Pascal's Wager as a Decision Under Ignorance

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Forthcoming in *Erkenntnis*: Please cite the published version once it becomes available.

Abstract

In this paper, I examine Pascal's Wager as a decision problem where the uncertainty is massive, that is, as a decision under ignorance. I first present several reasons to support this interpretation. Then, I argue that wagering for God is the optimal act in a broad range of cases, according to two well-known criteria for decision-making: the Minimax Regret rule and the Hurwicz criterion. Given a Pascalian standard matrix, I also show that a tie between wagering for God and wagering against God is only possible under very narrow conditions when applying the Hurwicz criterion. Finally, I discuss three objections to these two versions of the Wager. The most pressing challenge comes from the Many-Gods objection. I conclude that this objection is even more challenging whenever one faces a situation of massive uncertainty about God's existence. I argue that addressing it requires a more detailed examination of the benefits of adopting a religious life compared to those of choosing non-theism, or an additional criterion that can break the tie between these options.

1 Introduction

Pascal's Wager consists of a family of arguments that aims to provide a pragmatic justification for theistic belief. Its most famous version is known as *the Canonical Wager*. If correct, this argument leads us to conclude that betting on God—or taking steps that would increase our chances of believing in Him—is the act that uniquely maximizes expectation. Accordingly, the Canonical Wager depends on probabilities. More specifically, it assumes that the probability of God's existence is somehow available to the wagerer. But what if our evidence permits us to withhold from having some positive probability in the proposition that God exists? What if it does not make sense at all to assign a probability to God's existence? In this paper, I examine the Wager as a decision under massive uncertainty (or ignorance), that is, as a decision problem where the probabilities are *unknown* or *not meaningful* to the wagerer.

It is widely acknowledged that Pascal himself has already considered the Wager as a decision problem under ignorance in his *Pensées* when applying a sort of dominance reasoning. Crucially, his dominance argument hinges on a central premise: the option of wagering for God must be at least as good as the option of wagering against God if there is no God. In this paper, I demonstrate that one does not need this assumption in order to achieve Pascal's conclusion about the rationality of the theistic option in a 2×2 matrix. In particular, I claim that two suitable candidates rules for decision-making under ignorance—viz. the Minimax Regret rule and the Hurwicz criterion—are capable of drawing this conclusion under a wide variety of circumstances. Another striking feature is that those criteria dispense with assigning any probability at all to God's existence. Despite that, I argue that extending the decision matrix to harbor different theistic hypotheses brings complications for those versions of the Wager.

This paper is organized as follows. In section 2, I characterize choices made under ignorance and present two main reasons why Pascal's Wager can be considered a paradigmatic example of this type of situation. In Section 3, I apply the aforementioned criteria for decision-making under ignorance to a Pascalian 2×2 matrix. I will look into the conditions that make wagering for God the optimal act according to each of those two criteria. In Section 4, I examine three objections to those new versions of the Wager. I respond to the first two objections. Finally, I argue that the Many-Gods objection is even more challenging in conditions of ignorance. I conclude that tackling this objection requires a more thorough investigation of the benefits of choosing a religious life and those of adopting non-theism, or applying a supplementary principle that can break the tie between these options.

2 Pascal's Wager and Decisions under Ignorance

The Canonical variant of Pascal's Wager vindicates the option of wagering for God—the Christian God, presumably—as rationally mandatory because it uniquely maximizes expected utility. As such, the argument relies heavily on the most straightforward decision matrix we can think of (see Table 1).[1] If you choose to live in line with the practices and beliefs of the Christian worldview and there exists such

[1] The notations G and $\neg G$ in Table 1 stand for the propositions that God exists and that He does not exist, respectively. The letter 'H' stands for heaven (or the outcome of salvation). For now, let us assume that H has either an infinite utility or an extraordinarily large but finite utility (when compared to each u_i in the decision matrix).

a God, then you will obtain salvation in the afterlife. Pascal (1941 [1670]: 154) suggests that God will reward the wagerer with "an infinitely happy infinity of life to be won." Any other consequence possesses only a finite payoff. If there is no God, then whether you wager for or against his existence gives you only a finite amount of utility. The same applies to the act of wagering against God if He does exist. Given that the probability you assign to his existence is any value in the unit interval but not zero, adopting a Christian way of life will have a strictly greater expectation than choosing to live a secular life. Thus, practical rationality requires you to prefer the former over the latter.

