(1.757)	(1.408)	(1.411)	(1.384)	(1.387)	(1.186)	(1.189)
$t = 3$	−13.641**	−13.641**	0.151	0.151	15.886**	15.886**	−13.178**	−13.178**	1.901	1.901	15.478**	15.478**
	(0.855)	(0.858)	(0.486)	(0.488)	(1.085)	(1.089)	(1.503)	(1.506)	(1.272)	(1.275)	(1.311)	(1.314)
$t = 4$	−14.002**	−14.002**	−0.897	−0.897	13.551**	13.551**	−14.419**	−14.419**	−0.831	−0.831	12.313**	12.313**
	(0.617)	(0.619)	(0.576)	(0.577)	(0.493)	(0.494)	(1.218)	(1.220)	(1.237)	(1.240)	(0.700)	(0.702)
$t = 2$ × RETURNS	0.542	0.630	2.098*	2.478	1.108	1.323	6.943**	6.641**	8.062**	7.636**	9.305**	8.919**
	(1.095)	(1.227)	(1.054)	(1.281)	(1.056)	(1.326)	(1.901)	(1.815)	(2.065)	(1.977)	(1.864)	(1.759)
$t = 1$ × RETURNS	2.758	2.846	1.770	2.150	0.675	0.890	8.296**	7.995**	6.983**	6.557**	7.811**	7.424**
	(1.409)	(1.546)	(1.373)	(1.572)	(2.057)	(2.259)	(1.941)	(1.897)	(1.846)	(1.789)	(1.841)	(1.754)
$t = 3$ × RETURNS	−2.048	−1.960	0.608	0.988	1.436	1.651	−0.959	−1.260	5.594**	5.168*	12.322**	11.936**
	(1.151)	(1.224)	(1.132)	(1.331)	(1.637)	(1.814)	(1.642)	(1.566)	(1.973)	(1.855)	(1.965)	(1.869)
$t = 4$ × RETURNS	−0.895	−0.808	0.108	0.488	2.201	2.417	2.979*	2.678	6.088**	5.662**	11.009**	10.622**
	(0.969)	(1.074)	(1.122)	(1.314)	(1.154)	(1.409)	(1.474)	(1.406)	(1.736)	(1.655)	(1.909)	(1.789)
Constant	100.273**	100.809**	100.716**	101.009**	100.950**	99.834**	99.358**	100.936**	99.599**	109.587**	98.281**	100.670**
	(1.080)	(1.645)	(1.027)	(1.812)	(1.035)	(2.692)	(1.304)	(6.224)	(1.648)	(7.833)	(1.160)	(7.553)
Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	808	808	808	808	808	808	1,128	1,128	1,128	1,128	1,128	1,128
R^2	0.468	0.476	0.037	0.107	0.355	0.380	0.281	0.299	0.050	0.078	0.267	0.284
Adjusted R^2	0.463	0.468	0.029	0.094	0.349	0.371	0.276	0.291	0.044	0.068	0.262	0.276

Table C28: Ordinary least squares regressions on RETURN FORECAST for each participant pool (financial professionals and students) and each shock type (DOWN, STRAIGHT, and UP). POST_SHOCK is a dummy variable taking the value 1 for periods after the volatility shock (i.e., decision at $t = 3$ and $t = 4$), zero otherwise, and PRE_SHOCK stands for a dummy variable taking the value 1 for periods before the shock (i.e., decision at $t = 1$ and $t = 2$), zero otherwise. The interaction terms (e.g., POST_SHOCK × RETURNS) measure the combined effects of the shock phase (i.e., before or after the shock) and the respective treatment (i.e., RETURNS). PRE_SHOCK and the presentation format PRICES act as the reference categories. Controls include a participant's risk tolerance, CRT score, age, and gender. Clustered standard errors on the participant-level are in parentheses. * and ** indicate the 5%- and the 0.5%-significance levels, respectively.

