

Dark Triad Personality Traits and Selective Hedging*

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Abstract We study the relationship between risk managers' dark triad personality traits (Machiavellianism, narcissism, and psychopathy) and their selective hedging activities. Using a primary survey of 412 professional risk managers, we find that managers with dark personality traits are more likely to engage in selective hedging than those without. This effect is particularly pronounced for older, male, and less experienced risk managers. The effect is also stronger in smaller firms, less centralized risk management departments, and in family-owned firms and it cannot be explained by managerial (over)confidence.

Keywords: Managers, personality traits, corporate risk management, selective hedging.

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[...] the most significant risk management failures in recent history have their roots in psychology, and [...] the practice of risk management can be improved by incorporating an explicit psychological dimension.

Shefrin (2016)

1 Introduction

“People hope and expect that appointees to high-ranking positions will use their authority wisely and for the betterment of their organizations” (Liu et al., 2020, p. 745). Based on this principle, we would expect risk managers—whose primary task is to manage the overall risk exposure of the firm—not to engage in additional risk-taking activities. In general, additional risk-taking by risk managers can lead to severe financial losses for companies and therefore serious consequences for investors, employees, and the company’s reputation. Therefore, additional risk-taking represents an important dimension of ethical misconduct by risk management (Van Scotter and Roglio, 2020; Melé et al., 2017; Jones, 1991). However, the literature provides ample evidence that risk managers heavily engage in *selective hedging*, an important dimension of managerial risk-taking, which may lead to severe losses with serious consequences. Selective hedging describes the empirical observation that managers incorporate their market views into their hedging programs.

In contrast to the traditional theoretical predictions of optimal corporate hedging policies, firms engage in speculative behavior and change the composition of their derivative portfolios on a regular basis (Adam and Fernando, 2006; Adam et al., 2017; Brown et al., 2006; Géczy et al., 2007; Haushalter, 2000; Jin and Jorion, 2006; Stulz, 1996; Tufano, 1996). As a direct consequence of this behavior, hedge ratios have significantly

higher volatility than they should, given the relevant fundamentals. In the literature, the adaption and timing of hedging transactions based on market views is called *selective hedging* (Stulz, 1996; Adam et al., 2015). Currently, “the widespread practice of managers speculating by incorporating their market views into firms’ hedging programs (“selective hedging”) remains a puzzle” (Adam et al., 2017). As selective hedging constitutes risk-taking, especially by the individuals who are supposed to control the company’s risk, the practice is ethically precarious.

In this paper, we analyze how risk managers’ personality traits can explain firms’ selective hedging behavior. We develop and test the hypothesis that dark personality traits increase managers’ propensity to engage in selective hedging activities. We hypothesize that managers with pronounced dark triad personality traits take larger selective hedging positions than managers with less pronounced dark personality traits. Our hypothesis is based on the notion that dark personality traits are associated with increased sensation-seeking and risky behaviors (Crysel et al., 2013). Engaging in selective hedging activities will satisfy the sensation-seeking need of managers with pronounced dark personality traits. Moreover, selective hedging activities are a good match for other typical behavioral patterns of people with pronounced Machiavellistic, narcissistic, or psychopathic personality traits. As noted by Bajo et al. (2019), “derivative usage offers the narcissistic manager a convenient stage for bold and decisive action that generates a continuous supply of attention”.

According to upper echelons theory, the strategy and performance of a company is a result of managers’ background characteristics and actions (Hambrick and Mason, 1984; Hambrick, 2007). The theory establishes a general link between managerial characteristics and firm outcomes. Senior managers influence firm outcomes both directly through

their immediate decisions and indirectly through their guiding example, behavior, and values (Berson et al., 2008; Reed et al., 2011; Schroeder, 2002; Schwartz et al., 2005). Hence, it is no surprise that the impact of manager-specific personality traits on financial and corporate decisions and firm outcomes has received increasing attention in recent years (see Bertrand and Schoar, 2003, amongst others). For example, CEO characteristics as important performance drivers in corporate activities have been studied in detail (Kaplan et al., 2012). Focusing on financial decisions, Gambetti and Giusberti (2012) use a survey to study the relationship between personality traits and real-life investment decision-making. They document significant connections between specific traits and risk-taking activities. In the corporate context, Graham et al. (2013) elicit psychological traits and attitudes of senior executives using psychometric tests and observe a significant difference between CEOs from the US and those from outside the US. Moreover, the authors document that CEOs are significantly more optimistic and risk tolerant than the lay population.

Importantly, not only do senior executives play an important role in organizations, but middle managers with decision-making authority also serve as important interfaces between otherwise disconnected top and operating-level managers and shape strategic decisions and firm outcomes (Balogun, 2003; Balogun and Johnson, 2004; Wooldridge et al., 2008). According to Wooldridge et al. (2008), “middle managers are central to explaining key organizational outcomes”. Based on the insight that managers exert a strong influence on corporate decisions, we study the impact of dark personality traits on firms’ selective hedging activities.

We use established theory and measures from the psychological literature to study the effects of (dark) managerial personality traits on corporate hedging. The most prominent

negative personality traits are Machiavellianism, narcissism, and psychopathy (Paulhus and Williams, 2002; Paulhus and Jones, 2015; Rauthmann and Kolar, 2012). Based on the observation that these personality traits show significant overlap (Furnham et al., 2013; Paulhus and Williams, 2002), they are together referred to as the dark triad of personality (Paulhus and Williams, 2002). While psychopathy, Machiavellianism, and narcissism affect different parts of the unethical decision-making process, the elements of the dark triad nevertheless act in concert as powerful psychological antecedents to unethical behaviors (Harrison et al., 2018). Dark triad traits predict individuals' propensity to take financial risks, investment risks, and gambling risks (Sekścińska and Rudzinska-Wojciechowska, 2020). Importantly, dark personality traits also predict various (workplace) behaviors (Neo et al., 2018). Previous research has documented the implications of dark personality traits for financial damage to the firm (see, e.g., Babiak and Hare, 2006; Boddy et al., 2015, for the case of corporate psychopathy). Dark triad personality features have been associated with a series of undesirable (firm) outcomes, such as fraudulent financial reporting (Murphy, 2012), extreme and fluctuating organizational performance (Chatterjee and Hambrick, 2007), and reduced investment performance (ten Brinke et al., 2018).

We use a survey-based approach to test our hypotheses. The survey allows us to access managers' personality traits and their hedging activities at the same time, which would not be possible using a large-scale archival analysis (see also Graham et al., 2013). We make use of the "dirty dozen scale" to elicit managers' dark triad personality traits, following along the lines proposed by Cragun et al. (2020) in their meta-analysis.¹ The dirty dozen scale is a well-researched, validated, and commonly used measure to gauge dark personality characteristics (Jonason and Webster, 2010; Webster and Jonason, 2013). As is commonly done in other studies using the scale, we obfuscate the questions within sev-

eral other uncontroversial questions to ensure that participants do not immediately realize that they are describing potentially negatively perceived personality traits (Mutschmann et al., 2020). We carefully control for other potential drivers of selective hedging, such as the manager’s age, overconfidence, and risk preferences. Additionally, we study the moderating influence of the firm’s ownership structure and managerial discretion.

Dark personality traits are prevalent among the overall population, with approximately 0.6-1.2 percent of general population samples showing signs of psychopathy (Boddy, 2017; Caponecchia et al., 2012; Coid et al., 2009; Lilienfeld et al., 2014; Neumann and Hare, 2008), for example, and even more so in the corporate environment, with an incidence of approximately 3.5 percent at senior organizational levels (Babiak et al., 2010; Boddy, 2011; Chiaburu et al., 2013). Various characteristics of a person with dark personality traits seem to be advantageous when rising to leadership positions in organizations (Babiak and Hare, 2006; Boddy, 2011; Chiaburu et al., 2013; Lubit, 2002). For example, Boddy (2006) notes that such individuals are superficially charming and skilled manipulators (see also Neo et al., 2018), which can appear to be good influence and persuasion skills, important traits of an effective leader (Babiak et al., 2010). Babiak et al. (2010) write that psychopathy is positively associated with ratings of creativity, good strategic thinking, and communication skills. Mahaffey and Marcus (2006) note that the coldheartedness and manipulateness of psychopathic employees allow them to gain other people’s confidence and facilitate their entry into leadership positions. A lack of remorse, guilt, and empathy can be interpreted as being “cool under fire” in the corporate world and thereby benefit the individual on their way to the top (Babiak et al., 2010).

We contribute to the literature in three important ways. First, we link findings from

personality psychology to the corporate risk management literature by analyzing whether dark personality traits have an influence on corporate risk management. By studying the influence of personality traits on corporate hedging, we extend the existing knowledge on motivations and drivers of selective hedging. Second, we analyze whether the organizational context can function as a moderator of the influence of personality traits on corporate hedging activities. Important practical implications arise from understanding under which conditions the influence of personality traits on selective hedging is most pronounced. Third, we contribute to personality theory in the management context. While a large part of the literature on managerial personality traits focuses on narcissism (Chatterjee and Hambrick, 2007; Ham et al., 2018; Petrenko et al., 2016; Raskin and Shaw, 1988) to exploit several readily available proxies for this personality trait (e.g., signature size, the use of first-person pronouns, or the size of the manager's picture in annual reports), we study the influence of dark personality traits in general. By doing so, we also address concerns regarding the validity of these proxies for narcissism (Carey et al., 2015; Koch and Biemann, 2014).

The rest of the paper is organized as follows. Section 2 discusses the related literature and develops our hypotheses. Section 3 describes the survey instrument used in this study and explains the design of the questions and delivery mechanism. Section 4 presents our main analysis. The final section evaluates and discusses our findings, highlights implications for practice, and concludes the paper.

2 Related literature and hypotheses

This section discusses the related literature on corporate hedging and dark personality traits in the corporate context. We begin with the literature on corporate hedging and selective hedging (section 2.1) before we move on to the literature on dark personality traits (section 2.2). We then discuss the literature on dark triad personality traits in the corporate context in section 2.3. Finally, we present our hypotheses in section 2.4.

2.1 Corporate hedging

Traditional theories of corporate risk management provide numerous theoretical arguments in support of the notion that passively matching one risk exposure with an opposing risk creates value for shareholders (see, e.g., Geyer-Klingenberg et al., 2020, for a recent meta-analysis). Stulz (1984) pioneered this literature by presenting a model in which value-maximizing firms pursue active hedging policies. In particular, derivatives allow firms to stabilize their cash flows by eliminating specific sources of volatility (Moore et al., 2000). Importantly, this theory does not suggest that companies hedge their entire risk exposure, i.e., create a hedge ratio of 100%. Even without taking a view, companies may decide to hedge, for example, 50% to protect themselves against the possibility of financial distress, and still be in line with traditional academic theory (Stulz, 1996). In a similar fashion, a passive risk management strategy that is designed to protect the firm against costly lower-tail outcomes is in line with theoretical recommendations in a corporate value-adding perspective (Aabo, 2015; Stulz, 1996).

Hedging affects firm value by reducing the probability of financial distress and expected bankruptcy costs, underinvestment risk, expected tax liabilities, agency costs,

and information asymmetries (Bolton et al., 2011; Campello et al., 2011; Carter et al., 2006; Chen and King, 2014; Froot et al., 1993; Géczy et al., 1997; Gilje and Taillard, 2017; Graham and Rogers, 2002; MacKay and Moeller, 2007). For example, foreign currency hedgers realize a firm value hedging premium of 1.8% (Geyer-Klingeberg et al., 2020). Carter et al. (2006) show for the airline industry that the valuation premium increases in the proportion of future fuel requirements hedged. As demonstrated by Biguri et al. (2018), firms that have access to newly created hedging opportunities also experience up to a 40% drop in the variance of their stock returns, which may be explained by an increase in profit margins, investment, better access to credit lines, and a drop in cash holdings.

However, this risk avoidance notion of hedging is deficient in regard to explaining hedging behavior in practice (Adam et al., 2015; Graham and Rogers, 2002; Haushalter, 2000). Actual usage of derivatives is quite heterogeneous (Pennings and Garcia, 2004). Survey studies of both corporate exchange risk management and the corporate use of derivatives in general have shown considerable variation in managerial practice (Glaum, 2002). While most companies engage in selective hedging (Adam and Fernando, 2006; Brown et al., 2006), some firms tend to engage in outright speculation, using derivatives to “deliberately creat[e] risk exposures in addition to those arising from their normal business operations” (Glaum, 2002).

