Economic Analysis Letters

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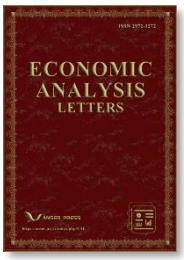

# Psychopathy, prospect theory, and the Madoff Curve: a dual behavioral neuroscience and behavioral economic framework for understanding White Collar Crime

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## ABSTRACT

Reckless behavior by business leaders can be a systemic risk for individual firms and the economies in which the firms exist. We propose that a synthesis of behavioral economics, in particular prospect theory, and the study of psychopathy may help researchers better understand why some business leaders engage in high-risk criminal activity. We propose that psychopathy is associated with an abnormal response to negative consequences. Where traditional Prospect Theory proposes that people are loss avoidant, we propose that people high on the trait of psychopathy may be more motivated by gains and will be risk seeking in high reward/high risk situations for which most people will avoid risk. We propose two empirical study designs that may be used to test the framework in the future.

## KEYWORDS

Prospect theory, psychopathy, behavioral economics, White-Collar Crime, decision making

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ISSN 2972-3272
doi: 10.58567/eal02020005


Received 22 March 2023; Accepted 15 May 2023; Available online 23 May 2023

## 1. Introduction

From a human decision-making perspective, high risk White-Collar criminal activity is somewhat unusual. Take the case of Bernie Madoff. Madoff ran a successful and legitimate investment firm, was highly respected on Wall Street, and was chair of NASDAQ for a time (2015). And yet, even after attaining mainstream success, Madoff ran a massive Ponzi scheme that left 5000 clients including wealthy investors and numerous Jewish charities destitute after the scheme came crashing down in 2008. While Madoff is far from the only White-Collar criminal, we focus on him as an example for two reasons: first, his audacious scheme is widely known. Second, it is unusual for the fact that he would have been wealthy and widely respected had he returned funds to all of his "investors" and ceased criminal activity decades before the scheme came crashing down as a result of the late aughts financial crisis.

The question remains, why do people who have a great deal of money and power take unnecessary criminal risks? The eventual fall of Madoff ruined not only his clients and his family, but also his own business and reputation. We propose that high risk White-Collar crime can be explained by the synthesis of a theory of criminal psychopathy (Kiehl, 2014) and Prospect Theory (Khaneman & Tversky, 1979).

## 2. The Madoff Curve vs the Prospect Theory Value Function

Our argument relies on neuroscience evidence reported in Kiehl's (2014) book The Psychopath Whisperer. In the book, Kiehl reviews previous experimental research on high-risk prisoners who score high on the Hare Psychopathy Checklist (Hare et al., 1990). Kiehl reports several interesting findings. First, the checklist gives a continuous score, which means that people vary in their level of psychopathy. Second, Hare found that violent offenders who scored high on the checklist showed deficiencies in amygdala activity. This was interpreted as evidence that psychopaths do not respond to fear of punishment in the same way as non-psychopaths. Instead of associating negative consequences with their behavior, punishment was something to be angry about and retaliate over. In classical behaviorism, punishment associates negative valence with a behavior and thus reduces this behavior. Amygdala activity is part of the neurological substrate of this association. If this activity is diminished, then so is the power of punishment. Finally, Kiehl noted studies which suggest that behavior modification techniques that focus reinforcement are more successful in adolescents with conduct disorders than are techniques that use punishments. In other words, for reasons related to brain development, individuals who score high on measures of psychopathy may not respond to negative consequences in the same ways as everyone else.