	G	$\neg G$
Wager for God	H	u_1
Wager against God	u_2	u_3

Table 1: Pascal's Wager

This version of Pascal's argument depends on some fundamental assumptions. Among other things, it assumes that assigning probabilities to the proposition that God exists (G) makes sense. If this is the case, then an agent who is facing a Pascalian decision problem has either relevant information about G's objective probability, or it is up to her to make a precise judgment about G's probability given her evidence. If probabilities (either objective or subjective) are in some way available to the agent, then it will be possible to calculate the expected utilities of wagering for God and wagering against God. As it stands, the argument states that wagering for God will be the uniquely optimal choice, considering that it has the largest expected utility, whatever positive probability is attached to G. The fact that the probabilities are *somehow* available makes it possible to vindicate the theistic option as rationally mandatory. Here's the principle of practical rationality underlying this argument:

> (**EU Maximization**)
>
> An act A is rationally permissible (mandatory) just in case its expected utility is equal or greater (strictly greater) than the expected utility of any other act B.

EU Maximization relies crucially on probabilities. (Recall that the expected utility of any act is the weighted sum of the utilities of the outcomes associated with it, where the weights are given by the probabilities assigned to each possible state of the world). But what happens to one's choice if the probabilities are *unknown*, or if it makes no sense *at all* to make a subjective judgment about how probable the existence of God is? More importantly, if a rational agent cannot assign any probability to God's existence, what rule should govern her choice between wagering for God and against God?

Before delving into those issues, I will spend a bit of time motivating why one might interpret Pascal's Wager as a decision in which the probabilities are unavailable: namely, *a decision under ignorance*.

In decisions under uncertainty, unlike decisions under risk, decision-makers lack enough specific information to assign an objective probability to each possible state of the world. Typically, they are aware of all prospects involved in their choice, and they know each corresponding outcome associated with those prospects. Depending on their level of uncertainty, they are capable of making judgments of how confident they are about the prospects and outcomes. But the level of uncertainty may vary significantly, from mild to severe uncertainty.[2] A subjective probability distribution (or a set thereof) captures the state uncertainty: it quantifies how uncertain an agent is regarding each possible state of the world. Decisions under ignorance are decisions where the state uncertainty is massive. In this way, decisions under uncertainty is a broader category ranging from mild uncertainty to ignorance. Thus, decisions under ignorance are a particular case of decisions under uncertainty.[3] As I see it, 'decision under uncertainty' is an umbrella term covering a range of decision problems with different levels of severity. In cases of decision-making under ignorance, agents are unable to make a probability judgment about the states because their level of uncertainty is extraordinarily large. Presumably, in such circumstances, the level of severity about what possible state of the world is the case is maximal.

Following Peterson (2017: 41), I require two conditions for a choice problem to be a decision under ignorance: (i) the decision-maker knows what possible states of the world and their corresponding outcomes are available and (ii) they cannot assign probabilities to those states because their probabilities are either unknown or it makes no sense to do so. In other words, the decision-maker is unable to draw any conclusion about the probabilities of the states and their corresponding outcomes. By 'decisions under ignorance' I do not mean to include decision problems where one has no information at all about what outcome results from a combination of a possible state of the world and an available act. Later in section 4.3, I will show that choosing between different religious worldviews requires one to know more facts about the non-salvific utilities. Moreover, ignorance can be partial if the decision-maker is able to assign a probability to some but not all available states. Throughout this paper I focus solely on cases

[2]See Bradley & Drechsler (2014) for a detailed taxonomy of uncertainty and more information about its levels of severity.

[3]It is important to say that this is not the orthodox view in decision theory. For instance, authors such as Luce & Raiffa (1985 [1957]: 13) use the phrase *decisions under uncertainty* instead of *decisions under ignorance* to refer to cases where neither a decision-maker knows the objective probabilities nor they are capable of assigning a subjective probability to each possible state of the world. As I understand it, however, this view does not cut deep enough. Even if objective probabilities are unknown, in situations where the uncertainty is high but not massive a decision-maker may be able to assign imprecise (or ranged) credences to each possible state of the world. As noted above, I characterize decision problems under ignorance as a special case of a broader class: decision problems where the uncertainty is severe.

involving complete ignorance (viz. massive uncertainty) about what possible state is true.

There are two main reasons why one might construe Pascal's Wager as a decision under ignorance: (a) certain key passages of his *Pensées* and (b) the evidential situation of a Pascalian decision.