Several recent studies try to explain the heterogeneity in the corporate use of derivatives. For example, the ownership structure of a firm may explain some of this heterogeneity (Pennings and Garcia, 2004). Empirical research indicates that selective hedging may be related to managerial power (Jankensgård, 2019); in particular, firms with high inside ownership have excessive variability in their derivative portfolios (Jankensgård,

2019). Adam et al. (2017) show that selective hedging is more prevalent among financially constrained firms, which suggests that this practice is driven by asset substitution motives. The authors also find weak relationships between selective hedging and some corporate governance measures and no evidence of a link between selective hedging and managerial compensation (see also Croci et al., 2017).

A theoretical attempt to explain selective hedging that is in line with a shareholder value-adding perspective comes from Wojakowski (2012), who justifies selective hedging as a result of convex cash flow structures. Another starting point to explain the differences in the corporate use of derivatives takes a closer look at managers themselves. Pennings and Garcia (2004) highlight that factors such as risk exposure, risk perception, and individual risk preference explain variation in derivatives usage, while Croci et al. (2017) report that firms' hedging practices increase with the CEO's age, and near-retirement CEOs in particular prefer linear hedging instruments. In line with this, Beber and Fabbri (2012) find that younger, MBA-trained, and less experienced managers exhibit higher variability in notional amounts of hedging dimensions. Several surveys report that a majority of corporate financial managers appear to believe that they are able to "beat the market" (Glaum, 2002). Fabling and Grimes (2015) find further evidence of exporters' attempts to time the market and show that firms alter their hedge ratios when the currency has recently trended in one direction, even though Adam et al. (2017) find no evidence that selective hedging is more prevalent among firms that are believed to possess an informational advantage. Adam et al. (2015) propose managerial behavioral biases as an explanation for selective hedging. The authors study managerial reactions to their (speculative) gains and losses from market timing when they use derivatives and propose a connection between managerial overconfidence and selective hedging activities. The

authors document that firms hedge more selectively following past gains and attribute this behavior to increased confidence levels. In addition to overconfidence, managerial loss aversion coupled with mental accounting may also explain selective hedging (Adam et al., 2013). Most closely related to our study, Bajo et al. (2019) investigate the relationship between narcissism and selective hedging and find that narcissistic managers engage more in selective hedging activities.

At the end of the day, many observations and research findings around the practice of selective hedging remain puzzling (Adam et al., 2017). This is particularly true, given that the cash flow gains from selective hedging appear to be small at best (Adam and Fernando, 2006). We try to help solve this puzzle and investigate to what extent (dark) personality traits contribute to selective hedging.

The next section 2.2 discusses the literature on dark personality traits and paints a picture of a typical person with such dark personality traits. In section 2.3, we discuss the dark triad personality traits in the corporate context.

2.2 Dark triad personality traits

Personality traits make up who an individual is as a person, defining one's personal values and preferences (Parks-Leduc et al., 2015). The dark triad includes the most prominent negative personality traits: Machiavellianism, narcissism, and psychopathy (Paulhus and Williams, 2002; Paulhus and Jones, 2015; Rauthmann and Kolar, 2012). In the following, we will review the literature on the dark triad of personality traits and its components to lay the foundation for our hypothesis.

Individuals who score high on the Machiavellianism scale are, on average, more self-interested and opportunistic than those who do not (Gunnthorsdottir et al., 2002). They

exhibit less guilt (Murphy, 2012) and have been reported to be more likely to cheat, manipulate others for their own gain, and believe that manipulation is an important key to success (Cooper and Peterson, 1980; Paulhus and Jones, 2015). Additionally, Machiavellianism is often accompanied by a lack of empathy and a focus on pursuing one's own goals at the expense of others (LeBreton et al., 2018). Individuals with pronounced Machiavellianism have a view of morality that offers a greater acceptance of behaviors that would normally be described as immoral or unethical (LeBreton et al., 2018).

The best-known feature of individuals with narcissistic traits is their continuous need for attention and admiration from others as well as the continuous reinforcement of their ego (Buss and Chiodo, 1991; Miller et al., 2009; Vazire and Funder, 2006). People with narcissistic traits are individuals for whom enhancing the positivity of the self is extremely important. As a result, their behavior is directed towards gaining status and esteem (Campbell et al., 2004). Highly narcissistic individuals feel a need to undertake large-stakes initiatives to reinforce their ego (Chatterjee and Hambrick, 2007). Gabriel et al. (1994) argue that people with a high level of narcissism have a need to feel superior to others. According to the authors, individuals with narcissistic traits are even characterized by thinking that they are more intelligent than they actually are. In addition, individuals with narcissistic traits display high levels of impulsivity (Vazire and Funder, 2006; Miller et al., 2009), which affects their decision-making style (Campbell et al., 2011). Similar to individuals with pronounced Machiavellianism, narcissists are associated with cheating and unethical behavior (Buss and Shackelford, 1997; Menon and Sharland, 2011). Individuals with narcissistic traits are also more likely to show a propensity for engaging in exploitative acts or behaviors and at the same time lack empathy with a tendency towards callousness (LeBreton et al., 2018). Finally, Vogel (2006) argues

that the typical narcissist is unfazed by setbacks and feels neither regret nor remorse, as they are always capable of finding someone else to blame.

Individuals with psychopathic traits exhibit a significant lack of consciousness and feelings for others. They experience low levels of empathy and remorse (Babiak and Hare, 2006; Lilienfeld and Andrews, 1996) and do as they please without any feeling of guilt (Hare, 1999). Research characterizes psychopathic individuals as reckless, selfish, and aggressive (Patrick, 2007). Williams et al. (2007) note that psychopaths pursue an irresponsible lifestyle and counterproductive behavior.

All three personality traits of the dark triad are associated with an increase in excitement seeking and risk-taking (Crysel et al., 2013; Jones, 2014). For example, Sekścińska and Rudzinska-Wojciechowska (2020) find that narcissism and psychopathy in particular predict individuals' general propensity for financial risk-taking and their propensity to take investment risks and gambling risks. As noted by Wink and Donahue (1997), individuals with narcissistic traits cannot stand boredom, as it creates a mismatch between their high inner ambitions and external goals. As a result, such individuals tend to engage more in "sensation-seeking" (Emmons, 1981). Similarly, individuals with psychopathic traits have also been reported to engage in sensation-seeking more heavily (Zuckerman, 1979). Turning to risk-taking, Rim (1966) studies the influence of Machiavellianism on decisions involving the risk of both individuals and groups. The study documents that subjects who score high on the Machiavellianism scale tend to undertake more risky decisions than other individuals (see also Li-Ping Tang et al., 2008). Moreover, these individuals are particularly influential in group discussions and thereby shift group decisions towards increased risk-taking. Similarly, the literature has documented that individuals with narcissistic (Campbell et al., 2004; Foster et al., 2009; Judge et al., 2006; Maccoby, 2004)

and psychopathic (Jones, 2014) traits generally take more risks than those without these traits.

Studies on the composite dark triad of personality traits have associated individuals with a high dark triad score with emotional coldness, unethical decision-making, a lack of guilt and remorse, and a sense of superiority (Babiak and Hare, 2006; Boddy, 2006; Furnham et al., 2013; Paulhus and Williams, 2002; Stevens et al., 2012).

2.3 Dark triad personality traits in the context of the firm

Dark personality traits may be especially pronounced among corporate executives (Furtner et al., 2017). As noted by Engelen et al. (2016), narcissism among corporate executives seems to be increasing over time. In fact, Kets de Vries (2004) notes that narcissism is “at the heart of leadership” and that rising to the top of an organization may be facilitated by a dose of narcissism (p. 188). Similarly, Marshall et al. (2015) note that “corporate psychopathy thrives perhaps as the most significant threat to ethical corporate behavior around the world.” Furtner et al. (2017) argue that dark triad personalities can be found among leaders due to these individuals’ high need for power and social dominance orientation. At the same time, however, Babiak and Hare (2006) note that individuals with psychopathic traits are good at strategic thinking and tend to be innovative. Consequently, over the last few years, the impact of dark personality traits has also been studied in an organizational context. Previous research provides evidence that the dark personality traits of managers are important in explaining certain organizational activities and outcomes.

While the literature has linked negative personality traits to several aspects of daily corporate life, such as job performance (O’Boyle Jr. et al., 2012; Smith et al., 2016),

team processes, citizenship behavior, leadership (Volmer et al., 2016), counterproductive workplace behaviors (O’Boyle Jr. et al., 2012), and job attitudes and negotiations (Cohen, 2016; LeBreton et al., 2018; Spain et al., 2014), we will specifically focus on financial decision-making and organizational outcomes in the following.

With respect to organizational outcomes, the literature has studied the volatility of organizational performance (Chatterjee and Hambrick, 2007; Wales et al., 2013), the adoption of technological discontinuities (Gerstner et al., 2013), the M&A process (Aktas et al., 2016), tax avoidance (Olsen et al., 2014), accounting choices (Francis et al., 2008; Olsen and Stekelberg, 2016; Schrand and Zechman, 2012), fraudulent reporting (Murphy, 2012; Rijsenbilt and Commandeur, 2013; Mutschmann et al., 2020), and risk management decisions (Bajo et al., 2019) in connection with managerial personality traits. Managerial narcissism has also been associated with lower reporting quality (Capalbo et al., 2018; Ham et al., 2017) and less effective monitoring (Chatterjee and Pollock, 2017; Young et al., 2016). Omar et al. (2019) report that psychopathic characteristics in firms’ top management teams reduce future shareholder wealth. Moreover, individuals with psychopathic traits working in leadership positions in financial corporations may have contributed to causing the global financial crisis (Boddy, 2011).

Chatterjee and Hambrick (2007) document that CEOs with narcissistic personality traits favor bold actions, strategic dynamism, and grandiosity, which lead to extreme and fluctuating organizational performance (see also Wales et al., 2013). This observation can be explained by narcissists’ need for attention. While the authors document that the performance of affected companies is indeed more volatile than that of non affected companies, they show that, on average, firms with narcissistic CEOs realize similar performance compared to firms with non-narcissistic CEOs. In a similar study, Chatterjee

and Hambrick (2011) evaluate the impact of narcissism on CEOs' risk-taking. The authors document that highly narcissistic CEOs are much less responsive to recent objective performance than their less narcissistic peers. In contrast to the findings of Chatterjee and Hambrick (2007), ten Brinke et al. (2018) study hedge fund managers and document that managers with more psychopathic tendencies produced lower absolute returns than their less psychopathic peers and that managers with more narcissistic traits produced decreased risk-adjusted returns. In their meta-analysis, Cragun et al. (2020) summarize the common themes of the research on CEO narcissism.

In her experimental study on fraudulent financial reporting, Murphy (2012) documents that individuals who exhibit higher Machiavellianism are more likely to misreport. Moreover, she finds that such Machiavellians who misreport feel significantly less guilt than others who misreport. These findings are supported by Rijsenbilt and Comman-deur (2013), who find that managers who score high on the Machiavellianism scale seem to be more willing to tamper with financial accounts or engage in fraudulent behavior in an effort to preserve their positive self-image. Similarly, experimental results suggest that managers with greater narcissistic personality tendencies are more likely to inflate reported earnings when there are positive social status implications such as praise, acclaim, and affirmation (Hobson and Resutek, 2008). According to Harris et al. (2021), some organizations may even go as far as to particularly hire managers with dark personality traits for their accounting departments due to their willingness to push ethical boundaries.

