



Anchoring in social context

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ABSTRACT

The anchoring-and-adjustment heuristic has been studied in numerous experimental settings and is increasingly drawn upon to explain systematically biased decisions in economic areas as diverse as auctions, real estate pricing, sports betting and forecasting. In these cases, anchors result from publicly observable and aggregated decisions of other market participants. However, experimental studies have neglected this social dimension by focusing on neutral, experimenter-provided anchors in purely individualistic settings. We present a novel experimental design with a socially derived anchor, monetary incentives for unbiased decisions and feedback on performance to more accurately implement market conditions. Despite these factors, we find robust effects for the socially derived anchor, an increased bias for higher cognitive load, and only weak learning effects. A comparison to a neutral anchor shows that the social context increases biased behavior. Further, we find that this increase is not driven by differences in perceived relevance of anchor values. Our results support the assumption that anchoring remains a valid explanation for systematically biased decisions within market contexts.

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1. Introduction

The anchoring heuristic is one of the most thoroughly investigated behavioral biases. Following [Tversky and Kahnemann's \(1974\)](#) seminal paper, a considerable body of experimental literature has evolved that assumes its “*robust and pervasive influence*” ([Furnham and Boo 2011](#), p. 39). However, while anchoring has been studied comprehensively for autonomous, individualistic decisions, its social dimension has been neglected to date ([Furnham and Boo, 2011](#)). This shortcoming connects to recent doubts on the universal prevalence of behavioral biases under economic conditions; an argument that has been put forth by [List and Millimet \(2008\)](#), [Levitt and List \(2007\)](#) and [Loomes, Starmer and Sugden \(2003\)](#) who argue that monetary incentives along with feedback can reduce behavioral anomalies through learning effects. Presenting experimental evidence on anchoring effects for willingness-to-pay/-accept, recent studies point to a lack of robustness under economic conditions ([Maniadis, Tufano and List, 2014](#); [Fudenberg, Levine and Maniadis, 2012](#); [Alevy, Landry and List, 2011](#) for a field experiment; [Tufano, 2010](#); [Simonson and Drolet, 2004](#)). As economic transactions take place in social settings that foster learning through monetary incentives and the observation of other market participants in repeated tasks, doubts on the unconditional robustness of the anchoring bias seem reasonable.

We thus argue that experimental studies of socially derived anchors are necessary to more accurately investigate actual anchoring situations in market contexts. For an example of such situations, consider forecasters who anchor their predictions on the publicly available consensus values ([Fujiwara et al., 2013](#); [Campbell and Sharpe, 2009](#)). All individual forecasts that constitute the respective consensus values are publicly observable, as is the most recent consensus forecast. Accordingly, the anchor values are constituted through the combination of prior decisions, while there are strong monetary incentives for unbiased predictions. We assume that this derivation of real-world anchors is applicable to a wide range of economic situations prone to anchoring effects. Anchors with an observable, social formation thus promise additional external validity in comparison to the classical experimenter-provided anchors.

Consequently, we aim at establishing for the first time the behavioral impact of a social context on anchoring effects. The implementation of a socially derived anchor setting along with monetary incentives, feedback and potential learning effects might foster a bias-reduction, as these are the core elements of the market serving as a “*catalyst for rationality and filter for irrationality*” ([List and Millimet, 2008](#), p. 1). However, anchors resulting from other subjects' decisions might be perceived and processed differently when compared to experimenter-provided ones. Recent studies suggest that an anchor perceived as more relevant may lead to stronger anchoring effects ([Gloeckner and Englich, 2014](#)). This in turn implies that the social dimension might ultimately increase individual adherence to anchors if such anchors are perceived as more relevant.

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Our study clarifies these contradictory views and thus serves as more closely determining whether market conditions have a debiasing effect or aggravate anchoring. Besides adding evidence to the discussion on market forces and biases, we aim at commenting on the growing body of empirical studies in various economic settings that assume anchoring to be the driving force behind systematic distortions in the behavior observed. Recent examples of this trend include art and online auctions (Beggs and Graddy, 2009; Dodonova and Khoroshilov, 2004), real estate purchases (Bucchianeri and Minson, 2013) and sports betting (Johnson, Schnytzer and Liu, 2009; McAlvanah and Moul, 2013). Another large strand of literature draws on prediction behavior with time series data drawn from financial forecasts (Fujiwara et al., 2013), earnings forecasts (Cen, Hilary and Wei, 2013), macroeconomic forecasts (Bofinger and Schmidt, 2003; Campbell and Sharpe, 2009) and sales forecasting (Lawrence and O'Connor, 2000). While anchoring does seem like a plausible explanation for the empirical patterns in the respective studies, their experimental base remains inadequate by featuring the classical non-incentivized decisions, experimenter-given anchors, neither feedback on performance, nor information on other participant's decisions, all of which run contrary to market conditions. For anchoring to hold as an interpretation regarding actual markets, laboratory validations are required that encompass the central features of the decision situations potentially prone to biased decisions.

