Three Essays in Behavioral and Corporate Finance

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Abstract

This dissertation comprises three essays in behavioral and corporate finance. The first essay examines employees’ open-market purchases of own-company call options. Using data from Finland, I show that employees play an important role in the retail option market and their purchases contain price-relevant information. The second essay focuses on employee stock option (ESO) grantees. Specifically, I analyze how their outside wealth influences their decisions. I find that employees with diversified stock portfolios tend to hold on to their options longer. My results underscore the importance of external wealth in shaping the decisions of ESO grantees. Finally, the third essay examines the effect of local COVID-19 pandemic experiences on sell-side analysts’ earnings forecasts. I find that analysts in areas severely affected by the pandemic tend to conform more closely to consensus forecasts. The results point to a shift in risk attitudes driven by the crisis conditions, rather than an increase in forecast pessimism. Collectively, these essays provide novel insights on the decision-making processes of individuals in the financial sector, emphasizing the role of personal and external factors in shaping financial behaviors and market outcomes.

Keywords Behavioral Finance, Corporate Finance

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Introduction

This doctoral dissertation consists of three essays in behavioral and corporate finance, with a focus on individual decision making. In the following pages, I first provide a short overview of my three papers, and then discuss some overarching themes that connect the components of my dissertation.

Insider Trading With Options

Insider trading has long been a subject of intense scrutiny and debate. Recent research emphasizes the prevalence of informed trading in the financial markets, highlighting how it often remains undetected (e.g., Augustin and Subrahmanyam, 2020; Hvide and Nielsen, 2023). In this essay, I show that employees’ open-market purchases of own-company call options are associated with positive short-term stock returns.

Motivation

This study offers a fresh perspective, differing from traditional research on informed option trading, which predominantly focuses on institutional investors and large trades scrutinized by regulators. To do so, I take advantage of granular trading data from Finland as well as distinctive characteristics of its institutional setting, which ensure the availability of listed options written on many individual stocks. Insider trading regulations in Finland are similar to those in most other developed countries, including the United States. There are two main aspects of these laws: investors are not allowed to exploit non-public material information, and primary insiders (such as C-level executives and board members) have to publicly disclose all their own-company trades. My data allow me to identify 2,659 own-company call option purchases that occur on the open market
and are mainly carried out by rank-and-file employees, who are not subject to mandatory disclosure requirements. I also identify other trades that are likely to be the result of an information advantage, including open market purchases of derivatives by employees in customer and supplier firms, as well as call option buys that are likely to be the result of tipping (i.e., the sharing of non-public material information to other investors).

**Main Results**

This paper has four main sets of results. First, I document that own-company trading is prevalent in the option market in Finland. Employees trading in their personal accounts represent up to 10% of retail demand for options. Accounting for tipping, identified through repeated correlated trading, raises this estimate to 14%. These figures are large, and in particular much larger than what one would expect based on the public disclosure of own-company trades by primary insiders. Second, I show that open-market purchases of delta-positive instruments by employees predict short-term stock returns. The effect is economically large: around 50 basis points in excess of the market over one week. Additional evidence overwhelmingly supports an information advantage story. Own-company call option buys are extremely informative right before earnings news, being associated with average weekly stock returns of around 200 basis points. The informativeness propagates along the supply chain and disappears after job separation. Moreover, four in five employees who buy own-company options do not purchase options written on other firms. I also find evidence of a substitution effect: employees are less likely to buy own-company shares when own-company options are available. Third, I find that most of the informativeness is driven by rank-and-file employees who are not subject to mandatory disclosure requirements. This has
potentially important ramifications for policymakers, especially in light of recent evidence from the market microstructure literature suggesting a positive correlation between informed and uninformed volumes (Collin-Dufresne and Fos, 2015), coupled with recent increases in retail option trading (Bryzgalova, Pavlova, and Sikorskaya, 2023). Fourth, my data also allow me to examine why informed agents decide to act based on their private information. I identify several aspects associated with this decision. For example, I show that employees who experience recent losses in the value of their stock holdings are more likely to buy own-company options in the following month. This behavior can be explained by increased risk-taking in the loss domain due to loss aversion. While we have evidence of this phenomenon in other contexts, such as tax evasion (e.g., Rees-Jones, 2018), my setting allows me to document a link between prospect theory and insider trading.