Finally, in their study on corporate risk management and narcissism, Bajo et al. (2019) argue that even in the absence of specific beliefs about markets, narcissistic managers may be attracted to derivative usage as a way to enhance their self-image. Making bets using

derivatives draws attention and staves off boredom at the same time and may help sustain a perception of the manager as bold and decisive.²

In conclusion, a large part of the literature that relates dark personality traits to organizational outcomes focuses on narcissism as a single construct. Much less thought has been given to Machiavellianism, psychopathy, and the dark triad composite scale, which is surprising, considering, for example, the impact of individuals with psychopathic traits in the financial world (Jones, 2014). Taking the notion of Harrison et al. (2018) that Machiavellianism, narcissism, and psychopathy act together to explain certain behaviors into account, we argue that the composite dark triad trait may incorporate the various dimensions of a dark personality that relate to selective hedging activities. In addition, Jonason and Webster (2010) note that the individual scales for Machiavellianism, narcissism, and psychopathy are associated with distinctive response biases. Hence, measuring all three traits simultaneously increases internal consistency.

2.4 Hypotheses

Based on the above insights from the literature, we hypothesize that risk managers who score high on the dark triad personality scale will engage more heavily in selective hedging activities than other risk managers. Selective hedging provides these managers with several benefits that cater to their personal preferences. Specifically, it provides them additional excitement and satisfies their “thirst for risk”. Moreover, selective hedging provides the potential for large additional financial gains that will be attributed to the skill of the manager, thereby satisfying the need for attention and status. Finally, managers who score high on the dark triad scale will not be affected by the negative outcomes of their speculative behavior, as they do not experience feelings of guilt and will likely be

able to allocate the blame to someone else. As a result, our main hypothesis is as follows:

H1: Managers who score high on the dark triad personality scale engage more heavily in selective hedging activities.

Next, we analyze the cross-sectional differences in the connection between dark triad personality traits and selective hedging along several dimensions. Considering that several demographic characteristics, such as age and gender, are known to be important determinants of general risk-taking behavior (see, e.g., Riley Jr. and Chow, 1992; Halek and Eisenhauer, 2001; He et al., 2008; Morin and Suarez, 1983; Powell and Ansic, 1997) but also seem to impact managers' hedging practices (Crocchi et al., 2017; Beber and Fabbri, 2012), age and gender may also moderate the relationship between dark triad personality traits and selective hedging activities. As female and older decision-makers are reported to be more risk averse than male and younger decision-makers, we hypothesize

H2: The influence of managers' dark personality traits on their selective hedging activities is greater for male managers and for younger managers.

In a similar vein, experience has been documented to have important effects on behavioral biases (Feng and Seasholes, 2005; Kaustia et al., 2008) and on managers' hedging preferences (Beber and Fabbri, 2012). In particular, experience has been shown to mitigate the impact of behavioral biases on decision making (Feng and Seasholes, 2005; Kaustia et al., 2008). Consequently, we hypothesize

H3: The influence of managers' dark personality traits on their selective hedging activities is greater for less experienced managers.

At the same time, the education of managers influences their hedging decisions (Beber and Fabbri, 2012). In particular, a higher educational background could provide a man-

ager with superior information and a better ability to time the market and forecast future market developments (Beber and Fabbri, 2012). At the same time, people with a superior educational background may be more risk tolerant or even (over)confident as a result of their (perceived) superior training (Beber and Fabbri, 2012). This reasoning is supported by Bertrand and Schoar (2003) who find that managers with higher educational degrees follow more aggressive strategies. Thus, it is reasonable to assume that education and (perceived) expertise may also moderate the relationship between dark triad personality traits and selective hedging. Based on this notion, we hypothesize

H4: The influence of managers' dark personality traits on their selective hedging activities is greater for highly educated managers.

For risk managers with dark personality traits to receive attention and admiration for their selective hedging activities, these managers need to have a platform. Specifically, these managers need to be able to report to their supervisors on their hedging activities on a regular basis. Without being able to regularly report on their selective hedging activities, risk managers will not have access to external admiration to a large extent. Consequently, a reduced reporting frequency undermines the benefits of these managers to engage in selective hedging. Based on this notion, we hypothesize the following:

H5: The influence of managers' dark personality traits on their selective hedging activities is greater for managers who report on their hedging activities more frequently.

Risk managers may have different perceptions about what constitutes successful risk management. For example, some risk managers may perceive little variation in firms' cash flows as an indication of successful risk management—in line with traditional theories of corporate risk management. Others, however, may perceive the creation of financial gains

with their derivatives usage as an indication of successful risk management. For managers with pronounced dark personality traits to feel admired for their financial gains, these managers need, first of all, to perceive generating financial gains as an indication of successful risk management. In other words, risk managers who feel that only little cash flow variation is a sign of successful risk management will not feel excited about financial gains. Based on this argument, we posit our fifth hypothesis:

H6: The influence of managers' dark personality traits on their selective hedging activities is greater for managers who perceive financial gains as an indication of successful risk management.

The organizational context is important for managerial interpretations (Sharma, 2000). Firms that have established routines and structures with respect to corporate hedging decisions leave less scope for managerial discretion (see also Li and Tang, 2010). In addition, empirical findings indicate that selective hedging is related to managerial power (Jankensgård, 2019). Therefore, organizational factors may also moderate the impact of managers' personality traits on their selective hedging decisions. The personality traits of managers may influence their risk management activities through the opportunity for those managers to exercise discretion (Hemingway and Maclagan, 2004; Aragón-Correa et al., 2004; Goll et al., 2008; Li and Tang, 2010; Finkelstein and Hambrick, 1990; Finkelstein and Boyd, 1998; Hambrick and Finkelstein, 1987; Crossland and Hambrick, 2007). We thus hypothesize that the impact of risk managers' dark personality traits on their selective hedging activities increases in their discretion.

H7: The influence of managers' dark personality traits on their selective hedging activities increases in their managerial discretion.

3 Methodology and data

We use an online survey to collect information about managers' personality traits and their hedging activities.³ The survey allows us to gather data on the personality traits of risk managers and their preferred hedging activities at the same time, which would not be possible using large archival data sources (see, e.g., Graham et al., 2013). Using a self-reported measure provides a valid proxy for managers' personality traits. In fact, Cragun et al. (2020) emphasize in their meta-analysis that a psychometric self-report would be the first choice for researchers to study managers' personality traits. Similarly, Graham et al. (2013) argue that inferring managerial attitudes from observed actions in archival datasets raises questions about the validity of the action as a broad-based proxy. Additionally, such samples are limited to a few managers for whom such actions are observable (Graham et al., 2013).

3.1 Data collection

The survey targets high-ranking professionals responsible for the corporate hedging decisions of their organization.⁴ We commissioned *QuestionPro* to carry out the actual questioning of respondents. *QuestionPro* has an extensive database of industry professionals and continuously tries to recruit new members for their database. In particular, *QuestionPro* is one of the largest providers of online panels and has a database of more than 22 million potential respondents. Their business online panel consists primarily of business decision makers, such as CEOs or company owners. During the recruiting process individuals are asked to indicate several characteristics about themselves which allows researchers to profile respondents based on, for example, the industry that they

work in, or the department of their occupation. In addition, *QuestionPro* continuously monitors their panel for duplicate, fraudulent, and suspicious records. Lastly, *QuestionPro* provides respondents a strong assurance of anonymity which may improve the response rate and quality of data collected (Durant et al., 2002; Pearlin, 1961; Podsakoff et al., 2003) and is compliant with general data protection regulations. Thus, making use of their database allows us to obtain a high-quality sample. The survey was executed via the *QuestionPro* survey platform in English.

The invitation to the survey was sent to 1,220 professionals from *QuestionPro*'s database based on the target group of the survey. In particular, we specifically targeted individuals who had previously indicated that they hold a high-ranking position (e.g., EVP, SVP, AVP, Director or Group Manager, Senior Manager) with decision-making authority in the financial department of their organization. We specifically targeted individuals from financial departments as previous research indicates that the risk management function is commonly anchored in this division (Aabo et al., 2012; El-Masry, 2006). We screened individuals whether their original indications are still up to date. In addition, respondents had to reply "yes" to two qualifying questions to be included in our survey. First, the organization they worked for had to use derivatives (e.g., forwards, futures, options, swaps, etc.). Second, the hedging decisions had to fall into the professional area of responsibility of the respondent. Last, we restricted participation to respondents from firms located in the United States or the United Kingdom. These restrictions were included in the announcement of the survey and queried with the first questions of the questionnaire; only participants who answered "yes" to these questions were allowed to continue the survey. The initial reply rate was 87%. A total of 135 respondents were disqualified due to our screening and qualification questions, and 161 respondents did

not complete the survey. Since the literature indicates that data from online surveys might be contaminated by careless responses, we included an attention check in our actual survey (Kung et al., 2018).⁵ A total of 333 respondents did not pass the attention check and were thus also excluded. One respondent did not provide answers to all items on the dirty dozen scale, and another seventeen respondents did not provide answers to performance evaluation questions. The remaining 412 complete questionnaires were used for the analysis. The average time needed to complete the questionnaire was 11 minutes. Respondents received monetary compensation for their efforts.

Table 1 shows the distribution of respondents across industries, firm size, and firm structures. We proxy the size of the firms in our sample with the number of employees and the sales revenue. The sample includes an overrepresentation of firms in the financial sector, with almost 54% of all observations. To address the concern that our results may exclusively be driven by respondents from the financial sector, we present robustness tests where repeat our main analysis excluding respondents from the financial sector in the Appendix (Table A.3). Our results are robust to this specification, indicating that our conclusions are not (exclusively) driven by respondents from the financial sector. The sample includes both public (38.11%), private, and government-owned firms (6.07%). The majority of private firms are non-family-owned (42.96%), but the sample also includes almost 13% of family-owned private firms.

Insert Table 1 here

The unit of analysis is the corporate hedging decisions of risk managers. Table 2 summarizes the personal characteristics of respondents in our sample. The majority of respondents were between 35 and 44 years old and male and held a graduate degree.

Additionally, more than 90% of respondents had at least 3 years of experience / tenure with the organization.

Insert Table 2 here

Common method bias is an important issue when using data collected through surveys. We try to reduce common method bias by following best practices to enhance the validity of our survey procedure and using both procedural and statistical remedies that have been employed by other researchers as well (Abernethy et al., 2011; Fowler, Jr., 2013; Bergman et al., 2020). In particular, we measure the dependent and independent variables at a maximum distance within the survey (Chang et al., 2010; Podsakoff et al., 2003). We also measure the independent variable of interest with negatively loaded items and hide them among a positively loaded scale, which further reduces bias (Mutschmann et al., 2020). We use the Harman (1976) single-factor test to test whether the correlations between the variables are artificially inflated and find that a single factor can explain 23.2 percent of the variance. This finding indicates low common method bias (Abernethy et al., 2011).

3.2 Variables

We ask the participants about their corporate hedging practices using various questions that allow us to capture different dimensions of selective hedging. Our questions regarding selective hedging activities are inspired by earlier studies on hedging practices (Bodnar et al., 1995, 1998).

Trade for profit. We first ask the participants about the purpose of their derivatives usage. In particular, we ask them to rate their answers to the question, “What best describes the purpose of your derivatives usage?” on an 11-level Likert item ranking from

“Reduce cash flow / earnings volatility” to “Trading for profit”. Risk managers in our sample, on average, have a strong tendency to trade for profits with a mean of 8.54 and a median of 9. The standard deviation is 2.08 (see Table 3).

Market view. Next, we ask participants about the extent to which their view of the market influences their hedging decisions. We ask, “How often does your market view cause you to... (i) alter the timing of hedges, (ii) alter the size of hedges, and (iii) actively take positions in derivatives?” using 5-level Likert items ranking from “Never” to “Very frequently”. We aggregate the answers to a single variable by taking the average. Factor analysis shows that the three items effectively capture the impact of the market view on hedging decisions (Cronbach’s alpha = 0.71). Risk managers seem to consider their market view quite a bit when making hedging decisions, as indicated by a mean of 3.96 (standard deviation of 0.69) and a median of 4.