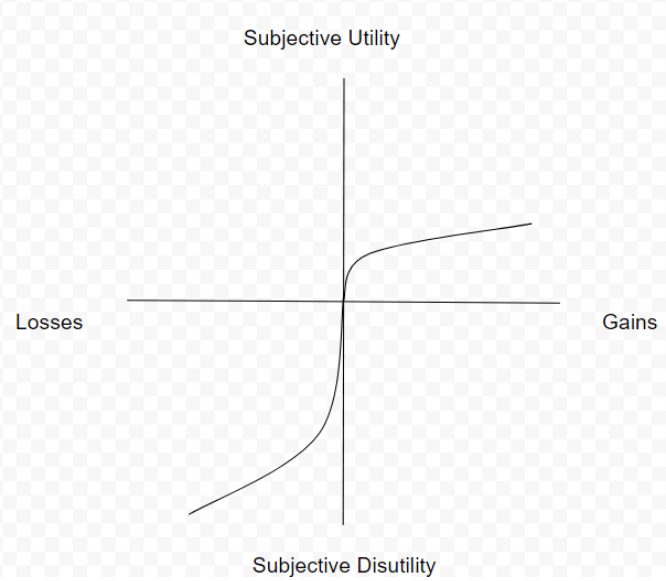
This could be particularly important when behavioral economists, psychologists, and criminologists study theories of decision making as they apply to White-Collar crime. Even though we use Madoff as an example, there is other research showing that bad behavior in business leaders may have serious consequences for businesses and other economic institutions that are intertwined with them. Zona, Minioja, and Coda (2012) did a case study of a 2005 scandal involving the Italian Bank Banca Popolare di Lodi (BPL). Their analysis provided a detailed hypothesis for how the personal moral characteristics of the CEO became antecedent to a widespread culture of corruption at BPL. Borgholthaus, White, and Harms (2023) have found that studies of dark personality traits in CEO's have increased over the last decade, corresponding with wider recognition that CEO personal characteristics can have large effects on firms, but they note that the main emphasis has been on CEO narcissism. Traits like psychopathy and Machiavellianism have been, according to these authors, relatively understudied compared to narcissism.

Our analysis follows from the following premises: First, bad CEO behavior can have serious systemic consequences for a firm and other economic entity doing business with the firm. Second, the trait of psychopathy is associated with abnormal ways of responding to risk and negative consequences. Third, there the relative dearth of research on CEO psychopathy leaves opens the question of how a psychopathic CEO's altered perception of consequences and risk may impact their firm. Taken together, we propose that there is a need for a framework that

generates hypotheses about how psychopathic traits alter risk taking in White-Collar workers, such as CEO's, in such a way as to increase the probability of high-risk White-Collar crimes which have high short-term gains and present large long term risk for the firms engaging in the crimes.

We propose that such a framework can be developed with the help of the field of behavioral economics. In particular, we propose that insights may be found in the theory of decision making under conditions of risk known as Prospect Theory (Kahneman & Tversky, 1979). One of the most well-known images from the theory is the Prospect Theory Value Function. We show an exaggerated version of the function in figure one to make the pattern easier for the reader to see [Figure 1]. Using hypothetical decision-making tasks, prospect theory researchers ask participants to make risky decisions with certain probabilities of loss and gain (Barberis, 2013; Kahneman & Tversky, 1979). A common paradigm is to present two experimental conditions mirror image risky choice scenarios in which the probability of gain and loss is the same in both scenarios. From a mathematical perspective, telling one group "you have a 40% chance of gaining" is the same thing as telling another group "You have a 60% chance of losing." What prospect theory shows is that people do not treat those the same. Losing a specified amount of money (or some other valued thing) has been shown to cause more negative valence in research participants than gaining the same amount of money (or valued thing) causes an increase in positive valence (Barberis, 2013). In other words, losing $10 makes the typical person more upset than gaining $10 makes the typical person happy. As a result, Prospect Theory researchers have been able to get research participants to make decisions with the opposite expected utility by framing choice scenarios in such a way as to either emphasize gains or losses. Participants will often be more risk averse in order to lock in gains and risk seeking in order to avoid losses.

