Preregistration: Mental Models of the Stock Market

Downstream Consequences Study

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In addition to the existing preregistration plan, we preregister the Downstream Consequences Study.

Study parameters

- Sample size wave 1: 1,500 (about 750 per treatment)
- Sample size wave 2: We will reinvite all participants one to two days later to a follow-up study. We expect a completion rate of between 60% and 80%.
- Sample type: Prolific sample (balanced on gender, otherwise no quotas)
- Start of data collection: March 5th, 2024 (after preregistration)
- Number of treatments conditions: 4 (2x2 design)
- Randomization method: Computerized via Qualtrics
- We plan to work with all complete responses. In the (typically very rare) case that a respondent submits multiple responses, we only count the first response.
- In wave 1, respondents can only start with the survey if they pass an attention screener. Moreover, they can only proceed with the survey if they pass a comprehension quiz that tests their understanding of the scenarios (multiple attempts are allowed).

Study design: Wave 1 Survey wave 1 consists of two parts. The second part is a shorter version of the main descriptive survey for households (see full instructions of the main survey). We only consider the *Nike good news* case and ask the following questions:

- Prediction: In which scenario is the future expected return of an investment in the stock over the next year higher?
- Open-ended explanation of prediction

- Background characteristics

The first part of the survey contains the experimental manipulation. We implement two conditions.

Control Participants learn about the geographical phenomenon of the tidal range and the factors that influence the tidal range.

Treatment Participants learn that and why the expected future success of a company is not a reliable indicator of the future success of an investment in its stock.

The precise instructions of the two conditions are attached below.

In comparison to the control condition, the treatment condition familiarizes participants with the consequences of equilibrium on stock markets. Other features such as text difficulty and length are comparable across the two conditions.

Study design: Wave 2 We will reinvite all participants who completed wave 1 to a follow-up study one to two days later. Wave 2 is divided in two parts. Part 1 is based on the main descriptive study but adopts a between-subject design and relies on real news. Specifically, it deviates from the main study as follows:

- between-subject design: respondents see either good or bad news about the stock of the company Comcast (treatment variation, orthogonal to the treatment variation in wave 1)
- real news: the news is real old news
- quantitative return forecast: respondents make a quantitative return forecast
- incentivized return forecast: the return forecast is incentivized
- incentivized investment decision: after respondents explain their return forecast, they make an incentivized investment decision where they can invest £100 in either a safe savings bond or the Comcast stock

Wave 2 contains additional questions on (i) respondents' perceived importance of tracking company news for successful stock investment and (ii) respondents' beliefs about the relationship between a stock's risk and expected return.

See instructions for all details.

We plan to winsorize the quantitative return forecasts at +30% and −30%.

Research question Does the tendency to neglect equilibrium pricing cause respondents to expect higher returns in response to stale good news, to trade on stale news, to view tracking company news as important for successful stock investment, and to believe in a reverse risk-return trade-off?

We test whether explaining the consequences of equilibrium on stock markets affects individuals' sensitivity to stale news and their responses to our other two outcome questions.

Wave 1: *Treatment* condition

Part 1

In part 1 of the survey, we explain an important stock market principle to you. We want you to read the explanation carefully so that you can briefly restate and explain the principle in your own words.

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An important stock market principle

Companies usually differ in their expected future business prospects. Some companies are expected to generate high earnings, others are expected to generate low earnings.

What do you think? Which type of stocks are the better investment?

- Stocks of companies that are expected to generate HIGH earnings in the future.
- Stocks of companies that are expected to generate LOW earnings in the future.

The answer might surprise you. *It often does not matter.*

Why? On the next pages, we want to explain to you the following important stock market principle.

> **Stock market principle**
> Whether a company is expected to generate high or low future earnings often does not matter for the expected future return of an investment in its stock.
>
> In other words, the expected future success of a *company* is not a reliable indicator of the future success of an *investment in its stock*.

expected future success of company	≠	**expected future success of investment in company stock**

Why does the principle hold?

It is actually easy to see why this principle holds. First, let's repeat it once more.