Selective hedging. Finally, we create a variable that aggregates the various dimensions of selective hedging behavior using an 8-item scale. We ask the participants to what extent they use various practices, ranging from taking a view to trading for profit. In total, the scale contains the following questions:

1. How important do you consider trading for profit for your hedging decisions?
(Ranges from “Never” to “Very frequently”)
2. How often do you use derivatives to reduce costs / increase profits by arbitraging the markets? (Ranges from “Never” to “Very frequently”)
3. How often do you use derivatives to reduce costs / increase profits by taking a view? (Ranges from “Never” to “Very frequently”)
4. How important do you rate the profit potential when you consider to choose a derivative product? (Ranges from “Not at all important” to “Very important”)

5. What best describes the purpose of your derivatives usage? (Ranges from “Reduce cash flow / earnings volatility” to “Trading for profit”)
6. How often does your market view cause you to alter the timing of hedges? (Ranges from “Never” to “Very frequently”)
7. How often does your market view cause you to alter the size of hedges? (Ranges from “Never” to “Very frequently”)
8. How often does your market view cause you to actively take positions in derivatives? (Ranges from “Never” to “Very frequently”)

We obfuscate the selective hedging items among a number of other statements that focus on corporate hedging preferences and activities so that participants are not immediately made aware of the focus of the study. We aggregate the variables that capture the various dimensions of selective hedging behavior to a single variable by first scaling all items to a range from 1 to 5 (if necessary) and then taking the arithmetic average of all eight items. With a Cronbach’s alpha value of 0.82, the internal consistency of the selective hedging measure is very high. Figure 1 shows the distribution of the main dependent variable. With a mean and a median of 4.09 (standard deviation of 0.57), the variable indicates that risk managers in our sample do engage in selective hedging practices. This observation is in line with the empirical literature that documents widespread selective hedging practices (Adam et al., 2015, 2017; Brown et al., 2006). In fact, we observe that several risk managers in our sample even exhibit the maximum value of five, indicating that these risk managers very frequently let their market view and thirst for additional profits guide their hedging decisions. This observation is consistent with previous studies that report large shares of firms engage in selective hedging (Dolde, 1993; Bodnar et al., 1998).

Insert Figure 1 here

Dark triad personality. We ask the participants to what extent they agreed with a set of short statements. The statements include the dirty dozen scale to elicit their dark personality traits (Jonason and Webster, 2010). The scale comprises three four-item subscales for Machiavellianism, narcissism, and (subclinical) psychopathy. Specifically, the scale contains the following questions, with 5-levels ranking from “Disagree strongly” to “Agree strongly”:

M1 I have used deceit or lied to get my way.

M2 I tend to manipulate others to get my way.

M3 I have used flattery to get my way.

M4 I tend to exploit others towards my own end.

N1 I tend to want others to admire me.

N2 I tend to want others to pay attention to me.

N3 I tend to expect special favors from others.

N4 I tend to seek prestige or status.

P1 I tend to lack remorse.

P2 I tend to be callous or insensitive.

P3 I tend to not be too concerned with morality or the morality of my actions.

P4 I tend to be cynical.

The dirty dozen scale has been previously used and validated to measure dark triad personality traits (Miller et al., 2012; Webster and Jonason, 2013). To mitigate the potential impact of social desirability bias in our measure of respondents’ dark personality traits, we obfuscate the dark personality scale among a number of other statements. Specifically, we hide the dirty dozen scale within a large number of positively loaded items, which assess general leadership behavior and other personality traits (Gosling

et al., 2003). We randomize the order of all questions to alleviate the possible bias of negatively framed questions. We opt for the dirty dozen, as this shorter scale allows us to hide the items properly and can be answered in a short time. The Cronbach's alpha of the dark triad scale is 0.92, indicating very high internal consistency. Figure 2 shows the distribution of the main explanatory variable. We observe a fairly uniform distribution with several observations obtaining the largest possible value of five as well.

Insert Figure 2 here

Risk preference. Considering previous findings that risk preferences are related to the hedging behavior of firms (Pennings and Garcia, 2004), we control for managers' risk attitude. We elicit respondents' risk preferences using their responses to the question, "How do you see yourself: are you generally a person who is fully prepared to take risks or do you try to avoid taking risks?" on an 11-level Likert item from "not at all willing to take risks" to "very willing to take risks". As noted by Dohmen et al. (2011), this question is the best overall predictor of risk-taking behavior.

Success=profitability. We proxy risk managers' perception that creating (additional) financial gains is an important success criterion (compared to, e.g., reduced volatility relative to a benchmark) through their responses to the questions, "How successful in managing company risk would you characterize your derivatives' usage over the last three years?" and "How profitable would you characterize your derivatives' usage over the last three years?" on 11-level Likert items. We then create a dummy variable that takes a value of one for managers who provide the same reply to both questions and zero otherwise. The main idea is that, on average, risk managers who perceive financial gains as an important success criterion are more likely to reply identically to both questions

than those who do not.

Confidence. Motivated by experimental evidence that narcissism is a significant predictor of overconfidence (Campbell et al., 2004), we control for participants' level of confidence.⁶ This control is also important, given the impact of confidence on risk managers' selective hedging activities (Adam et al., 2015). We measure respondents' confidence in their hedging decisions with the help of a one-item measure based on Weber and Brewer (2003). Specifically, we ask “*How confident are you usually in the derivatives positions that you take?*” on an 11-level Likert item ranking from “not at all confident” to “very confident”.

Experience / tenure. We measure managers' tenure with the company on a 5-level item ranging from less than one year to more than 10 years.

Derivatives expertise. We measure managers' expertise using derivatives on a 5-level item ranging from less than one year to more than 10 years.

Performance measurement. The evaluation of the performance of the risk manager may provide risk managers incentives to engage in selective hedging activities in an effort to better their performance evaluation. Hence, we ask participants to indicate the importance of the absolute profit/loss when assessing their performance as a risk manager on a 5-level Likert item ranging from “Not at all important” to “Very important”. On average, the absolute profit/loss is highly important for the evaluation of the performance of risk managers in our sample, as indicated by a mean of 4.4 and a median of 5.

Guidelines. We ask the participants to what extent they are bound in their corporate hedging decisions by internal guidelines on a scale ranking from “very restrictive policy” to “No, there is no such policy or guidelines at all”.

Centralization. We ask participants to rate the degree of centralization of the hedging activities within their firm (“Please rate your organizations’ degree of centralization associated with the usage of derivative contracts to manage risk exposure.”) on a 11-level Likert item. With a mean of 8.53 and a standard deviation of 2.03, risk management activities are fairly centralized in our sample.

Reporting frequency. We measure the reporting frequency on derivatives usage with participants’ replies to the question, “How often do you report to your supervisors / the board on your derivatives activities?” on a 6-level item ranging from never to daily. The items are “Never”, “Annually”, “Quarterly”, “Monthly”, “Weekly”, and “Daily”.⁷

Tail outcomes. Based on the argument by Aabo (2015) that risk managers who are concerned with costly lower-tail outcomes will also hedge (considerably) less than the traditional theory suggests, we ask participants how important they consider eliminating the possibility of extreme losses for their hedging decisions and how often they use derivatives to eliminate lower-tail outcomes on 5-level Likert items. We aggregate the answers to a single variable by taking the average. A mean of 4.15 (standard deviation 0.65, median 4) indicates that risk managers in our sample consider eliminating lower-tail outcomes to be an important part of their hedging decisions.

Insert Table 3 here

Control variables. Based on the literature on corporate hedging practices, we include several control variables in our analysis. In particular, we collect information about participants’ age, gender, education, and residence. We also collect information about their current position. We summarize the characteristics of the respondents in Table 2.

We also control for the size of the firm, measured with the number of employees, and the firm structure (i.e., public firm, private firm, family firm, and government firm).

3.3 Model estimation

We aim to test the hypothesis that managers with more pronounced dark personality traits will engage in more selective hedging. Formally, we estimate the following main model using a standard ordinary least squares (OLS) model with robust standard errors (MacKinnon and White, 1985):

$$Selective\ hedging_i = \alpha + \beta\ dark\ triad_i + \sum_{j=1}^J \gamma_j\ controls_{ij} + \epsilon_i \quad (1)$$

Control variables include demographic controls of the manager (gender, age, and education). We also control for tail outcomes, professional position, performance measurement, guidelines, number of employees, and firm type, among others. We run several additional analyses to obtain a more granular view of our results. We summarize all variable definitions in Table A.1 in the Appendix.

4 Results

4.1 Pearson’s correlation matrix

We begin our analysis with a look at bivariate correlations between our variables of interest. Table 4 reports the Pearson correlations. We observe a strong positive correlation between the selective hedging variable and the different dimensions of selective hedging. We also observe a significantly positive correlation between the dark triad and selective

hedging and the different dimensions of selective hedging. Thus, bivariate correlations provide initial support for our first hypothesis.

Insert Table 4 here

We also observe strong positive correlations between selective hedging activities and risk managers' risk preferences, confidence levels, education, and derivatives expertise. Risk managers who are particularly concerned with low tail outcomes are also more engaged in selective hedging activities.

4.2 Predictability of the Dark triad

Next, we investigate to which degree the variable Dark triad can be predicted using the respondents' demographics and firm-specific variables. To this end, we regress Dark triad on the individual demographic variables and our firm-specific variables and fixed effects. We summarize our results in Table 5. We observe a significantly positive correlation between Dark triad and our Male dummy variable, indicating that male respondents in our sample show more pronounced dark personality traits. We also find that older and more experienced respondents indicate less pronounced dark triad personality traits. Finally, we find that respondents who work in family or government firms indicate higher dark triad personality traits compared to respondents from non-family private firms. We do not observe a correlation between one of our industry dummies and the dark triad variable. Most importantly, the regression only explains less than 6% of the variation in our data, indicating that a large share of the variation within the Dark triad variable remains unexplained by demographics and firm-specific variables.

Insert Table 5 here

4.3 Hypothesis testing

To formally test our hypotheses, we estimate equation (1) using OLS. Table 6 presents our main regression results on managers' selective hedging activities. Column 1 indicates a positive correlation between dark triad personality traits and selective hedging. We find a positive regression coefficient of 0.0369, with a t -statistic of 2.08. The regression coefficient suggests that a one-unit increase in Dark triad explains about 6.6% ($= 0.04/0.6$) of the standard deviation of selective hedging. To put this in perspective, the coefficient of Dark triad is slightly larger than the coefficient of risk preferences, indicating a somewhat larger effect size when comparing the two variables. When interpreting the effect size, however, keep in mind that estimating precise effect sizes is a task that is better suited for large-scale archival studies, as noted by Libby et al. (2002). In columns 2 and 3, we study the relation between dark triad personality traits and different dimensions of selective hedging activities. In particular, we focus on the trade-off between reducing the volatility of earnings and cash flows versus trading for profit in column 2, with risk managers with more pronounced dark personality traits having a clear preference for trading for profit (coefficient of 0.3125; t -statistic of 3.61). Economically, a one-unit increase in Dark triad explains about 15% of the standard deviation of Trade for profit. We find statistically significant and positive coefficients in column as well. These results are consistent with Hypothesis H1: Managers who score high on the dark triad personality scale engage more heavily in selective hedging activities.

Insert Table 6 here

Turning briefly to our control variables, we also observe significant positive coefficients on managers' risk preference (0.03, t -statistic of 2.23) and confidence (0.11, t -statistic of

6.44). These findings are in line with the prior literature that reports a positive relation between managers' risk preferences (Pennings and Garcia, 2004) and an impact of managerial confidence on selective hedging (Adam et al., 2015). We also find that managers who are concerned with lower-tail outcomes engage more in selective hedging (0.22, t -statistic of 5.72), as previously suggested by Aabo (2015), and between performance measurement and selective hedging (0.18, t -statistic of 5.17).

To alleviate the concern that one particular trait of the dark triad, for example narcissism, may explain our results, we repeat our main analysis using the subscales for the individual traits as main explanatory variables. We summarize the results in Table A.2 in the Appendix. We observe positive and significant coefficients of similar magnitude for all traits, with the coefficient of Dark triad on psychopathy being the only exception. This observation provides additional support for the use of the composite dark triad measure. In addition, we address the concern that participants from the financial sector are the main driver of our findings. We thus repeat our main analysis excluding respondents from the financial sector and summarize the results in Table A.3 in the Appendix. The results indicate that our conclusions are not (exclusively) driven by respondents from the financial sector.