It is worth noting that Pascal presents several different versions of the Wager in the *Infinity nothingness* passage (§233). The Canonical Wager, by far the most widely discussed version in the literature, is only one of them. Before turning to it, Pascal clearly takes the Wager as a decision problem under ignorance. He first begins by saying that one cannot know what constitutes the nature of God:[4]

> "If there is a God, He is infinitely incomprehensible [...] We are then incapable of knowing either what He is or if He is." (*Pensées*, 1941 [1670]: 80).

Next, Pascal asserts that reason alone is incapable of settling the matter about the existence of God, presumably because there are no evidential grounds for favoring theism over non-theism (or vice versa):

> "God is, or He is not. But to which side shall we incline? Reason can decide nothing here. There is an infinite chaos which separated us. A game is being played at the extremity of this infinite distance where heads or tails will turn up. What will you wager? According to reason, you can do neither the one thing nor the other; according to reason, you can defend neither of the propositions."(*Pensées*, 1941 [1670]: 81).

Despite such epistemically impoverished situation, Pascal points out that we have no alternative but to choose between wagering for God or wagering against God. That is to say, the Wager is inescapable. Then, Pascal puts forward the first of his well-known arguments for wagering for God's existence:

> "Which will you choose then? Let us see. Since you must choose, let us see which interests you least. You have two things to lose, the true and the good; and two things to stake, your reason and your will, your knowledge and your happiness, and your nature has two things to shun, error and misery. Your reason is no more shocked in choosing one rather than the other, since you must of necessity choose. This is one point settled. But your happiness? Let us weigh the gain and the loss in wagering that God is. Let us estimate these two chances. If you gain, you gain all; if you lose, you lose nothing. Wager, then, without hesitation that He is." (*Pensées*, 1941 [1670]: 81).

[4]All quotations used here are from W. F. Trotter's translation of *Pensées* (1941 [1670]).

If God exists, then wagering for God is better than wagering against God: $H > u_2$. If God does not exist, then wagering for God is at least as good as wagering against God: $u_1 \geq u_3$. So, the outcomes associated with wagering for God are better off than those associated with wagering against God. Because the former dominates the latter, Ian Hacking (1972) calls it *the argument from dominance*.[5]

In order for the argument from dominance to work, one does not need to assign any probability whatsoever to the proposition that God exists. In fact, with respect to the probabilities of the states, it is only assumed that each available act cannot affect how probable God's existence is. Because Pascal's first argument appeals to a dominance reasoning, it is required that the possible states of the world are independent of each act in the decision problem, namely wagering for God and wagering against God.

More importantly, Pascal's argument from dominance depends on $u_1 \geq u_3$. In other words, the outcome associated with wagering against God cannot be better than that associated with wagering for God if there is no God. But, as many might think, this is a crucial limitation of the dominance reasoning. To make this point more vividly, perhaps the believer has to sacrifice certain pleasures when they decide to wagering for God, so there is no guarantee that $u_3 \leq u_1$ as a dominance reasoning requires. In the next section, I argue that the Wager construed as a decision under ignorance goes through even if $u_1 < u_3$. Thus, even if one assumes that wagering for God is worse than wagering against God if there is no God, Pascal's argument may work equally well. Although it is well-known that the Canonical Wager does not rely on what values one attaches to both u_1 and u_3, it is not obvious that the same holds for a Pascalian decision under ignorance. In fact, I show that one can vindicate Pascal's Wager using two distinct rules for decision-making under massive uncertainty—viz. The Minimax Regret rule and the Hurwicz Criterion—regardless of the values assigned to u_1 and u_3. Before we get to all that, let us turn to another motivation for seeing a Pascalian decision as a choice under ignorance.

Unlike most theistic arguments, Pascal's Wager consists of a family of arguments that intends to provide a pragmatic justification for believing in God's existence. Practical rationality comes into play in all versions of the Wager because its epistemic context is one in which the agent lacks sufficient evidence for the proposition that God exists. The more fundamental general point about this context is that the wagerer cannot determine from their evidence whether God exists.[6] Even though there is no

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[5]The argument from dominance relies on the weak dominance principle: one should choose the act that *weakly* dominates all other available acts. We say that an act A *weakly* dominates an act B if the outcomes associated with A are at least as good as those associated with B in every possible state. If $u_1 > u_3$, then one will get a stronger version of the argument from dominance. In this case, wagering for God will *strongly* (or *strictly*) dominate wagering against God. For more discussion about these versions, see Jordan (2006) and Bartha & Pasternack (2018).