**Contribution**

This paper bridges two emerging literatures. On the one hand, informed trading is likely to occur frequently in the option market and often goes unnoticed (see, for example, Augustin, Brenner, and Subrahmanym, 2019). On the other hand, employees other than primary insiders are often privy to information that can affect stock prices (Green, Huang, Wen, and Zhou, 2019; Huddart and Lang, 2003). My ability to observe derivative trades by rank-and-file employees allows me to contribute to a large literature interested in whether option markets contain price-relevant information (for a review of the literature on informed trading in the option markets, see Augustin and Subrahmanym, 2020). Specifically, using the words of Chakravarty, Gulen, and Mayhew (2004): “Understanding where informed traders trade [...] has important practical implications. The question of whether option order flow is
informative is directly relevant to option market makers concerned with managing adverse selection risk. It is also directly relevant to market makers in the underlying stock market who receive orders from option market makers attempting to hedge—if price discovery occurs in the option market, then hedging demand by option market makers may represent an indirect type of informed trading. If a significant amount of informed trading occurs in the option market, this also has implications for traders watching for signals about future price movements, and for those engaged in surveillance for illegal insider trading.” More generally, my paper is related to a small but well-published literature that exploits unique characteristics of data from Nordic countries (e.g., Berkman, Koch, and Westerholm, 2014; J. Kallunki, Kallunki, Nilsson, and Puhakka, 2018; J. P. Kallunki, Nilsson, and Hellström, 2009). While previous work focuses on informed trading in stocks, I examine how informed individuals trade own-company derivatives.

Diversification at Work: Evidence from Employee Stock Options

Diversification motives have long been considered an important determinant of the decisions of employee stock option (ESO) grantees. However, data limitations have generally prevented researchers from being able to identify how outside investments shape employees’ decisions. In my second essay, I show that employees who have greater investments in other listed companies tend to hold onto their employee stock options for longer.

Motivation

How do employees who receive equity-linked compensation value their pay? To answer this question, one needs to understand what
drives the decisions of these employees. Starting from the seminal work of Lambert, Larcker, and Verrecchia (1991), a number of theoretical models suggest that portfolio considerations play a central role in shaping the behavior of employee stock option grantees. The key intuition of these models is that risk-averse grantees who are less wealthy and more exposed to employer-specific risk would greatly benefit from diversifying early by disposing of their option position. On the contrary, grantees who are wealthier and hold more diversified portfolios would benefit less. However, empirical evidence of these dynamics is scarce, as data on the outside wealth of employee stock option grantees is difficult to obtain. Previous work either relies solely on own-company wealth or uses rather coarse measures of outside wealth. In particular, the extant literature can be divided into two broad camps: studies that find evidence that is consistent with the existence of diversification motives (e.g., Carpenter, Stanton, and Wallace, 2019; Hemmer, Matsunaga, and Shevlin, 1996) and those that do not (e.g., Heron and Lie, 2017; Klein and Maug, 2020).

**Main Results**

Using granular data covering the daily shareholdings and changes in these holdings for tens of thousands of ESO grantees in Finland, I find that employees who are less exposed to employer-specific risk due to their investments in other listed companies tend to hold onto their options for longer. Importantly, the relationship between outside stock wealth and ESO holding period is not driven by grantees who do not own any outside stock and holds for both top-ranked and lower-ranked employees. In a battery of additional tests, I take advantage of the unique features of the institutional setting to further strengthen my results. For example, I show that my estimates represent a credible lower bound to the effect of outside
investments on the exercise of employee stock options in other countries by demonstrating that the effect of outside stock wealth is stronger when the options are less liquid and employer-specific risk is harder to diversify. Overall, the results of this essay support the long-standing hypothesis that portfolio considerations play an important role in shaping the behavior of employee stock option grantees (see, among others, Detemple and Sundaresan, 1999; Hall and Murphy, 2002; Huddart, 1994; Kulatilaka and Marcus, 1994).