**Figure 1. Traditional Prospect Theory Value Function.**



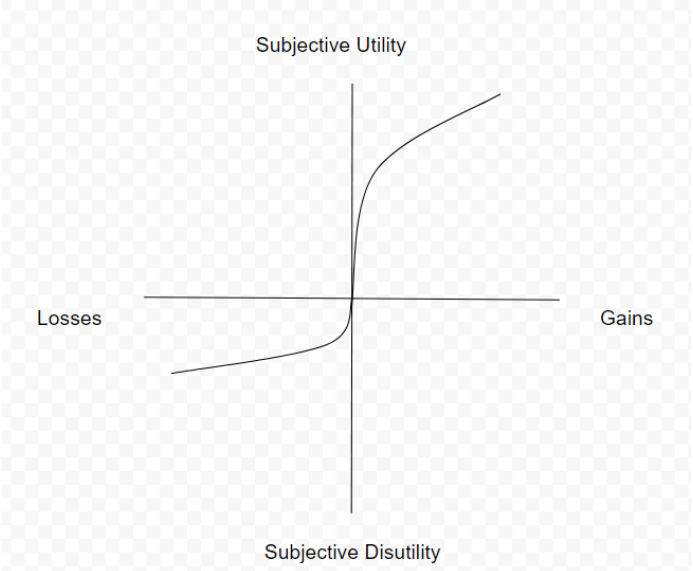

*Note: The X-axis represent how much of something of value is gained or lost. The Y-axis represents the subjective valence associated with the gain or loss (Based on figures published by Barberis, 2013; Kahneman & Tversky, 1979).*

However, the typical pattern is just that: an average. As seen in figure one, it is presented as concave for gains, convex for losses, and steeper for losses. Kahneman and Tversky (1979) cited previous research that constructed utility functions for changes in wealth based on the response of 30 individuals who worked in business. Of the 30, there was a single participant who showed an unexpected pattern in which their utility function for losses was not steeper than their utility function for gains. Thirty is a small sample size and we cannot extrapolate relative percentages of the population that would show this pattern from such a small number. However, it is interesting to note that 1/30 is about 3%. A recent paper offered estimates of the prevalence of psychopathy in adults as being

between 1.2 and 4.5% depending on the method used to come to the estimate and the instrument used to measure psychopathy (Sanz-Garcia et al., 2021). We want to propose that individuals who commit high risk White-Collar crimes are individuals whose personal value functions are flattened or even reversed compared to the typical pattern. Further, we hypothesize that this altered risky choice profile is the result of reduced sensitivity to punishment and negative consequences as behavior modifiers.

Both a flattened curve and an inverted curve would lead to gains causing greater subjective increases in positive valence for the psychopathic white-collar criminal than for the typical person. Both possibilities are worth considering. A completely flat curve suggests that a gain and loss are linearly associated with valence. In some ways, this is a rationalist way of assessing risk. Pickett at al. (2020) conducted a series of experiments on 3 samples from non-criminal populations (one student sample and two convenience samples recruited from MTURK) and asked them hypothetical scenarios about how likely they would be to take a criminal opportunity and how appealing the criminal opportunity would be. For example, one scenario entailed a friend offering an opportunity to help sell stolen computers. Independent variables related to how much money stood to be made from the crime and the baseline salary of the participants predicted how appealing the criminal opportunity sounded. For example, participants asked to imagine they were jobless and in debt and stood to make $25,000 were more likely to rate the opportunity as appealing than were participants who were instructed to image they stood to make $250 and that they had a job making $100k. These predictions were in line with rational utility theory. However framing manipulations for the criminal opportunities did not create the classic prospect theory effects. Whether or not a criminal opportunity seemed appealing was related to how much there was to be gained relative to the starting monetary reference point for the participants. These results suggest that decisions about whether or not to commit crimes might be better predicted by classical utility theory.

**Figure 2.** The Proposed Madoff Curve.




*Note: The X-axis represent how much of something of value is gained or lost. The Y-axis represents the subjective valence associated with the gain or loss. A person with this pattern should be more risk seeking for gains and relatively less sensitive to losses (Based on figures published by Barberis, 2013; Kahneman & Tversky, 1979).*

There is a major caveat to that conclusion. Across the studies, the modal response for how "worth it" the crime would be on a 1 to 7 scale and how likely the participants would be to offend on a 1 to 5 scale was 1. In other words, the most common response among participants for all scenarios was that the crime was not at all worth committing and they were very unlikely to participate. So rational utility theory predicted which scenarios would be more appealing for criminals, but among people willing to consider committing the crime. This suggests that there might

be something different about people willing to seriously consider a crime. Since a flatter Prospect Theory value function is a less extreme deviation than an inverted function, it might be reasonable to propose that the typical white-collar criminal is opportunistic and willing to consider crime when the gain is high relative to their starting wealth point. Strictly speaking, they might be making a "rational" decision from a monetary gain versus risk of getting caught perspective, even if that decision is anti-social.