	Dependent variable: RETURN FORECAST											
	Financial Professionals						Students					
	DOWN		STRAIGHT		UP		DOWN		STRAIGHT		UP	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$t = 1$	−1.896*	−1.896*	0.192	0.192	0.571	0.571	−1.011	−1.011	1.469	1.469	0.380	0.380
	(0.939)	(0.942)	(0.838)	(0.841)	(1.789)	(1.795)	(1.420)	(1.423)	(1.382)	(1.385)	(1.173)	(1.176)
$t = 3$	5.162**	5.162**	1.474**	1.474**	−0.073	−0.073	5.531**	5.531**	3.278*	3.278*	−0.205	−0.205
	(0.880)	(0.883)	(0.489)	(0.491)	(0.800)	(0.802)	(1.626)	(1.630)	(1.269)	(1.271)	(1.138)	(1.141)
$t = 4$	3.156**	3.156**	2.112**	2.112**	−0.318	−0.318	2.476	2.476	2.229	2.229	−1.212*	−1.212*
	(0.665)	(0.667)	(0.559)	(0.561)	(0.434)	(0.436)	(1.302)	(1.305)	(1.233)	(1.236)	(0.598)	(0.600)
$t = 2$ × RETURNS	0.610	0.681	2.076*	2.443	1.124	1.347	7.057**	6.709**	7.978**	7.545**	9.260**	8.889**
	(1.106)	(1.247)	(1.043)	(1.275)	(1.049)	(1.300)	(1.922)	(1.829)	(2.043)	(1.955)	(1.851)	(1.751)
$t = 1$ × RETURNS	2.477	2.549	1.820	2.187	0.568	0.791	8.033**	7.685**	7.178**	6.745**	7.818**	7.447**
	(1.382)	(1.537)	(1.411)	(1.614)	(2.084)	(2.278)	(1.905)	(1.864)	(1.897)	(1.839)	(1.836)	(1.748)
$t = 3$ × RETURNS	−2.736*	−2.664	0.708	1.075	1.204	1.426	−1.281	−1.629	5.572**	5.140*	10.610**	10.239**
	(1.341)	(1.426)	(1.136)	(1.339)	(1.327)	(1.512)	(1.966)	(1.877)	(1.960)	(1.841)	(1.649)	(1.556)
$t = 4$ × RETURNS	−1.374	−1.302	0.217	0.584	1.829	2.051	3.402*	3.054	6.145**	5.712**	9.578**	9.207**
	(1.147)	(1.267)	(1.130)	(1.326)	(0.984)	(1.236)	(1.735)	(1.655)	(1.748)	(1.665)	(1.662)	(1.549)
Constant	1.159	1.158	−0.334	0.302	0.369	−0.101	0.224	3.115	−1.439	8.029	−2.257	−0.147
	(1.091)	(1.633)	(1.017)	(1.764)	(1.030)	(2.540)	(1.313)	(6.755)	(1.631)	(7.886)	(1.154)	(6.994)
Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	808	808	808	808	808	808	1,128	1,128	1,128	1,128	1,128	1,128
R^2	0.050	0.065	0.011	0.083	0.004	0.041	0.032	0.058	0.045	0.073	0.093	0.116
Adjusted R^2	0.042	0.051	0.002	0.069	-0.005	0.026	0.026	0.048	0.039	0.063	0.088	0.107

Table C29: Ordinary least squares regressions on Optimistic minus Pessimistic Forecasts for each participant pool (financial professionals and students) and each shock type (DOWN, STRAIGHT, and UP). POST_SHOCK is a dummy variable taking the value 1 for periods after the volatility shock (i.e., decision at $t = 3$ and t = 4), zero otherwise, and PRE_SHOCK stands for a dummy variable taking the value 1 for periods before the shock (i.e., decision at $t = 1$ and t = 2), zero otherwise. The interaction terms (e.g., POST_SHOCK × RETURNS) measure the combined effects of the shock phase (i.e., before or after the shock) and the respective treatment (i.e., RETURNS). PRE_SHOCK and the presentation format PRICES act as the reference categories. Controls include a participant's risk tolerance, CRT score, age, and gender. Clustered standard errors on the participant-level are in parentheses. * and ** indicate the 5%- and the 0.5%-significance levels, respectively.

