



## Full length article

# Past performance framing and investors' belief updating: Is seeing long-term returns always associated with smaller belief updates?



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## HIGHLIGHTS

- Exposes subjects to different return information horizons and measures belief updates.
- Tests whether longer information horizons are associated with smaller updates in beliefs.
- Different from previous studies, experimental subjects can easily opt out of their default.
- Effectiveness of longer information horizons depends on whether subjects opt out of default.

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## ABSTRACT

Prior research shows that investors with smaller belief updates trade less actively, which positively affects their return performance. We examine the effect of different default frames of presenting past return information on investors' belief updating. In particular, we analyze whether presenting longer information horizons as a default is associated with smaller belief updates. In lab and online experiments, we expose subjects to different past return information defaults and measure updates in their beliefs. Different from previous research, our subjects can easily opt out of the default to obtain additional information. We find that presenting long-term return information is not effective in reducing belief updates on average. Whereas belief updates are reduced for subjects who remain in their default, for those who opt out, we observe the opposite.

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## 1. Introduction

Prior research shows that updates in individual investors' beliefs, such as return expectations and risk perceptions, drive their investment decisions (Hoffmann et al., 2013). When updating their beliefs, individual investors often extrapolate past return experiences (Dominitz and Manski, 2011; Greenwood and Shleifer, 2014). In this paper, we examine how framing of past performance information affects individual investors' belief updating. In particular, we analyze whether presenting longer information horizons

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as a default option leads to smaller updates in investors' beliefs. Because smaller belief updates are associated with less active trading, effective framing of past performance information would have the capacity to positively affect investors' return performance (Barber and Odean, 2000; Hoffmann and Post, 2016). We find that the effectiveness of showing long-term returns on reducing updates in beliefs depends on whether investors can easily opt out of their assigned default or not.

Our paper builds on previous work that examines how different evaluation and/or reporting frequencies as well as information horizons influence individual investors' decision-making, such as Benartzi and Thaler (1995), Gneezy and Potters (1997), Fellner and Sutter (2009), Beshears et al. (2017), and Shaton (2015). These

other studies typically recommend longer evaluation and information horizons to improve individual investor decision-making in terms of overcoming myopic loss aversion, making fund flows less sensitive to past returns, or reducing trading volume. An important distinction of our paper compared to previous work is that we focus on the effect of different information horizon defaults on belief updates when investors have access to additional information. Prior studies analyze interventions which restrict access to information and make it cumbersome or even impossible for subjects to opt out of the default. Our setting more closely resembles individual investors' actual decision-making environment where individuals have immediate access to alternative information horizons and can easily opt out of the default.

We perform two experiments, one in the lab and one online, in which we place subjects in a situation resembling an online brokerage environment. We present them with a stock portfolio to assess their belief updates over six evaluation rounds. Subjects receive portfolio performance information after each round. Subjects are randomly assigned to three experimental conditions, which differ regarding the default information horizon that is shown to them (i.e., annual, monthly, daily). For each subject, this default information horizon is held constant over subsequent rounds of the experiment. We conduct our first experiment in a controlled laboratory environment. The lab experiment focuses on the effect of varying the default information horizon. Subjects can easily opt out of the default and obtain past performance information on each of the three information horizons in each round. To test the generalizability of our laboratory results to situations outside the lab and compare with past studies that restrict subjects' opportunity to view alternative information horizons, we conduct a second experiment online. This experiment includes both an exact replication of the original laboratory experiment, as well as an alternative version of the experiment in which subjects cannot opt out of the default and have to stay in the assigned default information horizon, consistent with previous studies on the effect of restrictive interventions by Beshears et al. (2017) and Shaton (2015).