To further the discussions in the two strands of literature presented, we implement a simple estimation task that allows us to measure the effect of a socially derived anchor while providing economic conditions, i.e. information on the other players' decisions, feedback for learning effects and strong monetary incentives. Unlike the classical anchoring studies, we implement a relatively simple rational strategy of taking unbiased decisions. Accordingly, if socially derived anchor values have an impact even when avoiding them is rather simple and profitable, we suggest that their actual influence is bound to increase in a more complex decision situation. To account for this notion, we run a second experiment with increased cognitive load. In both experiments, the anchor values result from the aggregated decisions of all participants and contain no additional task relevant information. We thus introduce a socially derived anchor, whereby the decisions of all other subjects and the resulting average value are displayed. The average value subsequently serves as the anchor for the following round. To qualify the relative importance of this anchor, we compare its impact to results from Meub, Proeger and Bizer (2013) who feature an identical experimental setting, but implement a classical neutrally derived anchor. Finally, we run an additional experiment to elicit subjects' perceived relevance of the anchor values as a potential explanation for differences in the strength of the bias in socially and neutrally derived anchors.

In the following, we review the relevant literature to deduct our behavioral hypotheses.

Traditional anchoring studies feature an exogenously given anchor and the additional question of whether participants expect the respective value to be higher or lower than the anchor in numerous variations (see Furnham and Boo, 2011 for a comprehensive review). Furthermore, a basic anchoring effect is shown by Wilson et al. (1996), who find anchoring even without the higher/lower question. Another result (e.g. by Epley and Gilovich, 2005) is that self-generated anchors also lead to robust anchoring effects. Critcher and Gilovich (2008) show how even incidental numbers in the subject's environment bias estimations. However, closest to the investigation of anchoring in social contexts is the experiment in Phillips and Menkhaus (2010). They show that an endogenous anchor, constituted by the average results of the respective last round, leads to anchoring effects on the willingness to pay and accept in an auction. They explain the ensuing deterioration of prices in their auction as resulting from the norm of starting a negotiation at the anchor, in this case the average price.

Conversely, a rational strategy with monetary incentives for unbiased decisions may reduce anchoring. Although Chapman and Johnson (2002, p. 125) state that "*incentives reduce anchoring very little if at all*" (referring to the studies of Tversky and Kahnemann, 1974; Wilson et al., 1996; Epley and Gilovich, 2005), Wright and Anderson (1989) as well as Simmons, LeBoeuf and Nelson (2010) show that incentives reduce anchoring if subjects have task familiarity or are provided clues in terms of the direction of adjustment for their initial predictions. Meub, Proeger and Bizer (2013) find that monetary incentives reduce anchoring to one-third of its strength when compared to a non-incentivized setting. We argue that the ambiguous outcomes regarding the impact of incentives reflect the availability of a simple rational strategy in the respective experiments. Once given the realistic opportunity and incentives, subjects tend to act more rationally, which is one of the standard observations in economic experiments (see e.g. Smith and Walker, 1993; Rydval and Ortmann, 2004).

While learning effects in repeated tasks have not yet been investigated concerning their effect on anchoring, a number of studies have pointed out experts' susceptibility to anchoring, e.g. for car mechanics (Mussweiler, Strack and Pfeiffer, 2000), real estate agents (Northcraft and Neale, 1987) and legal experts (Englich and Mussweiler, 2001; Englich, Mussweiler and Strack, 2005, 2006). Accordingly, Furnham and Boo (2011) summarize that expertise fails to prevent anchoring. However, task specific knowledge has been shown to reduce anchoring by Wilson et al. (1996), as well as by Wright and Anderson (1989). The divergent results on task familiarity point to different processes that elicit anchoring effects (see Crusius, van Horen and Mussweiler, 2012). Thus, expert statements may be biased as anchor-consistent knowledge is activated in a cognitively effortful process, whereas in more simple tasks, anchors are used intuitively as a cue to the right answer (Wegener et al., 2001, 2010). Given that the decision situations investigated in empirical anchoring studies can be expected to feature non-intuitive settings, respective experimental studies need to implement cognitively effortful tasks to uphold external validity. Connected to this is the effect of cognitive load on subject's decision quality. Blankenship et al. (2008) show that a mental overload through time pressure and task complexity increases anchoring.

Previous research on effects of the perceived anchor relevance has yielded inconclusive results. Chapman and Johnson (1999) use explicit subject ratings to investigate the relation of perceived relevance and strength of the bias, finding mixed evidence. Avoiding the direct elicitation of subject ratings of perceived relevance, Englich and Mussweiler (2001), as well as Englich, Mussweiler and Strack (2006) compare relevant and irrelevant anchors in legal judgment tasks and in a number of previous anchoring studies, yet also present inconclusive evidence. Gloeckner and Englich (2014) similarly manipulate the relevance of anchor values and show that relevant anchors have a stronger impact than similar anchors of low relevance. However, this finding only holds for high anchors, leading them to the conclusion that the evidence on the influence of anchor relevance remains ambiguous.

We contribute to the literature reviewed by furthering the knowledge on the effects of anchoring in a social context. This enables us to comment both on the robustness of anchoring under market conditions and on the interpretation of empirical studies that draw on anchoring.

Our results show that a socially derived anchor does in fact trigger the anchoring bias, whereby higher cognitive load increases a subject's reliance on the anchor values. Despite the comprehensive information on the derivation of anchor values and its factual uselessness for individual estimations, there are only weak learning effects. When compared to a neutral anchor in an otherwise identical setting, the socially derived anchor has a stronger biasing effect. Accordingly, we find that the introduction of a social dimension increases anchoring. This effect cannot, however, be explained with a higher perceived relevance of the socially derived anchor, which in our study does not

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