Contribution

The main contribution of this paper is to the literature on employee stock options. Unique data from Finland allow me to examine how portfolio considerations shape the behavior of executives and employees who receive ESOs as part of their compensation package. To the best of my knowledge, this is the first paper that studies this research question by observing an important and time-varying component of outside wealth that is measured at the individual level.

Panic herding: Analysts’ COVID-19 experiences and the interpretation of earnings news

My third essay shows that sell-side analysts who have more intense local and recent experiences of the COVID-19 pandemic herd more closely with the consensus forecast.

Motivation

Analyst herding refers to the tendency of sell-side analysts to issue earnings forecasts that are aligned with the previous consensus (i.e., the forecasts are not bold). A number of papers have examined herding during crises, mainly studying the extensive margin (i.e., comparing herding in booms and busts). While evidence from the
economics literature shows that disagreement among professional forecasters sometimes increases during recessions (Patton and Timmermann, 2010), previous work on sell-side analysts can be divided into two broad camps: studies that find increases in herding during economic downturns (e.g., Huang, Krishnan, Shon, and Zhou, 2017; Palmer, Eickhoff, and Muntermann, 2018), and those that do not (e.g., Kretzmann, Maaz, and Pucker, 2015; Lin, Chen, and Chen, 2011). A related stream of literature examines how analysts are affected by their personal experiences. Local events as different as bad weather, pollution, terrorist attacks, and hurricanes affect sell-side analysts’ earnings forecasts (see Bourveau and Law, 2020; Cuculiza, Antoniou, Kumar, and Maligkris, 2020; deHaan, Madsen, and Piotroski, 2017; Dong, Fisman, Wang, and Xu, 2019). Finally, a number of recent papers examine the importance of sell-side analysts and of information events during the COVID-19 crisis. Among others, Landier and Thesmar (2020) highlight the importance of analyst forecasts during the first weeks of the COVID-19 pandemic. Ramelli and Wagner (2020) examine conference calls during the pandemic. Cahill, Ho, and Yang (2022).

Main Results

This essay examines how the intensity of sell-side analysts’ local COVID-19 experiences shape their earnings forecasts. Specifically, I take advantage of variations in the intensity and timing of local COVID-19 outbreaks to study how sell-side analysts’ exposures to the COVID-19 pandemic affect their interpretation of earnings news. My results show that an increase in the number of local victims (i.e., a more “intense” COVID-19 experience) is associated with an increase in the tendency of sell-side analysts to herd their forecasts towards the consensus forecast. As discussed above, a growing body of work shows that recent experiences can affect both investors and
sell-side analysts. In particular, negative experiences such as hurricanes and terrorist attacks lead sell-side analysts to issue more pessimistic forecasts (e.g., Bourveau and Law, 2020; Cuculiza et al., 2020). However, I find that more severe COVID-19 outbreaks are not associated with forecast pessimism in sell-side analysts. Taken together, my results are consistent with recent changes in sell-side analysts’ environment shaping their risk attitudes. This research can help investors, regulators, and policymakers understand the impact of the COVID-19 pandemic on financial markets.

Contribution

The vast majority of extant work on herding during crises focuses on the extensive margin, effectively comparing herding in booms and busts. My essay analyzes this relationship by exploiting local variations in the intensity of the COVID-19 pandemic. While it is naturally hard to identify the exact mechanism that links the COVID-19 pandemic to changes in analyst herding, this approach allows me to provide novel evidence of the effects of a crisis focusing on the intensive margin (i.e., how exposure to the same objective information varies with personal experiences).