> **Stock market principle**
> Whether a company is expected to generate high or low future earnings often does not matter for the expected future return of an investment in its stock.
>
> In other words, the expected future success of a *company* is not a reliable indicator of the future success of an *investment in its stock*.
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> | **expected future success of company** | ≠ | **expected future success of investment in company stock** |

The principle holds because expectations for the future are already reflected in today's stock prices.

The stock of a high-earning company is particularly expensive. In fact, it is often so expensive that, from a stock investment perspective, the high expected future earnings are offset by the high stock price today.

Similarly, the stock of a low-earning company is particularly cheap. In fact, it is often so cheap that, from a stock investment perspective, the low expected future earnings are offset by the low stock price today.

Why does the principle hold?

The expected future success of a company is not a reliable indicator of the future success of an investment in its stock. This also becomes clear if we think about what would happen if this principle did not hold.

Suppose that investing in high-earning companies was more lucrative than investing in low-earning companies because of their future expected earnings. This situation is unstable. Why? The answer involves four steps.

1. Stock traders obviously love lucrative investments. Hence, they would want to hold more of the lucrative high-earning companies and less of the low-earning companies.
2. This would trigger a change in stock prices. The demand for the stock of high-earning companies is so high that their stock prices would rise. The demand for the stock of low-earning companies is so low that their stock prices would fall.
3. Investing in high-earning companies just became less lucrative because their stocks are now more expensive. Investing in low-earning companies just became more lucrative because their stocks are now cheaper.
4. **As long as investments in high-earning companies remain more lucrative, this process will continue. Traders will continue to trade and prices will continue to change until the expected earnings of companies do not matter for stock investments anymore.**

Hence, in the end, we would be back in a situation where higher expected future earnings of a company do not come with a higher future expected return of investing into the company stock.

Participants have to click on a "next" button to reveal points 1–4 step by step.

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Summary

Of course, there are other reasons why some companies might have higher expected stock returns: for example, investments in some companies' stocks are more risky or offer less protection against low economic growth. But importantly, expected future earnings themselves do not matter for stock returns.

Stock market principle

Whether a company is expected to generate high or low future earnings often does not matter for the expected future return of an investment in its stock.

In other words, the expected future success of a *company* is not a reliable indicator of the future success of an *investment in its stock*.

expected future success of company	≠	**expected future success of investment in company stock**

Your explanation

Now, please describe the principle you just learned about in your own words.

Please explain why this principle holds in the stock market.

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Part 2

In part 2 of the survey, we will ask you to predict the return of stocks in hypothetical scenarios. We start with a short introduction. Please read the introduction carefully.

Wave 1: *Control* condition

Part 1

In part 1 of the survey, we explain an important phenomenon in geography to you. We want you to read the explanation carefully so that you can briefly restate and explain the phenomenon in your own words.

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The tidal range

Tides are the periodic rise and fall of sea levels caused by the gravitational pull of the moon – and, to a much lesser extent, the sun – on the water. There are two main stages of the tidal movement. The **high tide** denotes when the water reaches its highest point, while the **low tide** denotes when the water reaches its lowest point.

The gravitational force of the moon affects all bodies of water on Earth, not only the oceans. For small bodies of water like a bathtub or the coffee cup on your desk, however, the tides are so small that they are not noticeable.

But even across different regions of the world's oceans, how much the sea level changes with the tides varies quite a lot. The difference in height between high tide and low tide is called the **tidal range**.

The world's largest tidal range of 53.5 ft (16.3 meters) can be found in the Bay of Fundy, Canada, while some of the smallest tidal ranges of less than 1 ft (0.3 meters) can be found in the Mediterranean and the Caribbean Seas.

On the next pages, you will learn which factors influence the tidal ranges of different locations.

What determines the tidal range?

There are several factors that determine the tidal range at a certain time and location.

In general, the closer a region is to the moon, the stronger the gravitational attraction, and the more extreme the tides will be. For this reason, the tides tend to be stronger on the side of the earth that currently faces the moon.

When the sun and moon are aligned, their gravitational forces reinforce each other and bring along even larger tidal ranges. This is also called a **spring tide**.

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How do coastlines affect the tides?