	Dependent variable: Optimistic minus Pessimistic Forecast											
	Financial Professionals						Students					
	DOWN		STRAIGHT		UP		DOWN		STRAIGHT		UP	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$t = 1$	0.241	0.241	0.482	0.482	0.684	0.684	11.628	11.628	1.387	1.387	−0.061	−0.061
	(0.483)	(0.484)	(0.549)	(0.551)	(0.422)	(0.424)	(9.736)	(9.757)	(0.903)	(0.905)	(0.684)	(0.686)
$t = 3$	9.837**	9.837**	3.951**	3.951**	5.057**	5.057**	12.815**	12.815**	6.263**	6.263**	4.036**	4.036**
	(0.864)	(0.867)	(0.830)	(0.832)	(0.912)	(0.915)	(1.304)	(1.307)	(0.739)	(0.741)	(1.031)	(1.033)
$t = 4$	7.211**	7.211**	2.179*	2.179*	3.411**	3.411**	7.365**	7.365**	3.128**	3.128**	2.062*	2.062*
	(0.837)	(0.840)	(0.841)	(0.844)	(0.608)	(0.610)	(0.856)	(0.858)	(0.846)	(0.848)	(0.841)	(0.843)
$t = 2$ × RETURNS	−1.231	−1.216	−1.868	−1.885	−2.044	−2.076	1.204	1.207	−0.696	−0.979	−1.445	−1.691
	(1.664)	(1.651)	(1.831)	(1.818)	(1.724)	(1.748)	(1.729)	(1.671)	(1.436)	(1.421)	(1.996)	(2.011)
$t = 1$ × RETURNS	−1.737	−1.722	−2.282	−2.299	−2.289	−2.321	−10.875	−10.872	−1.176	−1.458	−1.572	−1.818
	(1.589)	(1.575)	(1.929)	(1.933)	(1.843)	(1.867)	(10.708)	(10.512)	(1.677)	(1.667)	(1.686)	(1.692)
$t = 3$ × RETURNS	−3.338	−3.323	−3.652	−3.668*	−3.784*	−3.816*	−6.537**	−6.535**	−5.427**	−5.709**	−1.603	−1.849
	(2.179)	(2.147)	(1.894)	(1.867)	(1.788)	(1.811)	(2.124)	(2.120)	(1.655)	(1.651)	(1.563)	(1.565)
$t = 4$ × RETURNS	−3.965	−3.950	−4.366*	−4.383*	−3.912*	−3.944*	−4.722**	−4.720**	−2.204	−2.486	−3.056*	−3.302*
	(2.093)	(2.070)	(1.736)	(1.741)	(1.694)	(1.736)	(1.628)	(1.657)	(2.030)	(2.024)	(1.544)	(1.545)
Constant	11.689**	2.826	13.215**	6.484	12.148**	5.986	10.948**	10.229	11.541**	19.648**	12.499**	16.123*
	(1.427)	(5.278)	(1.585)	(5.618)	(1.527)	(4.782)	(1.180)	(10.123)	(1.073)	(5.427)	(1.631)	(6.955)
Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	808	808	808	808	808	808	1,128	1,128	1,128	1,128	1,128	1,128
R^2	0.085	0.119	0.023	0.057	0.033	0.058	0.011	0.019	0.020	0.033	0.018	0.029
Adjusted R^2	0.077	0.106	0.015	0.043	0.024	0.044	0.005	0.008	0.014	0.023	0.012	0.019

Table C30: WAVE 2. Ordinary least squares regressions on INVESTMENT, RECOMMENDATION, and SATISFACTION, for each participant pool (financial professionals and students) and each presentation format (RETURNS or PRICES). POST_SHOCK is a dummy variable taking the value 1 for periods after the volatility shock (i.e., $t = 3$ and $t = 4$), zero otherwise, and PRE_SHOCK stands for a dummy variable taking the value 1 for periods before the shock (i.e., $t = 1$ and $t = 2$), zero otherwise. The interaction terms (e.g., POST_SHOCK × UP) measure the combined effects of the shock phase (i.e., before or after the shock) and the respective treatment (i.e., UP or DOWN). All specifications are run with a participant's risk attitude, CRT score, age, and gender as control variables. Clustered standard errors at the participant-level are in parentheses. * and ** indicate the 5%- and 0.5%-significance levels, respectively.