We next study the moderating function of demographic factors. We first study whether managers' gender or age functions as a moderator of the influence of managers' dark personality traits on selective hedging activities. To this end, we add a set of interaction variables to equation (1). We first interact Dark triad with our dummy variable for male managers. To simplify the interpretability of the results, we report the coefficients for Dark triad for female managers (Dark triad \cdot female) and for male managers (Dark triad \cdot male) separately. This approach simplifies the readability of the effect sizes

and captures the entire domains of both the dark triad and the relevant dummy, while being otherwise completely equivalent to a standard interaction approach.⁸ The results of the analysis are presented in column (1) of Table 7. We find a positive coefficient on Dark triad male (0.0471, t -statistic of 2.1626), whereas the coefficient for female managers (t -statistic of 0.57) is not significantly different from zero. This finding indicates that the relationship between the dark triad personality measure and selective hedging is significantly less pronounced for female risk managers, thereby providing support for Hypothesis H2.

In column (2), we turn to the moderating function of age. We classify managers who are 44 years of age or younger as young and managers who are 45 years or older as old. The results suggest that the relationship between the dark triad personality measure and selective hedging is particularly pronounced for older risk managers, as we observe a positive coefficient on Dark triad old (0.0726, t -statistic of 2.12) and a coefficient of 0.0259 (t -statistic of 1.30) on Dark triad young. Thus, the overall support for Hypothesis H2 is mixed.

Insert Table 7 here

In column (3), we study the moderating function of experience. We employ our sample splits at the median. Our findings indicate that the relationship between the dark triad personality measure and selective hedging is particularly pronounced for risk managers who are less experienced. Specifically, we find a positive coefficient on Dark triad short tenure (0.09, t -statistic of 3.58) but not on Dark triad long tenure (t -statistic of 0.41). These findings are in line with Hypothesis H3.

Turning to Hypothesis H4, we observe a positive coefficient on Dark triad high ed-

ucation (0.04, t -statistic of 2.10) and a coefficient of zero on Dark triad low education (t -statistic of 0.26). As an alternative proxy for education, we take risk managers' experience trading with derivatives and report findings in column 5 of Table 7. The rationale behind this proxy is that managers with a large experience in trading derivatives are educated *in the field*. Overall, the findings are in line with Hypothesis H4.

We now turn to Hypotheses H5 and H6 and analyze the moderating function of the reporting frequency and the perception of successful risk management, respectively, in Table 8. We again split our reporting frequency and success=profitability variables at the median and add interaction variables to equation (1). In particular, we first interact reporting frequency with the Dark triad variable. We find a coefficient of 0.05 (t -statistic of 1.93) on Dark triad high reporting and a coefficient of zero (t -statistic of 1.14) on Dark triad low reporting, indicating support for Hypothesis H5.

Column (2) of Table 8 indicates that the relationship between dark triad personality traits and selective hedging activities is particularly pronounced for risk managers who perceive generating additional profits through hedging activities as a success. The coefficient on Dark triad success = profitability is 0.05 and statistically significant (t -statistic of 2.31), whereas the coefficient on Dark triad success \neq profitability is statistically not different from zero (t -statistic of 0.67). This finding provides support for Hypothesis H6.

Insert Table 8 here

Finally, we turn to Hypothesis H7 and the moderating role of managerial discretion. We use various proxies for managerial discretion. As a first proxy, we investigate the impact of managers' professional position on our findings. With this analysis, we also address the concern that the relationship between managerial personality traits may be

driven by managers who are not “in charge” and therefore may have limited practical implications. One may argue, for example, that risk managers, once in control of the risk management function of the firm, feel the responsibility of the position and keep their urge to engage in selective hedging in check. We again make use of an interaction term to study the role of managers’ professional position. We distinguish between managers who are a director or manager of corporate risk management and those who are not. Obviously, managers in charge will enjoy greater managerial discretion. Column (1) of Table 9 summarizes the results. We find positive coefficients for risk managers in charge (coefficient of 0.03, *t*-statistic of 1.68). This also suggests that our findings are not driven primarily by risk managers who are not in charge.

As a second proxy, motivated by the finding of Pennings and Garcia (2004) that the heterogeneity of the hedging behavior can to some degree be explained by the ownership structure of the firm, we investigate the moderating influence of the firm structure on the relationship between managerial personality traits and selective hedging. In particular, we argue that managers of family firms enjoy more discretion than those of non family firms. It is well known that the characteristics of firm owners tend to have a significant impact on their business strategies (Falkner and Hiebl, 2015). In this context, it is also important to note that family firms do not routinely select employees using common techniques, such as assessment centers, but often put family members in important decision-making positions. This is done after family members form skills and personalities over the years to be successful future leaders within the family business. This should have a significant impact on family firm leaders’ personality characteristics, and it can be hypothesized that family members who follow in the leadership of the firm may show dark personality traits as a result of their upbringing (Barach and Ganitsky, 1995). Thus, we separately study

the impact of dark managerial personality traits on selective hedging for family-owned firms and for firms that are not family-owned. Column (2) of Table 9 summarizes the results. The coefficient on Dark triad family is 0.09 (t -statistic of 1.83) and significantly larger than the coefficient on Dark triad other (0.03, t -statistic of 1.56), suggesting that the relationship between dark personality traits and selective hedging is more pronounced in family firms.

Insert Table 9 here

Next, we argue that larger firms and those with a more centralized risk management approach are more likely to have established routines and structures with respect to corporate hedging decisions, leaving less scope for managerial discretion (see also Li and Tang, 2010). In addition, it is worth noting that risk managers with dark personality traits aim to receive attention and admiration for their selective hedging activities. Obviously, these managers have a higher incentive to engage in such activities when the firm is smaller and their impact is therefore relatively higher, ensuring more external admiration for their actions. A similar argument holds when firms have a less centralized risk management approach, making the potential for receiving admiration more pronounced. Thus, we analyze the moderating role of firm size and the centralization of the risk management function. Our results in columns (3) and (4) of Table 9 indicate that the relationship between dark personality traits and selective hedging is more prevalent in small firms, as indicated by the interactions with our proxies for firm size based on the number of employees and the sales revenue of the firm. Both columns feature positive coefficients for small firms but not for large firms. In column (5) of Table 9, we turn to the degree of centralization of the risk management function and observe that managers with dark

personality traits engage in selective hedging activities specifically in firms with a decentralized risk management function (coefficient of 0.04, t -statistic of 1.86 on Dark triad less centralized, t -statistic of 1.012 on Dark triad highly centralized). These findings are consistent with Aabo et al. (2012) who find more speculation in foreign exchange when multiple departments are responsible for financial risk management. Overall, these findings provide support for Hypothesis H7. Note that our findings on the moderating role of the manager's age and education are also in line with this hypothesis, considering that older managers, or those with higher levels of education, likely enjoy more managerial discretion due to their seniority and education. Moreover, older managers may be less driven by future career potential than younger managers.

Finally, we study the triangle between managerial confidence, dark triad personality traits, and selective hedging in more detail. As noted by Adam et al. (2015) and Beber and Fabbri (2012), managerial overconfidence is an important determinant of selective hedging activities. As Campbell et al. (2004) highlight that narcissism is a significant predictor of overconfidence, we investigate whether risk managers who indicate high confidence are the same risk managers that drive our main results. To this end, we define risk managers who indicate that their usual level of confidence in their derivatives positions is below the median as having low confidence and risk managers who indicate that their usual level of confidence in their derivatives positions is above the median as having high confidence. We then interact the confidence dummy with our dark triad variable. Table 10 summarizes the results. The regression results indicate that in particular, risk managers with low confidence levels exhibit a strong positive correlation between the dark triad measure and selective hedging (0.06, t -statistic of 1.97). This provides strong evidence that our results are not driven by correlations between the Dark triad variable

and managers' confidence.

Insert Table 10 here

5 Implications and conclusion

Managerial personality traits have important implications for organizational decisions, overall organizational health, and company performance (Bertrand and Schoar, 2003; Hambrick and Mason, 1984; Marshall et al., 2015). We contribute to this literature by studying the relation between managerial personality traits and selective hedging activities. To date, the determinants of selective hedging are still not well understood (see, e.g., Adam et al., 2017). We use a survey setting to elicit risk managers' personality traits and their selective hedging activities. We specifically ask managers to rate the importance of particular criteria when selecting their hedging instruments. This information is (almost) impossible to obtain via large-scale archival data. Our results indicate that dark personality traits are positively associated with selective hedging when controlling for various manager and firm characteristics.

We also find that the results are more pronounced for male and older risk managers. While this finding is consistent with the general notion that women are more risk averse than men (Halek and Eisenhauer, 2001), it may seem counterintuitive given the well-established idea that individuals' risk aversion increases with age (Riley Jr. and Chow, 1992); however, this finding may be particularly interesting since it hints at the possibility that the dark triad effect overwrites the risk aversion effect as an individual ages. Moreover, the result is consistent with the notion of Croci et al. (2017) who argue that

younger managers prefer to hedge more because they suffer the consequences of an impaired reputation that comes from potential financial distress caused by selective hedging activities over a longer career horizon.

In addition to age and gender, we document that managers' experience and education play an important role in the relationship between the dark triad personality traits and selective hedging activities. In particular, we show that less experienced managers are more prone to selective hedging, given pronounced dark triad personality traits. Overall, this is in line with the notion that experience mitigates behavioral biases (Feng and Seasholes, 2005). Note that, while age is often used as a proxy for experience, age does not necessarily determine experience for highly specialized tasks, such as financial risk management. In support of this notion, we observe a correlation between age and experience of 0.33 in our sample, indicating that these two variables do have a common dimension, but indeed measure different constructs. Our results on education indicate that those risk managers with a higher level of education are more prone to engage in selective hedging when scoring high on the dark triad personality scale. In general, this is in line with the notion of Beber and Fabbri (2012) that high levels of education are associated with a larger tendency to engage in selective hedging.

A finding with important practical implications is that risk managers who perceive the isolated profit of hedging decisions to be a measure of success drive the relationship between dark personality traits and selective hedging activities. In addition, we investigate whether the relationship between dark managerial personality traits and selective hedging varies with the manager's discretion and proxy for managerial discretion with the manager's position, firm structure, and firm size. We do not observe a strong impact of professional position on this relationship but find the relationship to be more pronounced

in family firms, in smaller firms, and in firms with a less centralized risk management function, indicating that overall, the relationship between dark managerial personality traits and selective hedging increases with managerial discretion.

Finally, we show that our results cannot be explained by managerial (over)confidence.

Our paper speaks to the ethical dimension of selective hedging behavior. Firm stakeholders expect that appointees to important positions, such as risk managers, will make use of their authority to improve the organization. According to traditional financial theory, risk managers should passively match one risk exposure with an opposing risk to create value for shareholders (see, e.g., Carter et al., 2006; Biguri et al., 2018; Geyer-Klingeberg et al., 2020). However, the literature provides ample evidence that risk managers instead engage in selective hedging activities (Adam and Fernando, 2006; Adam et al., 2017), thereby creating excessively risky positions for the firm. Selective hedging may lead to severe losses for the firm and consequently constitutes an important dimension of ethical misconduct by management (Van Scotter and Roglio, 2020; Jones, 1991).

Our results have important implications, as various conclusions for public policy and corporate governance, corporate risk management research, education and theory testing can be drawn from this empirical analysis.

For *corporate practice*, our analysis studies whether specific personality traits may negatively affect financial risk management approaches. Our results demonstrate that managers with dark personalities may be particularly prone to selective hedging behaviors. Thus, our results may have implications for human resources departments to explicitly consider dark triad personality traits when hiring risk managers. Management assessment tests, particularly those designed for young “high potentials,” may need to

take such personality traits explicitly into account since people with such traits should not be put in charge of the risk management function of the firm. Firms may also want to place more weight on risk managers' experience since these factors mitigate the impact of dark personality traits on unhealthy financial risk management decisions.

In addition, public and corporate policies promoting explicit corporate hedging activities could perhaps be expected to mitigate the impact of managers' dark personality traits on corporate risk management. Specifically, it may be helpful to create an environment within the risk management function that does not focus on the profitability of the hedging decisions but rather uses a risk-related measure to quantify success. It may also be particularly useful to identify whether risk managers perceive generating additional profits as an important success criterion for financial risk management. It seems that these managers specifically drive the relationship between dark triad personality traits and selective hedging activities. Thus, risk managers who focus on profitability rather than risk measures should not be put in charge of the risk management function of the firm. This provides human resources departments with a more practical approach that does not rely on personality assessments. Considering the criticism of these assessments (Caponecchia et al., 2012), this approach may be particularly valuable.