The shape of the coastline can significantly affect the behavior of tides. When the coastline curves inward, the tidal range tends to be larger. When the coastline curves outward, the tidal range tends to be smaller. This is because the shape of the coastline can influence how much water is able to move in and out of a given region.

Geographic features can act as funnels, either channeling or dissipating the effect of the tide. The Bay of Fundy in Canada, where the highest tidal range in the world can be measured, is funnel-shaped in such a way that it greatly amplifies the tides. On the other hand, small islands in the middle of the ocean tend to only experience very small tidal ranges.

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Why does the depth of the ocean matter?

In addition to the shape of the coastline, the depth of the ocean can also play a role in determining the behavior of tides. In areas where the ocean is shallow, the tidal range tends to be larger, while in areas where the ocean is deep, the tidal range tends to be smaller. This is because shallow areas are more affected by the gravitational pull of the moon and the sun, while deeper areas are less affected.

What's the role of a region's climate?

Finally, the local wind and weather patterns of a place can also affect the tides. Strong offshore winds can move water away from coastlines, causing the tide to be lower than normal. Onshore winds may act to pile up water onto the shoreline, causing the tide to be higher than normal. High-pressure systems can depress sea levels, leading to clear sunny days with exceptionally low tides. Conversely, low-pressure systems that contribute to cloudy, rainy conditions typically are associated with exceptionally high tides.

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Summary: The tidal range and its influences

In conclusion, the behavior of tides and the tidal range, that is the height difference between the highest and lowest sea level, depend on various factors.

While the foremost influence is the location of the region in relation to the moon and the sun, geographical features such as the shape of the coastline, the depth of the ocean, and the climate of the region can all influence the behavior of tides in different ways. By understanding these factors, we can gain a better appreciation for the complex and dynamic nature of our oceans and the tides they produce.

Your explanation

Now, please describe in your own words what the tidal range is.

Please explain what determines how large the tidal range is.

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Part 2

In part 2 of the survey, we will ask you to predict the return of stocks in hypothetical scenarios. We start with a short introduction. Please read the introduction carefully.

[Short version of *Nike good news* scenario follows]

Wave 2: Good news condition

Comcast Corporation

On the next page, you will receive information about the exchange-traded company ***Comcast Corporation***.

Comcast Corporation is a large US-based multinational company. Comcast is deeply integrated into the telecommunications and entertainment industries. The company offers a wide array of services including high-speed internet, cable television, film production, and streaming.

Seven months ago: Comcast announces surge in subscribers to streaming service

About seven months ago, Comcast made an announcement that received a lot of attention among stock market traders. Here is a summary of the news story.

> Comcast Corporation experienced a dramatic surge in subscribers to its streaming service Peacock. In the second quarter of 2023, Peacock's paid subscribers in the U.S. nearly doubled, reaching 24 million. This growth, surpassing analysts' expectations, indicates a significant success for Comcast in the competitive streaming market. The substantial and unexpected uptick in subscriber numbers highlights the company's ability to attract and retain a growing viewer base, solidifying its standing as a major player in the digital entertainment arena.

Recall: This news story broke around seven months ago and received a lot of attention among stock market traders invested in or observing Comcast's stock.

Quiz

Please select all correct statements in the following list. Do not select any incorrect statements.

- ☐ Comcast announced a market expansion in Latin America.
- ☐ Comcast announced a near doubling of subscriber numbers.
- ☐ The announcement was made about seven months ago.
- ☐ The announcement was made earlier today.
- ☐ The announcement did not receive attention among stock market traders.
- ☐ The announcement received a lot of attention among stock market traders.
- ☐ The announcement is about Comcast's streaming service.
- ☐ The announcement is about Comcast's traditional cable business.

Well done! All responses were correct.

Now, you can earn additional money. On the following two pages, you have the opportunity to earn extra money based on your answers. Please respond carefully.

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Your prediction

Review the news story *(click to open detailed description)*

▸ **Seven months ago: Comcast announces surge in subscribers to streaming service**

Consider the following investment.

> Invest $1,000 in Comcast stock today, **several months after the announcement was made**.
> Sell these stocks in twelve months from now.

Your task is to indicate which return you would expect for this investment.