Common themes

Despite their individual distinctiveness, it is intriguing to highlight some common themes that weave through the three essays of my dissertation. These recurring themes reflect the interconnectedness of my academic work, allowing me to identify important concepts that permeate this dissertation. Below, I discuss a few key themes that emerge across the three essays, offering insights into the broader implications and connections that these papers share.
Influence of Personal and External Factors

This theme represents a prominent thread connecting the three essays in my dissertation. The first essay highlights how personal factors such as employees’ access to non-public information and their positions within a company are associated with their trading decisions. This essay reveals that rank-and-file employees, not just high-level executives, engage in informed trading, potentially affecting the financial markets. External factors such as the regulatory framework common to most Western countries are also likely to contribute to these trading behaviors, as rank-and-file employees are generally not subject to mandatory disclosure requirements. In my second essay, the interplay of personal and external factors is further examined through the lens of employee stock options and diversification. Here, personal factors such as employees’ outside investments and their exposure to employer-specific risk shape the decision to hold onto their stock options. In turn, the broader financial market environment shapes the dynamics of outside wealth. This essay underscores how personal investments and external market conditions together guide employee behavior regarding ESOs. The third essay delves into how sell-side analysts’ personal experiences with COVID-19 impact their professional judgments. The personal factor here is the analysts’ direct experience of the pandemic, which alters their risk perceptions and decision-making processes. The widespread impact of COVID-19 on markets and society at large influences how analysts interpret and forecast financial data, demonstrating the intricate ways personal experiences intertwine with external crises to shape professional judgments in finance. Across all three essays, it is evident that both personal and external factors play crucial roles in financial decision-making processes. Whether it is insider trading, employee stock options, or analysts’ forecasts, individual experiences and
broader market conditions jointly drive the behaviors and outcomes in the financial world.

**Information Asymmetry and Risk Perception**

Each of the three essays in this dissertation addresses how uneven access to information can influence financial decisions and the risk-reward payoff. The first essay delves into information asymmetry, where employees with access to material, non-public, company-specific information use this advantage to make informed trades. This scenario vividly illustrates information asymmetry, where one party has more information than others in the market, leading to a distinct advantage in trading decisions. In the second essay, the concept of risk perception is examined in the context of employee stock options. Here, employees’ decisions to hold onto their options are influenced by their perception of risk, which is in turn shaped by their personal investment portfolios and exposure to company-specific risks. Consistent with a number of theoretical models based on diversification motives, this essay links the idea of information asymmetry to risk perception. This is particularly evident in light of previous work suggesting that employees are unconditionally more likely to be informed than a random market participant (Huddart and Lang, 2003). The third essay extends these concepts to sell-side analysts during the COVID-19 pandemic. Their risk perceptions, identified by their personal experiences with the pandemic, shape their earnings forecasts. Here the information angle could work in two ways: more affected analysts could be more informed about the pandemic, or more distracted by it. My results show that analyst herding increases, suggesting that local experiences of the COVID-19 pandemic may negatively affect market efficiency. Across these essays, the interplay of information asymmetry and risk perception is a key driver of financial behaviors and outcomes.
Whether it is the trading actions of informed employees, the exercise of employee stock options, or the forecasts of analysts during a global crisis, these factors crucially influence the dynamics of financial markets, as well as individual decision-making processes.

**The Role of Employment**

This third theme is a significant connector between the three essays in my dissertation. One’s profession and role in the workplace are important factors in each of the papers. In the first essay, the role of employment is crucial. In fact, I show how employees, based on the information they have access to within a company, can engage in trading that exploits their insider knowledge. This essay emphasizes that an employee’s role can provide access to price-relevant information, which in turn affects their actions in the financial market. The second essay delves into the relationship between employees and their decisions regarding employee stock options. Here, the role of employment is seen through the lens of how employees perceive and manage financial risks related to their company. My results show that employees make decisions based on their involvement and stake in the company. Their choices about holding onto their stock options reflect their understanding of the company’s prospects and their personal investment strategies, showing a direct link between employment status and financial behaviors. Finally, the third essay examines how the professional role of financial analysts is affected by the COVID-19 pandemic. The analysts’ roles require them to interpret financial information for the market, but their personal experiences of the pandemic affect their risk assessment and forecasting. This demonstrates how the professional duties and personal experiences of employees in specific roles can blend, influencing their performance and potentially even their career outcomes. Together, these essays underscore the pivotal
role of employment. Whether it’s through access to insider information, the exercise of employee stock options, or the professional responsibilities of forecasting future earnings, employment plays a crucial part in shaping financial decisions and behaviors. These essays collectively highlight how employment intersects with financial opportunities, risks, and decision-making processes.

References