From a *research* perspective, our study provides evidence that future research on educating risk managers should investigate how personality traits relate to risk management competencies. While much research has been conducted on competencies for risk managers, links to personality traits are, however, so far missing in this literature. Can personality traits, which help to support corporate risk management, be identified with specific educational formats? Moreover, how can personality traits be considered in assessments of candidates for risk management positions?

Regardless of the contribution to the literature and important practical implications, our study has some caveats. While the survey methodology allows us to ask important questions, it has limits. Most importantly, it is not possible to discuss causation. A common concern in survey-based research is that the results are affected by endogeneity issues. However, considering that individual differences in personality traits are essentially fixed by age 30 (McCrae and Costa, 1994), before (most) risk managers are in the position to decide on their firms' hedging decisions, we are cautiously confident that reverse causality is not an issue in our setting. It may, however, be possible that individuals with pronounced dark personality traits actively pursue careers as risk managers in an effort to satisfy their thirst for risk and excitement. Such self-selection would make it particularly likely to find individuals with dark personality traits in risk manager positions, given the larger pool of applicants for these positions with said personality traits; it would, however, not invalidate the association between dark personality traits and selective hedging. Another potential drawback is that surveys measure beliefs and not necessarily actions (Graham et al., 2013). Additionally, some of the questions may be misunderstood or produce only noisy measures of the variable in question. As, however, it is difficult to obtain managers' personality traits and their propensity to engage in selective hedging at the same time via another research method, we nonetheless believe that our paper makes an important contribution. We also take great care and use best practices to mitigate well-known pitfalls of surveys, such as common method bias. Importantly, our results are in line with the previous literature with respect to the prevalence of selective hedging activities (see, e.g., Adam and Fernando, 2006; Adam et al., 2017) and established determinants of selective hedging such as (over)confidence (Adam et al., 2015) or risk preferences (Pennings and Garcia, 2004).

Keeping these concerns in mind, our research design offers new and unique insights into the relationship between manager personality characteristics and risk management competence, particularly selective hedging. These findings nicely complement recent studies on the determinants of selective hedging that make use of archival data (Adam et al., 2015; Bajo et al., 2019).

This study is a first step in evaluating the impact of dark personality traits on financial risk management activities in organizations. Future research should shed additional light on the mitigating factors that may help to keep risk managers' dark personality traits at bay and thereby improve corporate risk management outcomes.

Compliance with ethical standards

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Conflict of interest All authors declare they have no conflicts of interest.

Research involving human participants and their data All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. The study was reviewed and approved by the institutional ethics review board of a participating institution.

Informed consent Informed consent was obtained from all individual participants included in the study.

A Additional analyses

Insert Table A.1 here

Insert Table A.2 here

Insert Table A.3 here

Notes

¹Cragun et al. (2020) note that a psychometric self-report would be the first choice for researchers to study managers' personality traits. Instead of using a scale to diagnose personality disorders, however, we opt for the shorter dirty dozen scale even though this scale was developed for the subclinical population and does not guarantee a clinical diagnosis, as the shorter scale allows us to hide the items of interest among uncontroversial questions and can simultaneously be answered in a short time.

²Our paper is also related to research that studies dark personality traits in student samples (Shank et al., 2019). In this strand of the literature, Shank et al. (2019) find that finance majors score significantly higher on the Machiavellian scale than non-finance majors, including other business majors. The authors provide evidence that students with certain psychopathic personality traits make more rational financial decisions than other students. Similarly, D'Souza and de Lima (2015) study whether students who score high on the dark triad personality scale tend to engage in more opportunistic decision making.

³See, e.g., Giambona et al. (2018) for a recent survey of risk managers in an investigation of risk management practices.

⁴In line with this goal, 82.52% of the respondents in our sample are the "director/manager corporate risk management" of their organization.

⁵We presented the following prompt to the participants, "Everyone has hobbies. Nevertheless, we would like you to skip this question to show that you are reading carefully. Do not click any of the buttons corresponding to bike riding, hiking, swimming, playing sports, reading or watching TV." We also provided the following options: bike riding, hiking, swimming, playing sports, reading, and watching TV.

⁶It is still important to note that narcissism and overconfidence are distinct concepts.

⁷In a closely related item, we ask participants "How often do you evaluate your derivatives position?". As these two variables are highly correlated (Pearson correlation coefficient .72), we restrict our analysis to the reporting frequency.

⁸A "traditional" interaction term in a regression is the product of two terms. Using such an interacted regressor, however, has one disadvantage when it comes to readability: it requires mental arithmetic,

not only to quantify the effect size but also to determine the standard errors of the effect sizes of both groups that are part of the interaction. However, making use of a simple modification and including two “interaction” terms simplifies this issue and allows the reader to immediately read both coefficients and standard errors directly from the table.

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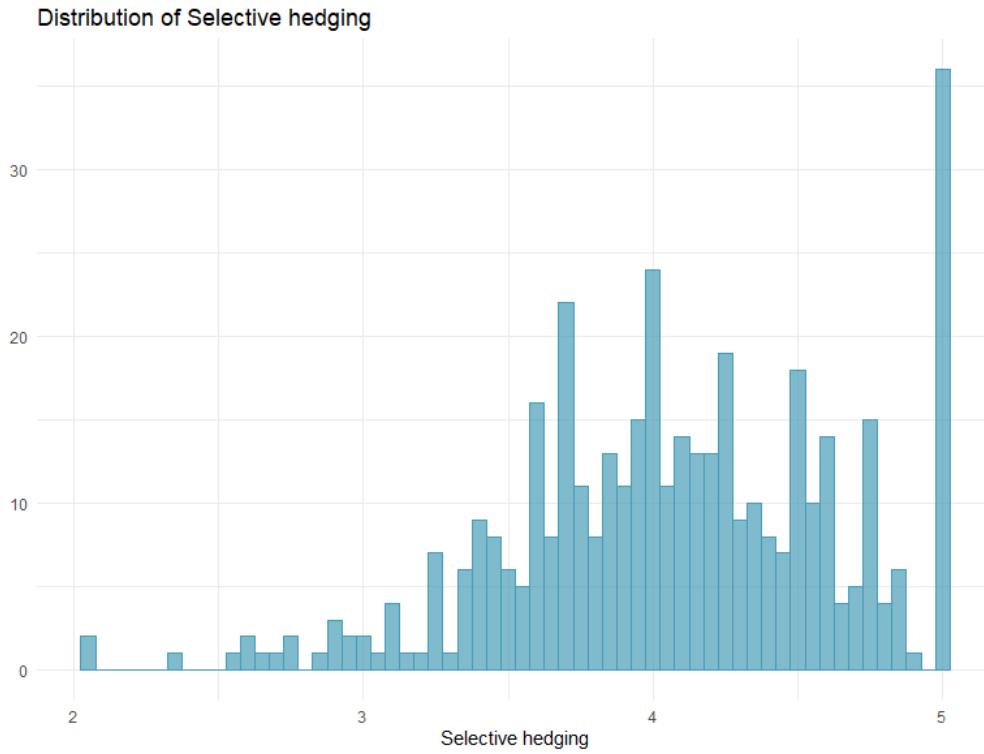


Figure 1: Distribution of the dependent variable, “Selective hedging”

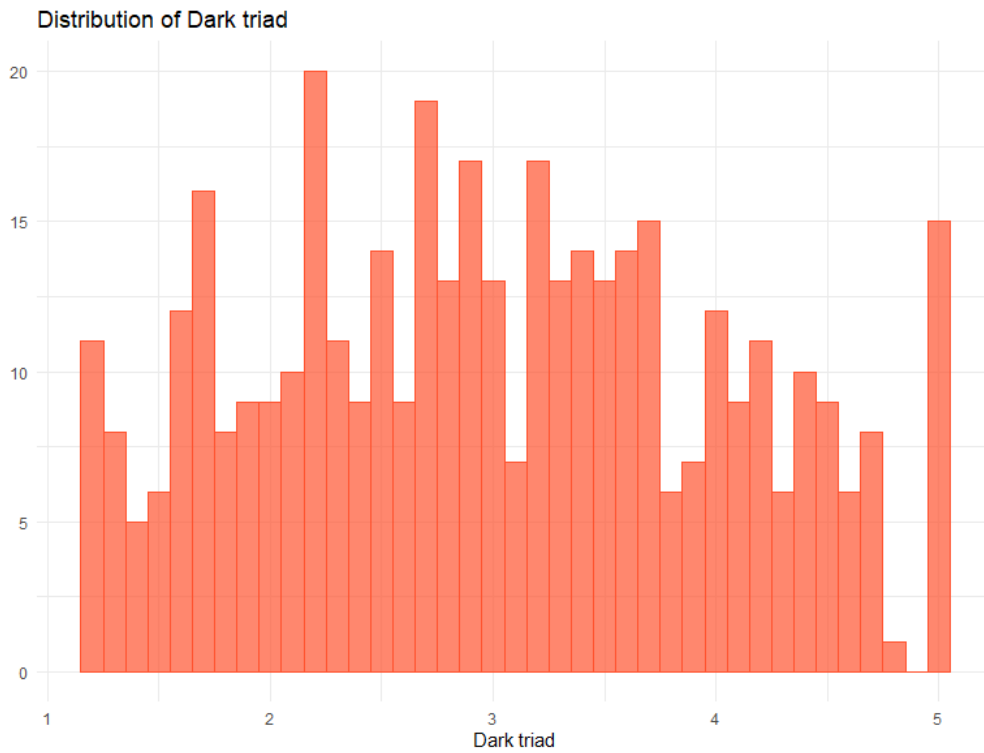


Figure 2: Distribution of the independent variable, “Dark triad”

Table 1: Characteristics of respondents' firms

	Percent
Industry	
Not a managing position	0.24
Agriculture, Forestry, Fishing	1.70
Mining	0.73
Manufacturing	12.86
Transportation & Public utilities	3.64
Wholesale trade	2.67
Retail trade	14.56
Finance, Insurance, Real Estate	54.37
Services	5.58
Public administration	2.43
Unclassified industry	1.46
No. employees	
1 - 50	4.13
51 - 250	14.08
251 - 500	22.57
501 - 1,000	24.27
1,001 - 5,000	22.33
5,001 - 10,000	7.28
10,001 - 25,000	2.67
25,001 or more	2.67
Sales revenue	
0 - 999,999	1.70
1,000,000 - 4,999,999	10.68
5,000,000 - 9,999,999	14.08
10,000,000 - 99,999,999	23.54
100,000,000 - 999,999,999	23.79
1,000,000,000 - 4,999,999,999	13.59
5,000,000,000 - 9,999,999,999	7.04
10,000,000,000 or above	5.58
Firm type	
Public firm	38.11
Non-family owned private firm	42.96
Family owned private firm	12.86
Government	6.07

Table 2: Personal characteristics of the respondents

	Percent
Age	
18 to 34	24.27
35 to 44	55.83
45 to 54	16.99
55+	2.91
Gender	
Female	28.64
Male	71.36
Residence	
United States	52.67
United Kingdom	47.33
Education	
Other	0.00
High School / GED	5.34
Undergraduate degree	17.23
Graduate degree	40.78
MBA	26.70
Other Non-MBA	2.43
Ph.D.	7.52
Experience / tenure	
< 1 year	0.24
1 - 2 years	5.25
3 - 5 years	31.26
6 - 10 years	47.26
> 10 years	18.38
Derivatives expertise	
< 1 year	0.73
1 - 2 years	9.71
3 - 5 years	39.32
6 - 10 years	41.50
> 10 years	8.74
Professional position	
Director/Manager corporate risk management	83.25
Other employee with decision-making power	16.50
Not a managing position	0.24

Table 3: Summary statistics

	N	Mean	SD	Min	25	Median	75	Maximum
Selective hedging	412	4.0863	0.5684	2.0250	3.7250	4.0875	4.5250	5.0000
Trade for profit	412	8.5388	2.0848	1.0000	8.0000	9.0000	10.0000	11.0000
Market view	412	3.9579	0.6889	1.0000	3.3333	4.0000	4.3333	5.0000
Dark triad	412	3.0051	1.0157	1.1667	2.1667	2.9583	3.7500	5.0000
Machiavellianism	412	2.7203	1.2603	1.0000	1.5000	2.7500	3.8125	5.0000
Narcissism	412	3.4132	1.0352	1.0000	2.7500	3.5000	4.2500	5.0000
Psychopathy	412	2.8817	1.1557	1.0000	2.0000	2.7500	3.7500	5.0000
Risk preference	412	8.8252	1.9303	1.0000	8.0000	9.0000	11.0000	11.0000
Confidence	412	9.0801	1.6333	2.0000	8.0000	9.0000	11.0000	11.0000
Tail outcomes	412	4.1553	0.6461	1.5000	4.0000	4.0000	4.5000	5.0000
Success = profitability	412	0.5121	0.5005	0.0000	0.0000	1.0000	1.0000	1.0000
Performance measurement	412	4.3689	0.7891	1.0000	4.0000	5.0000	5.0000	5.0000
Reporting frequency	412	4.2694	1.1282	1.0000	3.0000	4.0000	5.0000	6.0000
Centralization	412	8.5316	2.0305	1.0000	8.0000	9.0000	10.0000	11.0000
Guidelines	412	3.6141	1.1501	0.0000	3.0000	4.0000	4.2500	5.0000

Variable definitions can be found in Table A.1 in the Appendix.

