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journal homepage: [www.elsevier.com/locate/jfec](http://www.elsevier.com/locate/jfec)Social interaction at work<sup>☆</sup>Hans K. Hvide<sup>a,b,c,1</sup>, Per Östberg<sup>d,e,\*</sup><sup>a</sup> University of Bergen, Department of Economics, Fosswinckels Gate 14, 5007 Bergen, Norway<sup>b</sup> CEPR, United Kingdom<sup>c</sup> University of Aberdeen, United Kingdom<sup>d</sup> University of Zurich, Plattenstrasse 14, 8032 Zurich, Switzerland<sup>e</sup> Swiss Finance Institute, Switzerland

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## ABSTRACT

Stock market investment decisions of individuals are positively correlated with those of coworkers. Sorting of unobservably similar individuals to the same workplaces is unlikely to explain this pattern, as evidenced by the investment behavior of individuals who move between plants. Purchases made under stronger coworker purchase activity are not associated with higher returns. Moreover, social interaction appears to drive the purchase of within-industry stocks. Overall, we find a strong influence of coworkers on investment choices, but not an influence that improves the quality of investment decisions.

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## 1. Introduction

Although the literature has long acknowledged the existence of social interaction effects among individual investors (e.g., Shiller, 1984; Shiller and Pound, 1989), most work explaining individual investment decisions focuses

on other factors such as risk and time preferences, wealth, or overconfidence (Campbell, 2006). One exception is Hong, Kubik, and Stein (2004), who hypothesize that social interaction leads to greater stock market participation and find that those who interact with neighbors or attend church are more likely to invest in stocks. Using extremely

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detailed data from Norway, we show that social interactions with colleagues at work appear to strongly affect individual investors' trading intensity and their stock selection. We also analyze whether coworker influence appears to improve the quality of investment decisions.

The social psychology literature emphasizes the strength of face-to-face communication between individuals who frequently interact in producing and altering beliefs.<sup>2</sup> Conversations at the workplace occasionally center on the stock market and, we conjecture, can influence investment behavior. For example, investors pick among a dizzying number of individual stocks when picking stocks, and they can obtain information from discussions with their colleagues or make inferences based on hearing about their choices. Conversations with colleagues about stocks can also raise awareness of, or trust in, equity markets and make trading more likely (Guiso and Jappelli, 2005; Guiso, Sapienza, and Zingales, 2008).<sup>3</sup>

To examine whether individual investors are affected by their coworkers, we combine two data sources from Norway. The matched employer–employee data, which cover the whole population of workers over a ten year period from 1995 to 2005, identify coworkers at the plant level. We combine these data with a complete record of common stock transactions made by individual investors at the Oslo Stock Exchange (OSE) over the same period. We focus on individuals who make at least one purchase of common stocks over the sample period.<sup>4</sup> We omit individual-years in which the individual is employed by a listed company or a subsidiary of a listed company to avoid capturing mechanic effects of company stock plans.

The results suggest strong social interaction effects. For example, a 1 standard deviation increase in the fraction of coworkers who make a stock purchase in a given month is associated with a 41% increase in the probability of making a purchase. Moreover, conditional on making a purchase, a 1 standard deviation increase in coworkers' purchase of a particular stock is associated with a striking 194% increase in the fraction of that month's purchases invested in that stock by the individual.

Stock purchases could be correlated inside plants for other reasons than social interaction (e.g., Manski, 1993). The literature highlights correlated unobservables, endogenous group membership, and reflection as obstacles for estimation of causal effects.<sup>5</sup> We control for fixed effects to

address correlated unobservables. For example, plant fixed effects control for unobservables such as company culture, composition of the workforce, and industry affiliation.<sup>6</sup> Other fixed effects control for geographical differences in investment behavior (a preference for local stocks, for example) and for individuals following simple decision rules such as picking stocks based on their recent performance record. On top of this, we control for socio-demographic variables at the individual-year level.

Workers with similar unobserved characteristics, such as risk preferences, access to information, or investment style, could self-select to plants in a pattern not captured by the controls. To address such endogenous group membership, we analyze the investment behavior of individuals who move between plants. The idea is that future coworkers are unlikely to influence via social interaction but can still exhibit correlated behavior due to similarity along unobservables. Thus, if unobserved similarities drive the results, we would expect the correlation with future coworkers to be of comparable magnitude to the correlation with current coworkers.

In Fig. 1, time is on the horizontal axis and the correlation in purchasing behavior is on the vertical axis. Month 0 is the starting month in the new job and end month in the old job. The blue dashed line illustrates how the correlation in purchasing behavior with individuals who become coworkers after the move evolves over time. Up to three months before the move, the correlation in purchasing activity with these future peers is close to zero. Thus, endogenous group membership seems to be of minor concern. The red solid line illustrates how the correlation with individuals who are coworkers prior to the move evolves over time. Prior to Month 0, the correlation is significantly higher than the correlation with future coworkers and then fades out after the move.

Our results could be driven by events at the plant-month level, such as visits from equity brokers. If so, we would expect a similar correlation in trading behavior between pairs of individuals at small and large plants. If social interaction drives our results, in contrast, we would expect stronger correlation between individuals at small plants than at large plants, simply because two individuals are more likely to engage at a small plant. For each month, we rank all plants into ten size deciles, based on number of employees. We then sample two individuals from each plant-month and estimate the within-plant correlation in purchasing activity across size deciles. In support of the

<sup>2</sup> In a classic study by Asch (1955), individuals alone and in groups compare the lengths of line segments. The lengths are sufficiently different that when responding alone very few wrong answers are given. Yet when placed in a group in which all other members are instructed to give the same wrong answers, individuals frequently give wrong answers.

<sup>3</sup> For suggestive evidence, Shiller (1984) cites surveys from the 1950s and 1960s in which the answers to the questions “Do you own any stocks?” and “Do you have any friends or colleagues who own any stocks?” are practically identical. In a case study with a randomized trial design, Duflo and Saez (2003) show workplace social influence in the decision to enroll in a tax-deferred account retirement plan.

<sup>4</sup> In a draft version of the paper, we also studied stock market participation and obtained similar results.

<sup>5</sup> These concepts can be illustrated with an example. Suppose that purchases are correlated across individuals in the same plant. The correlation could be due to receiving the same news (correlated

(footnote continued)

unobservables), because they have similar investment style (endogenous group membership) or because of social interaction. Under social interaction, the group affects the individual and the individual affects the group, in which case it is not straightforward to back out the structural parameters of social influence from the estimated correlations. This is the reflection problem of Manski (1993), referred to as the simultaneity problem in Moffitt (2001).

<sup>6</sup> These are contextual and ecological effects in the terminology of Manski (1993), which should be contrasted with the endogenous social effects. Lee (2007) and Lee, Liu, and Lin (2010) analyze how fixed effects alleviate the problem of correlated unobservables in the identification of endogenous social effects. Blume, Brock, Durlauf, and Ioannides (2010) survey the literature.

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