	Investment		Recommendation		Satisfaction	
	Prices	Returns	Prices	Returns	Prices	Returns
Finance Professionals	(1)	(2)	(3)	(4)	(5)	(6)
POST_SHOCK	−1.612	−1.765	−0.177*	−0.236*	−0.627**	−0.815**
	(2.323)	(2.561)	(0.064)	(0.108)	(0.123)	(0.140)
PRE_SHOCK × DOWN	−2.043	0.398	−0.065	−0.064	−0.084	−0.272*
	(2.638)	(2.402)	(0.055)	(0.091)	(0.107)	(0.111)
POST_SHOCK × DOWN	9.664**	8.444**	0.310**	0.336*	−0.501**	−0.354*
	(2.847)	(2.818)	(0.099)	(0.124)	(0.122)	(0.149)
PRE_SHOCK × UP	2.011	−0.670	−0.056	0.027	−0.050	−0.126
	(2.116)	(2.217)	(0.056)	(0.089)	(0.112)	(0.117)
POST_SHOCK × UP	−3.804	−4.306	−0.138	0.027	1.388**	1.334**
	(2.485)	(2.498)	(0.086)	(0.105)	(0.132)	(0.153)
Constant	13.183	25.857	3.366**	3.154**	0.679	−0.830
	(15.785)	(25.798)	(0.215)	(0.429)	(0.438)	(0.529)
Observations	695	660	695	660	686	653
R^2	0.236	0.292	0.107	0.028	0.193	0.137
Adjusted R^2	0.224	0.281	0.094	0.013	0.181	0.124
Students	(7)	(8)	(9)	(10)	(11)	(12)
POST_SHOCK	−0.223	0.619	−0.086	−0.059	−0.667**	−0.926**
	(1.529)	(1.676)	(0.049)	(0.072)	(0.092)	(0.092)
PRE_SHOCK × DOWN	0.111	1.077	−0.047	0.031	−0.194*	−0.306**
	(1.801)	(1.799)	(0.061)	(0.070)	(0.080)	(0.089)
POST_SHOCK × DOWN	3.383	0.208	0.232*	−0.027	−0.647**	−0.079
	(2.178)	(1.613)	(0.084)	(0.078)	(0.110)	(0.093)
PRE_SHOCK × UP	−0.742	−0.734	−0.057	0.036	−0.081	−0.176
	(1.634)	(1.778)	(0.058)	(0.066)	(0.087)	(0.092)
POST_SHOCK × UP	−2.970	−1.495	−0.250**	0.095	1.874**	1.599**
	(1.988)	(2.038)	(0.070)	(0.083)	(0.115)	(0.108)
Constant	3.447	2.019	3.131**	2.747**	0.076	−0.310
	(26.306)	(15.953)	(0.194)	(0.301)	(0.362)	(0.385)
Observations	1,248	1,321	1,248	1,321	1,246	1,315
R^2	0.166	0.215	0.051	0.043	0.217	0.117
Adjusted R^2	0.159	0.209	0.043	0.035	0.210	0.111

Table C31: WAVE 2. Ordinary least squares regressions on RISK PERCEPTION, PRICE FORECAST, and RETURN FORECAST, for each participant pool (financial professionals and students) and each presentation format (RETURNS or PRICES). POST_SHOCK is a dummy variable taking the value 1 for periods after the volatility shock (i.e., $t = 3$ and $t = 4$), zero otherwise, and PRE_SHOCK stands for a dummy variable taking the value 1 for periods before the shock (i.e., $t = 1$ and $t = 2$), zero otherwise. The interaction terms (e.g., POST_SHOCK × UP) measure the combined effects of the shock phase (i.e., before or after the shock) and the respective treatment (i.e., UP or DOWN). All specifications are run with a participant's risk attitude, CRT score, age, and gender as control variables. Clustered standard errors at the participant-level are in parentheses. * and ** indicate the 5%- and 0.5%-significance levels, respectively.