We also have to consider the possibility of an individual with a totally inverted value function. Bernie Madoff might be a good candidate. Yes, he was opportunistic. But his Ponzi scheme entailed excessive risks to himself, his family, his business and did inordinate harm to others. In this extreme case, the possibilities of getting caught and losing everything or feeling guilt for harming others loomed smaller than whatever positive valence came as a result of making money through the scheme. In this case, Madoff engaged in risk taking behavior in order to increase gains. Hence, we propose the inverted value function or "Madoff Curve" as representing the way risky choices are assessed for high-risk White-Collar criminals [Figure 2].

## 3. Future Research and Applications

We want to end with suggestions for future research and potential applications of our framework. Before we do so, must acknowledge that the proposed Madoff Curve is currently speculative and theoretical. The goal of the present paper is to present a support a framework that will guide empirical research. The theory will ultimately stand or fall only after experimenters have had their say.

Our first recommendation is that concerted efforts be made by behavioral economists and psychologists to assess the way White-Collar criminals assess risk. This is especially true among White-Collar criminals who score high on measures of psychopathy, and we believe the neurological pattern underlying that condition is intertwined with risk assessment and decision making. By understanding the motivating factors underlying White-Collar crime, prevention may be easier in the future. Furthermore, understanding the risk-taking behaviors of White-Collar criminals may provide additional clues for investigators and regulators attempting to catch White-Collar crime. To that end, we want to propose that researchers actively seek out and test incarcerated populations which include White-Collar criminals. We recommend using the 14 problems used by Kahneman and Tversky (1979) to test how college students and faculty members made decisions about risk. The problems are inexpensive to administer, present little risk to the participants, and the results can be compared to the empirical and theoretical expectations of prospect theory. In addition, the problems could also be administered to several control groups including White-Collar professionals with no criminal background, and non-White-Collar incarcerated individuals. We also recommend administering a measure of psychopathy. For a more intensive and clinically oriented measure, the Hare checklist (Hare et al., 1990). For a shorter, but easier to administer measure, we recommend the psychopathy subscale of the Short Dark Triad Inventory or SD3 (Jones & Paulhus, 2014).

However, we want to propose a more provocative potential application. Corporations are frequently treated as individuals and in multiple cases, corporations have been criminally charged, tried, and convicted. If an organization can be convicted like a person, why cannot an organization have a "personality?" When a major corporation has a widespread pattern of criminal activity, it is easy to point to individuals who are "bad apples" and say, "ah, there are your psychopaths! They are the ones doing bad things!" But most of the population is not psychopathic. However, a corporation may, for a variety of reasons, develop a pattern of operating such that the perceived value of profits gained is greater than the perceived pain associated with a loss of equal value. When gains loom larger than losses, the value function of a corporation may start to look like the value function in figure two. Hence, even if individual employees are not psychopathic, the corporation may behave "psychopathically" as an organization. If our framework gains empirical support, it might not just help us understand White-Collar crime at the individual level. It might help us understand White-Collar crime at the institutional level as well. In order to experimentally test this

idea, we recommend an experimental procedure in which groups of White-Collar professionals have to make hypothetical risky choices that would affect the profitability of their organization and their likelihood of future advancement and employment. Experimental manipulations could include information about the health of the organization (soluble vs. near bankruptcy), shareholder behavior (shareholders satisfied vs. shareholders threatening hostile takeover and downsizing), and information about company culture ("At this company, we pride ourselves at doing things right" vs. "At this company, we win at all costs." If we are correct, we would expect groups to make risky decisions drive by gains when the company is under financial strain, under scrutiny from shareholders, and when the company has a highly competitive culture.

## Funding Statement

This research received no external funding.

## Conflict of interest

All the authors claim that the manuscript is completely original. The authors also declare no conflict of interest.

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