We find that in the restrictive version of our experiment, a longer past return horizon reduces belief updating of subjects. In the non-restrictive version of our experiment, when subjects are able to opt out of the default they are assigned to, varying the default does not, on average, impact the magnitude of belief updating. However, an important result emerges when comparing subjects staying in the default versus those opting out of the default (about half of the subjects opt out of the default). Specifically, similar to the results for the restrictive version, subjects who stay in the default option reduce the magnitude of their belief updating when being shown returns over a longer information horizon. We find the opposite result for subjects opting out of the default. For subjects originally assigned to the longer information horizon, opting out presents them with returns over a *shorter* horizon, which are consequently associated with *larger* updates in their beliefs.

## 2. Related literature and predictions

We align and build on two streams of literature. The first stream of literature analyzes various interventions on the return information that investors receive and their impact on investor decision making. Most interventions address myopic loss aversion by manipulating the frequency by which investors either receive information or the investment horizon for which investors have to commit in advance. Benartzi and Thaler (1995) show that investors who evaluate their investment portfolios more frequently are less willing to invest in risky securities. Gneezy and Potters (1997) experimentally evaluate myopic loss aversion and show that a longer

evaluation period puts subjects in a broader frame, which leads to increased risk-taking. They restrict the choices of their subjects by not allowing them to switch between evaluation frequencies. When subjects are allowed to choose the evaluation frequency, however, they display a preference for frequent feedback (Charness and Gneezy, 2010). Related, Fellner and Sutter (2009) find that longer investment horizons and less frequent feedback are associated with less myopic loss aversion. However, when given the choice, subjects prefer on average shorter investment horizons and more frequent feedback. Beshears et al. (2017) address myopic loss aversion using a field experiment in which subjects invest in mutual funds. They modify the degree of information given to subjects and observe the resulting equity allocation in a self-managed portfolio. Their results show that, in contrast to not providing any graphical past return information, presenting a graph of historical returns significantly increases the share of wealth allocated to equities. Looney and Hardin (2009) analyze default options for 401k retirement accounts. They employ simulations of retirement investments and investigate the effect of different information horizons, by modifying the horizon on which average historical stock-market performance information is provided to investors. Their results show that longer information horizons reduce conservatism in retirement portfolios. Looney and Hardin (2009) also impose restrictions on subjects' choices. The work closest to ours in terms of the intervention studied is Shaton (2015). She analyzes the impact of a regulatory change in Israel requiring retirement funds to report performance using at least a 12-month time horizon for past returns (whereas, previously, the default was one month). After this regulatory intervention was implemented, fund flows were less sensitive to past returns, investors reduced their trading volume, and they invested more in riskier funds. As the regulation applied to a broad range of information outlets, past return information on shorter horizons was, however, virtually no longer available to investors. Our experimental manipulation differs, in that investors can access the shorter-term return information horizons as well.

The second stream of literature that we build on analyzes how investor belief updating impacts trading decisions. In general, investors have a tendency to trade frequently, and because of that earn lower returns (Barber and Odean, 2000). Hoffmann et al. (2013) and Hoffmann and Post (2016) show that frequent trading can be traced back to investors' belief updating. These authors find that investors change their assessment of expected returns and risk frequently and by large amounts. Moreover, they find that larger updates in beliefs induce more trading, resulting in lower returns. Thus, for a typical individual investor, frequent and large updating of beliefs does not seem to be consistent with a normatively rational strategy. Investors update beliefs by using simple heuristics. In particular, beliefs are formed and updated by extrapolating past returns (Dominitz and Manski, 2011; Greenwood and Shleifer, 2014). Experiencing positive returns makes investors more optimistic about future returns (and vice versa) and larger return experiences are associated with larger belief updates.

In our paper, we reconcile the literature on framing and defaults regarding past return information horizons with the literature on belief updating induced trading. That is, we implement an intervention that is aligned to investors' tendency to update beliefs by extrapolating past returns and at the same time is feasible to implement. Prior studies have restricted subjects' access to return information. Doing so is an intervention that may often not be possible to mandate. A milder and easier to implement intervention is setting a default for the past return information shown, but not restricting access to different information. However, it is unclear whether previous results generalize to settings where subjects can easily opt out of a default. In consequence, we investigate how different default information horizons affect belief updating

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