	Risk perception		Price forecast		Return forecast	
	Prices	Returns	Prices	Returns	Prices	Returns
Finance Professionals	(1)	(2)	(3)	(4)	(5)	(6)
POST_SHOCK	0.934**	0.271*	0.838	−0.363	1.312	−0.134
	(0.144)	(0.122)	(0.833)	(0.333)	(0.853)	(0.285)
PRE_SHOCK × DOWN	0.030	−0.134	0.382	0.720	−0.387	0.030
	(0.129)	(0.108)	(0.647)	(0.563)	(0.644)	(0.567)
POST_SHOCK × DOWN	0.175	0.160	−13.180**	−14.958**	3.695**	2.440**
	(0.115)	(0.111)	(1.051)	(0.636)	(1.028)	(0.787)
PRE_SHOCK × UP	0.125	0.055	2.628	0.341	1.868	−0.434
	(0.143)	(0.083)	(2.497)	(0.406)	(2.540)	(0.397)
POST_SHOCK × UP	−0.103	0.120	13.655**	16.218**	−2.934**	−0.595
	(0.127)	(0.084)	(1.019)	(0.499)	(0.885)	(0.441)
Constant	3.307**	5.752**	90.113**	102.148**	−10.389	3.005
	(0.606)	(0.961)	(9.119)	(3.060)	(9.154)	(3.189)
Observations	676	651	695	660	695	660
R^2	0.162	0.075	0.222	0.719	0.071	0.097
Adjusted R^2	0.149	0.060	0.211	0.714	0.057	0.083
Students	(7)	(8)	(9)	(10)	(11)	(12)
POST_SHOCK	0.877**	0.373**	1.018	−0.970	1.159	−0.925
	(0.104)	(0.087)	(0.891)	(0.546)	(0.907)	(0.535)
PRE_SHOCK × DOWN	0.085	0.080	−0.097	0.612	−0.732	−0.149
	(0.131)	(0.110)	(1.187)	(1.221)	(1.185)	(1.225)
POST_SHOCK × DOWN	0.523**	0.400**	−13.871**	−18.178**	3.410**	−0.242
	(0.126)	(0.090)	(0.991)	(1.044)	(0.998)	(1.081)
PRE_SHOCK × UP	0.215	0.206	−0.525	−0.247	−1.391	−1.199
	(0.112)	(0.117)	(1.000)	(1.378)	(1.025)	(1.367)
POST_SHOCK × UP	−0.339**	−0.119	13.923**	18.660**	−2.389	0.626
	(0.110)	(0.105)	(1.447)	(1.045)	(1.361)	(0.937)
Constant	3.997**	5.660**	118.027**	98.055**	18.433	0.004
	(0.702)	(0.732)	(24.873)	(15.157)	(25.185)	(14.940)
Observations	1,222	1,309	1,248	1,321	1,248	1,321
R^2	0.129	0.090	0.174	0.256	0.062	0.031
Adjusted R^2	0.122	0.083	0.168	0.250	0.054	0.024

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Volatility Shocks and Investment Behavior

Abstract
We investigate how volatility shocks affect investors' risk-taking, risk perception and forecasts. We run artefactual field experiments with two participant pools (finance professionals and students), differing in (i) the direction of the shock (down, up, or a neutral case) and (ii) the presentation format of the time series (prices or returns). Professionals' investments are negatively associated with the price change and performance of the stock and their perceived risk increases to a similar extent following shocks of all directions. Students' risk perception, in contrast, is more closely related to the frequency of negative returns rather than an increase in volatility.

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