The return of an investment in a stock is the percent change in value that you receive from investing in that stock. It includes both dividend payments and the change in the stock price. For comparison, the S&P 500—which is a stock market index that represents the largest US exchange-traded companies—had an average annual total return of 13% over the last ten years.

You can earn additional money based on your prediction. We will calculate the actual return of the investment in a year from now. If your prediction is at most 0.5 percentage points away from the actual return, we will transfer £2 to your Prolific account in a year from now.

Please predict which return you would expect for the above investment.

I predict a return of ...

[ ] %

An investment decision

Review the news story *(click to open detailed description)*

▶ **Seven months ago: Comcast announces surge in subscribers to streaming service**

In the following, we ask you to make a decision on how you would invest £100 for the coming 12 months.

You have the **chance to earn additional money** with your answer to this question. Upon completion of the study, we will randomly select ten participants who will receive a payout equal to the value of their investment after 12 months. If you are selected, this payout will depend on your investment decision, so please consider carefully. The payout will be made in 12 months (plus processing time) in the form of a Prolific bonus payment.

Two investment options are available:

- **Investing in a stock of the company *Comcast Corporation*.** The return on your investment in Comcast stock will be based on the actual return of this stock over the coming 12 months.
- **Investing in a savings bond that pays 5 percent interest per year for sure.** The return on your investment in the savings bond will be 5 percent for sure.

Please decide. How much of the £100 do you invest in *Comcast* stock and how much in the savings bond?

(Note: The sum of your investments must amount to £100.)

My investment in the stock of *Comcast Corporation*	£ 0
My investment in the savings bond	£ 0
Total	£ 0

Monitoring news

Please read the following statement carefully. Indicate how much you agree or disagree using the scale provided.

"To successfully invest in the stock market, one needs to spend a lot of time monitoring news about companies."

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
○	○	○	○	○

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Relationship between expected return and uncertainty

The next question is about the relationship between the return you can expect from investing in a stock and the uncertainty of the return.

When uncertainty is higher, large deviations from the predicted return are more likely. For example, if uncertainty is high, it is more likely that the return is much higher or much lower than the predicted return. Note that uncertainty is distinct from the predicted return itself. One might predict a high return with high uncertainty or with low uncertainty. Conversely, one might predict a low return with high uncertainty or with low uncertainty.

Please think about two companies. **Market participants perceive the return of the stock of company A to be more uncertain than the return of the stock of company B.**

What would you expect, which company's stock would give a higher return?

Note: "Similar" means the difference in returns is smaller than or equal to 1 percentage point.

○ The return would be higher for company A's stock.

○ The return would be similar for the two companies' stocks.

○ The return would be higher for company B's stock.

When responding to the previous questions, did you look up any information regarding Comcast or the Comcast stock online, e.g., via Google?

- ◯ Yes
- ◯ Yes, but I could not find any information
- ◯ No

Wave 2: Bad news condition

Four months ago: Comcast announces drops in broadband and domestic video subscribers

About four months ago, Comcast made an announcement that received a lot of attention among stock market traders. Here is a summary of the news story.

> Comcast Corporation experienced a significant and unexpected decrease in both broadband and domestic video subscribers in the third quarter of 2023. This dual loss is particularly alarming for Comcast, given that broadband and video services have been integral to its market strength and revenue. The simultaneous decline in these key areas casts a shadow on the company's previously robust performance in the telecommunications and entertainment sectors. Comments from the company's leadership add a layer of concern, as they suggest that the challenges facing Comcast in these vital sectors may not be short-term obstacles but could represent a prolonged period of difficulty.

Recall: This news story broke around four months ago and received a lot of attention among stock market traders invested in or observing Comcast's stock.

Quiz

Please select all correct statements in the following list. Do not select any incorrect statements.

- ☐ Comcast announced a lawsuit against a former CEO.
- ☐ Comcast announced drops in subscriber numbers.
- ☐ The announcement was made about four months ago.
- ☐ The announcement was made earlier today.
- ☐ The announcement did not receive a lot of attention among stock market traders.
- ☐ The announcement received a lot of attention among stock market traders.
- ☐ The announcement is about Comcast's broadband and domestic video business.
- ☐ The announcement is about a market expansion of Comcast in Latin America.