Table 4: Pearson's correlation table

	Selective hedging	Trade for profit	Market view	Dark triad	Machiavellianism	Narcissism	Psychopathy	Risk preference	Confidence	Male	Age	Education	Derivatives expertise	Experience	Tail outcomes	Success = profitability	Professional position	Performance measurement	Reporting frequency	Centralization	Guidelines	No. employees	
Selective hedging																							
Trade for profit	0.6592***																						
Market view	0.8509***	0.5037***																					
Dark triad	0.1937***	0.2826***	0.2270***																				
Machiavellianism	0.0708	0.1918***	0.1167*	0.9172***																			
Narcissism	0.3279***	0.3109***	0.3457***	0.8081***	0.5876***																		
Psychopathy	0.1397**	0.2575***	0.1616***	0.9126***	0.8015***	0.5943***																	
Risk preference	0.4508***	0.4382***	0.4372***	0.1817***	0.0934	0.2496***	0.1538**																
Confidence	0.6597***	0.5789***	0.5530***	0.1714***	0.0221	0.3275***	0.1343**	0.4621***															
Male	-0.0780	-0.0423	-0.0699	0.1028*	0.0565	0.1182*	0.1037*	-0.0574	0.0147														
Age	0.0468	-0.0803	0.0094	-0.0894	-0.1015*	-0.0452	-0.0846	-0.0628	0.0429	0.0265													
Education	0.2231***	0.2038***	0.2266***	0.0095	-0.0716	0.1488**	-0.0302	0.1446**	0.2532***	0.1148*	0.0086												
Derivatives expertise	0.1752***	0.1029*	0.1212*	-0.0350	-0.0951	0.0760	-0.0567	0.0486	0.2290***	0.0688	0.2896***	0.1007*											
Experience	0.0829	-0.0001	-0.0032	-0.1079*	-0.1280**	-0.0498	-0.1004*	0.0069	0.1248*	0.0827	0.3238***	-0.0222	0.5089***										
Tail outcomes	0.5677***	0.2448***	0.5031***	0.0720	-0.0320	0.2044***	0.0418	0.2374***	0.4309***	-0.0888	0.1266*	0.1363**	0.2145***	0.1011*									
Success = profitability	0.3185***	0.2526***	0.2791***	0.1449**	0.0464	0.1999***	0.1524**	0.2390***	0.2980***	-0.0168	-0.0253	0.0904	0.0126	-0.0025	0.2086***								
Professional position	-0.1723***	-0.1365**	-0.1698***	-0.0367	0.0345	-0.1209*	-0.0260	-0.1772***	-0.2244***	-0.0134	0.0200	-0.1491**	-0.2067***	-0.0851	-0.1169*	-0.0362							
Performance measurement	0.5282***	0.2797***	0.3598***	0.0480	-0.0116	0.1413**	0.0126	0.2565***	0.3489***	-0.1054*	0.0737	0.1114*	0.1299**	0.0752	0.3574***	0.2043***	-0.0873						
Reporting frequency	0.4533***	0.3612***	0.4477***	0.2154***	0.1490**	0.2336***	0.1962***	0.4239***	0.4504***	0.0085	0.0033	0.0996*	0.0527	-0.0054	0.3464***	0.2980***	-0.0669	0.1996***					
Centralization	0.3860***	0.3931***	0.3720***	0.1277**	0.0842	0.2034***	0.0626	0.3050***	0.5352***	-0.0510	-0.0076	0.1618***	0.0990*	-0.0393	0.2837***	0.1864***	-0.1918***	0.1415**	0.2687***				
Guidelines	0.2360***	0.1955***	0.1914***	0.2358***	0.1901***	0.1966***	0.2383***	0.1197*	0.2199***	-0.0212	0.0110	0.0701	0.0182	-0.0816	0.1202*	0.1202*	-0.0552	0.1278**	0.1891***	0.2985***			
No. employees	-0.0026	0.0432	-0.0099	-0.0153	-0.0488	0.0561	-0.0374	-0.0465	-0.0054	-0.0382	0.0135	0.0901	0.0484	0.1023*	-0.1001*	-0.0576	0.0094	-0.0616	-0.0700	0.0106	0.0194		
Sales revenue	-0.0440	0.0221	-0.0106	0.0295	0.0214	0.0667	-0.0054	0.0120	-0.0070	0.1219*	0.0925	0.0174	0.1259*	0.1317**	-0.0602	-0.0020	-0.0450	-0.0203	0.0185	0.0926	-0.0196	0.4056***	

Variable definitions can be found in Table A.1 in the Appendix. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Table 5: Predictability of dark personality traits

	<i>Dependent variable:</i>
	Dark triad
Constant	3.1010*** (6.9392)
Male	0.2262** (1.9676)
Age (18-34)	0.0047 (0.0402)
Age (45-54)	-0.0551 (-0.3653)
Age (55+)	-0.7110*** (-2.7406)
Education	-0.0387 (-0.8741)
Derivatives expertise	0.0578 (0.8076)
Experience	-0.1298* (-1.9451)
No. employees	0.0280 (0.7915)
Sales Revenue	0.0064 (0.1886)
Non-family private firm	-0.0385 (-0.3395)
Family private firm	0.3393** (2.0082)
Government firm	0.7210*** (3.2163)
Industry: Mining	-0.1947 (-0.4434)
Industry: Manufacturing	-0.2130 (-0.5637)
Industry: Transportation and Public Utilities	-0.4168 (-0.9949)
Industry: Wholesale Trade	0.1110 (0.2540)
Industry: Retail Trade	-0.2458 (-0.6577)
Industry: Finance, Insurance and Real Estate	0.0104 (0.0289)
Industry: Services	-0.2799 (-0.7026)
Industry: Public Administration	0.0921 (0.2217)
Industry: Unclassified	-0.2952 (-0.5491)
Residence: US	0.1276 (1.1231)
Observations	412
Adjusted R ²	0.0563
Residual Std. Error	0.9867
F Statistic	2.1146***

Regression coefficients are presented with t -values in parentheses and robust standard errors (MacKinnon and White, 1985). * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. Variable definitions can be found in Table A.1 in the Appendix.

Table 6: Managerial dark triad personality and selective hedging

	<i>Dependent variable:</i>		
	Selective hedging	Trade for profit	Market view
	(1)	(2)	(3)
Constant	0.3824* (1.6883)	-0.3132 (-0.3233)	0.3630 (1.0149)
Dark triad	0.0369** (2.0845)	0.3125*** (3.6050)	0.0764*** (3.1051)
Risk preference	0.0287** (2.2334)	0.1529* (1.8420)	0.0409** (2.2091)
Confidence	0.1055*** (6.4359)	0.4939*** (6.0192)	0.0732*** (3.0869)
Male	-0.0516 (-1.3581)	-0.1924 (-1.1002)	-0.0954* (-1.7661)
Age (18-34)	0.0224 (0.4854)	0.3181* (1.7933)	-0.0564 (-0.9121)
Age (45-54)	0.0397 (0.7909)	-0.1531 (-0.4948)	0.0322 (0.4827)
Age (55+)	0.0127 (0.1222)	-0.2914 (-0.4387)	-0.1563 (-0.9473)
Education	0.0173 (1.1139)	0.1071 (1.4298)	0.0384* (1.7032)
Derivatives expertise	0.0015 (0.0469)	0.1180 (0.8956)	0.0138 (0.2918)
Experience	0.0035 (0.1115)	-0.0195 (-0.1453)	-0.0496 (-1.0943)
Tail outcomes	0.2233*** (5.7175)	-0.1844 (-1.2722)	0.2722*** (5.3324)
Success = profitability	0.0677 (1.6452)	0.1742 (1.0457)	0.0845 (1.4878)
Professional position	-0.0178 (-0.3284)	0.1229 (0.5912)	-0.0519 (-0.7195)
Performance measurement	0.1844*** (5.1729)	0.2502* (1.8931)	0.0903** (2.1161)
Reporting frequency	0.0396** (2.0212)	0.0703 (0.7965)	0.0821*** (2.9974)
Centralization	0.0015 (0.1516)	0.1110* (1.9448)	0.0185 (1.2677)
Guidelines	0.0233 (1.3154)	-0.0211 (-0.2789)	-0.0045 (-0.1541)
No. employees	0.0184 (1.4812)	0.0655 (0.9775)	0.0185 (1.1114)
Non-family private firm	-0.0259 (-0.6685)	-0.4141** (-2.3738)	-0.1069** (-1.9751)
Family private firm	-0.0685 (-1.0505)	-0.1365 (-0.6134)	-0.2147** (-2.2804)
Government firm	-0.0099 (-0.1740)	-0.0273 (-0.0884)	-0.0930 (-1.1270)
Industry FE	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
Country FE	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
Observations	412	412	412
Adjusted R ²	0.6258	0.4173	0.4934
Residual Std. Error	0.3477	1.5914	0.4903
F Statistic	23.1755***	10.4960***	13.9121***

Regression coefficients are presented with *t*-values in parentheses and robust standard errors (MacKinnon and White, 1985). **p*<0.1; ***p*<0.05; ****p*<0.01. Variable definitions of control variables can be found in Table A.1 in the Appendix.

Table 7: Managerial demographics, dark triad personality, and selective hedging

	<i>Dependent variable:</i>				
	Selective hedging				
	(1)	(2)	(3)	(4)	(5)
Dark triad female	0.0152 (0.5683)				
Dark triad male	0.0471** (2.1626)				
Dark triad young		0.0259 (1.3044)			
Dark triad old		0.0726** (2.1246)			
Young (D)		0.1043 (0.7566)			
Dark triad short tenure			0.0922*** (3.5794)		
Dark triad long tenure			0.0089 (0.4091)		
Experience/ tenure (D)			0.2915** (2.5843)		
Dark triad low education				0.0103 (0.2618)	
Dark triad high education				0.0411** (2.0953)	
Education (D)				-0.0440 (-0.3227)	
Dark triad low derivatives expertise					0.0832 (1.5455)
Dark triad high derivatives expertise					0.0320* (1.7085)
Derivatives expertise (D)					0.2028 (1.1387)
Male	-0.1450 (-1.3179)	-0.0528 (-1.3953)	-0.0589 (-1.5497)	-0.0483 (-1.2404)	-0.0511 (-1.3453)
Controls	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
Industry FE	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
Country FE	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
Observations	412	412	412	412	412
Adjusted R ²	0.6256	0.6278	0.6305	0.6252	0.6261
Residual Std. Error	0.3478	0.3468	0.3455	0.3480	0.3476
F Statistic	22.4580***	24.1079***	22.9193***	22.4215***	22.5028***

Regression coefficients are presented with *t*-values in parentheses and robust standard errors (MacKinnon and White, 1985). **p*<0.1; ***p*<0.05; ****p*<0.01. Variable definitions: Young (D) is a dummy variable that takes a value of one for risk managers who are 44 years of age or younger, zero otherwise; Experience / tenure (D) is a dummy variable that takes a value of one for risk managers with above median experience, zero otherwise; Education (D) is a dummy variables for risk managers who hold a graduate degree or higher, zero otherwise; Derivatives expertise (D) is a dummy variable that takes a value of one for risk managers with above median derivatives expertise, zero otherwise; *Dark triad female* takes the value of Dark triad for female respondents, zero otherwise; *Dark triad male* takes the value of Dark triad for male respondents, zero otherwise; *Dark triad young* takes the value of Dark triad for Young (D) = 1, zero otherwise; *Dark triad old* takes the value of Dark triad for Young (D) = 0, zero otherwise; *Dark triad short tenure* takes the value of Dark triad for Experience / tenure (D) = 0, zero otherwise; *Dark triad long tenure* takes the value of Dark triad for Experience / tenure (D) = 1, zero otherwise; *Dark triad low education* takes the value of Dark triad for Education (D) = 0, zero otherwise; *Dark triad high education* takes the value of Dark triad for Education (D) = 1, zero otherwise; *Dark triad low derivatives expertise* takes the value of Dark triad for Derivatives expertise (D) = 0, zero otherwise; *Dark triad high derivatives expertise* takes the value of Dark triad for Derivatives expertise (D) = 1, zero otherwise. Variable definitions of control variables can be found in Table A.1 in the Appendix.

Table 8: Reporting frequency, perception of success, dark triad personality, and selective hedging

	<i>Dependent variable:</i>	
	Selective hedging	
	(1)	(2)
Dark triad low reporting	0.0315 (1.1433)	
Dark triad high reporting	0.0464* (1.9293)	
Reporting frequency (D)	-0.0157 (-0.1249)	
Dark triad success = profitability		0.0491** (2.3083)
Dark triad success \neq profitability		0.0195 (0.6681)
Success = profitability		-0.0191 (-0.1683)
Controls	<i>Yes</i>	<i>Yes</i>
Industry FE	<i>Yes</i>	<i>Yes</i>
Country FE	<i>Yes</i>	<i>Yes</i>
Observations	412	412
Adjusted R ²	0.6213	0.6255
Residual Std. Error	0.3498	0.3479
F Statistic	22.0696***	22.4515***

Regression coefficients are presented with t -values in parentheses and robust standard errors (MacKinnon and White, 1985). * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. Reporting frequency (D) is a dummy variable that takes a value of one for reporting frequencies above the median, zero otherwise; *Dark triad low reporting* takes the value of Dark triad for Reporting frequency (D) = 0, zero otherwise; *Dark triad high reporting* takes the value of Dark triad for Reporting frequency (D) = 1, zero otherwise; *Dark triad success = profitability* takes the value of Dark triad for Success = profitability = 1, zero otherwise; *Dark triad success \neq profitability* takes the value of Dark triad for success = profitability = 0, zero otherwise. Variable definitions of control variables can be found in Table A.1 in the Appendix.

Table 9: Firm structure, dark triad personality, and selective hedging

	<i>Dependent variable:</i>				
	Selective hedging				
	(1)	(2)	(3)	(4)	(5)
Dark triad not managing	0.0803 (1.3534)				
Dark triad managing	0.0305* (1.6832)				
Professional position (D)	0.1707 (0.8659)				
Dark triad family		0.0913* (1.8278)			
Dark triad other		0.0290 (1.5605)			
Firm type (D)		-0.2533 (-1.2723)			
Dark triad low sales			0.0646*** (2.7042)		
Dark triad high sales			0.0059 (0.2332)		
Sales revenue (D)			0.1564 (1.3774)		
Dark triad few employees				0.0666*** (2.6139)	
Dark triad many employees				0.0118 (0.4951)	
No. employees (D)				0.1718 (1.5471)	
Dark triad less centralized					0.0401* (1.8629)
Dark triad highly centralized					0.0319 (1.0178)
Centralization (D)					0.1035 (0.8148)
Controls	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
Industry FE	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
Country FE	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
Observations	412	412	412	412	412
Adjusted R ²	0.6258	0.6278	0.6269	0.6249	0.6268
Residual Std. Error	0.3477	0.3468	0.3472	0.3482	0.3472
F Statistic	22.4793***	24.1116***	21.9239***	22.3934***	22.5745***

Regression coefficients are presented with t -values in parentheses and robust standard errors (MacKinnon and White, 1985). * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. Variable definitions: Professional position (D) is a dummy variable that takes a value of one for risk managers who hold a position as director or manager corporate risk management, zero otherwise; Firm type (D) is a dummy variable that takes a value of one for family firms, zero otherwise; Sales revenue (D) is a dummy variable that takes a value of one for firms with above median sales revenue, zero otherwise; No. employees (D) is a dummy variable that takes a value of one for companies with above median number of employees, zero otherwise; Centralization (D) is a dummy variable that takes a value of one for highly centralized firms, zero otherwise; *Dark triad not managing* takes the value of Dark triad for Professional position (D) = 0, zero otherwise; *Dark triad managing* takes the value of Dark triad for Professional position (D) = 1, zero otherwise; *Dark triad family* takes the value of Dark triad for Firm type (D) = 1, zero otherwise; *Dark triad other* takes the value of Dark triad for Firm type (D) = 0, zero otherwise; *Dark triad low sales* takes the value of Dark triad for Sales revenue (D) = 0, zero otherwise; *Dark triad high sales* takes the value of Dark triad for Sales revenue (D) = 1, zero otherwise; *Dark triad few employees* takes the value of Dark triad for No. employees (D) = 0, zero otherwise; *Dark triad many employees* takes the value of Dark triad for No. employees (D) = 1, zero otherwise. *Dark triad less centralized* takes the value of Dark triad for centralization (D) = 0, zero otherwise; *Dark triad highly centralized* takes the value of Dark triad for centralization (D) = 1, zero otherwise. Variable definitions of control variables can be found in Table A.1 in the Appendix.

Table 10: Robustness: Managerial confidence, dark triad personality, and selective hedging

	<i>Dependent variable:</i>
	Selective hedging
Dark triad low confidence	0.0561** (1.9667)
Dark triad high confidence	0.0297 (1.3638)
Confidence (D)	0.3832*** (3.2242)
Controls	<i>Yes</i>
Industry FE	<i>Yes</i>
Country FE	<i>Yes</i>
Observations	412
Adjusted R ²	0.6225
Residual Std. Error	0.3493
F Statistic	22.1771***
<i>Note:</i>	*p<0.1; **p<0.05; ***p<0.01

Regression coefficients are presented with *t*-values in parentheses and robust standard errors (MacKinnon and White, 1985). *p<0.1; **p<0.05; ***p<0.01. Variable definitions: Confidence (D) is a dummy variable that takes a value of one for risk managers who display above median confidence, zero otherwise; *Dark triad low confidence* takes the value of Dark triad for Confidence (D) = 0, zero otherwise; *Dark triad high confidence* takes the value of Dark triad for confidence (D) = 1, zero otherwise. Variable definitions of control variables can be found in Table A.1 in the Appendix.

Table A.1: Variable definitions

Variable	Definition
<i>Dependent variables</i>	
Selective hedging	Composite scale ranging from 1 to 5 measuring the selective hedging activities of risk managers
Trade for profit	Scale ranging from 1 to 11 measuring the degree to which risk managers try to make additional profit with their hedges rather than manage the volatility of earnings and cash flows
Market view	Composite scale ranging from 1 to 5 measuring the degree to which a risk manager's market view influences their hedging decisions
<i>Personality traits</i>	
Dark triad	Composite scale ranging from 1 to 5 measuring managerial personality traits (Machiavellianism, narcissism, and psychopathy) based on Jonason and Webster (2010)
Machiavellianism	Scale ranging from 1 to 5 measuring Machiavellianism based on Jonason and Webster (2010)
Narcissism	Scale ranging from 1-5 measuring narcissism based on Jonason and Webster (2010)
Psychopathy	Scale ranging from 1 to 5 measuring psychopathy based on Jonason and Webster (2010)
<i>Control variables</i>	
Risk preference	11-level scale measuring managerial risk attitude based on Dohmen et al. (2011)
Confidence	11-level scale measuring risk managers' confidence in their hedging activities based on Weber and Brewer (2003)
Male	Dummy variable that takes a value of one for male risk managers, zero otherwise
Age	6-level scale measuring risk managers' age
Education	6-level scale measuring risk managers' education
Derivatives expertise	5-level scale measuring risk managers' experience using derivatives
Experience / tenure	5-level scale measuring the risk manager's tenure with the firm
Tail outcomes	Composite scale ranging from 1 to 5 measuring the degree to which risk managers use hedging to eliminate lower-tail outcomes
Success=profitability	Dummy variable that takes a value of one for risk managers who perceive additional financial gains to be an important success criterion of risk management activities, zero otherwise
Professional position	Dummy variable that takes a value of one if the risk manager is the director/manager corporate risk management, zero otherwise
Performance measurement	Scale ranging from 1 to 5 measuring the degree to which a risk manager's performance is evaluated based on their absolute profit/loss
Reporting frequency	Scale ranging from 1 to 6 measuring the reporting frequency on a risk manager's hedging activities
Centralization	Scale ranging from 1 to 11 measuring the degree to which the firms' hedging activities are centralized
Guidelines	Scale ranging from 0 to 5 measuring the degree to which risk managers' hedging decisions are bound by internal guidelines

Continued on next page

Table A.1 – continued

Variable	Definition
No. employees	8-level variable indicating the number of employees in the respondent's firm
Sales revenue	8-level variable indicating the annual sales of the respondent's firm
Non-family private firm	Dummy variable that takes a value of one for non-family private firms, zero otherwise
Family private firm	Dummy variable that takes a value of one for family private firms, zero otherwise
Government firm	Dummy variable that takes a value of one for government firms, zero otherwise

Table A.2: Robustness: Dark personality traits and selective hedging

	Dependent variables:		
	Selective hedging	Trade for profit	Market view
	(1)	(2)	(3)
Machiavellianism	0.0266* (1.9360)	0.2446*** (3.7839)	0.0519*** (2.7255)
Controls	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
Industry FE	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
Country FE	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
Observations	412	412	412
Adjusted R ²	0.6252	0.4167	0.4904
Residual Std. Error	0.3480	1.5922	0.4918
F Statistic	23.1120***	10.4727***	13.7567***
	(4)	(5)	(6)
Narcissism	0.0376* (1.9635)	0.1961** (2.2384)	0.0782*** (2.7055)
Controls	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
Industry FE	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
Country FE	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
Observations	412	412	412
Adjusted R ²	0.6259	0.4047	0.4937
Residual Std. Error	0.3477	1.6086	0.4902
F Statistic	23.1828***	10.0115***	13.9281***
	(7)	(8)	(9)
Psychopathy	0.0245 (1.5421)	0.2781*** (3.5134)	0.0546** (2.4879)
Controls	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
Industry FE	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
Country FE	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
Observations	412	412	412
Adjusted R ²	0.6242	0.4177	0.4895
Residual Std. Error	0.3485	1.5909	0.4922
F Statistic	23.0183***	10.5103***	13.7136***

Regression coefficients are presented with t -values in parentheses and robust standard errors (MacKinnon and White, 1985). * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. Variable definitions can be found in Table A.1 in the Appendix.

Table A.3: The non-finance sector, dark triad personality, and selective hedging

	<i>Dependent variable:</i>		
	Selective hedging	Trade for Profit	Market view
	(1)	(2)	(3)
Dark triad	0.0599* (1.9524)	0.3557*** (2.7050)	0.0809* (1.7456)
Controls	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
Industry FE	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
Country FE	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
Observations	188	188	188
Adjusted R ²	0.6138	0.3959	0.5051
Residual Std. Error	0.3380	1.5898	0.4832
F Statistic	10.9056***	5.0845***	7.3609***

Regression coefficients are presented with t -values in parentheses and robust standard errors (MacKinnon and White, 1985). * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. Variable definitions can be found in Table A.1 in the Appendix.