[6]Relatedly, in the *Excellence of this way of proving God* passage of *Pensées*, Pascal expresses his skepticism regarding the

adequate evidence for theistic belief, Pascal thinks that pragmatic considerations are perfectly suitable to rationalize such a belief.[7] Indeed, this is one of Pascal's driving assumptions: the context of a Pascalian decision problem is characterized by impoverished evidential circumstances.

It is fair to say that this seems to be a case where the evidence is incomplete. Following Joyce (2005: 167), we define a body of evidence as incomplete relative to P whenever it does not help us to discriminate P from other incompatible hypotheses. Hence, incompleteness does not necessarily mean that the wagerer is faced with no evidence at all. Borrowing some terminology from Morris (1986), incomplete evidence does not always amount to a situation of *epistemic nullity*.[8] Although it might be hard to say if one's evidence favors theism over non-theism (or vice versa), each of these hypotheses can enjoy some positive epistemic status. Moreover, incompleteness by itself does not entail that the wagerer's evidence is *symmetrically balanced* either. After all, lack of information does not entail that the probabilities of each possible state of the world are equal. By way of example, consider an urn full of white and black balls. Suppose that the only information you have is that this particular urn contains 100 balls: you do not know how many balls are white, for instance. Consequently, you do not know whether those white and black balls are equally distributed in the urn's contents. It might be $50/50$. But your evidence does not rule out that, say, the urn contains 90 white balls and 10 black balls.[9] There is no reason to favor a $50/50$ distribution. You are completely in the dark regarding the proportion of white and black balls until you begin to obtain some sampling information about the urn's contents.

In addition, claims such as "reason cannot decide anything" and "reason cannot make you choose one way or the other" might suggest that one's evidence in a Pascalian decision problem is too unspecific to demand assigning probabilities to each of those rival hypotheses. As I see it, what explains one's body of evidence E being less than completely specific about the proposition that God exists is the

classical theistic arguments for the existence of God: "The metaphysical proofs of God are so far removed from man's reasoning, and so complicated, that they have little force. When they do help some people it is only at the moment when they see the demonstration. An hour later they are afraid of having made a mistake." (*Pensées*, 1941 [1670]: 63).

[7] As an alternative, those practical reasons support not directly the theistic belief but the ongoing action of wagering for God, namely adopting a religious way of life that attempts to foster belief in God's existence.

[8] According to Morris (1986), Pascal's Wager was originally thought to work only for agents who see theism and non-theism in a position of *epistemic parity*. For Morris, two hypotheses are in epistemic parity either because there is no evidence for either of them (epistemic nullity) or because it is unclear whether the evidence favors one hypothesis over the other, even though both are judged to have some positive epistemic status (epistemic ambiguity). The view about incomplete evidence I'm endorsing here is similar to this latter way in which two hypotheses may face epistemic parity.

[9] As Titelbaum (2022, chapter 14) points out, one might argue that in cases like this the appropriate, rational response involves adopting imprecise probabilities rather than point-valued probabilities. I explore this alternative in Neiva (2023), where I apply different principles of decision-making with imprecise probabilities to Pascal's Wager.

fact that E is incomplete.[10] Under this interpretation, Pascal seems to indicate that if an agent's evidence is sufficiently unspecific about God's existence because it is incomplete, then it will be wrong for them to assign a probability value to each possible state of the world (or to each rival hypothesis). In a similar vein, Hájek (2024) suggests that those passages from *Pensées* might support the claim that it is rationally permissible to fail to assign a probability to God's existence, rendering it undefined. My approach is close in spirit to Jackson's view (2023) in the sense that an agent's evidence about the existence of God rationally permits them to adopt more than one doxastic attitude—either belief, disbelief, or suspension of judgment—towards it. The difference is that I am also suggesting that the evidential situation of many of us permits us to withhold from assigning a probability to the proposition that God exists.

In a subsequent passage in the text, Pascal then presents his most famous Wager. In this revised version, probabilities are put to work in order to draw the conclusion that it is rational to choose the option of wagering for God. Assuming a 2×2 matrix, all that is required for this argument to succeed is to assign a non-zero and non-infinitesimal probability to God's existence.[11] Therefore, the probability that God exists can be any positive standard real number within the unit interval. No other assumption about this particular value is needed. This is, in fact, a remarkable result. I do not dispute the strength and relevance of the Canonical Wager. What I aim to show is that one can draw the same conclusion about the rationality of the theistic option without any assumption about how probable God's existence is. One can drop probabilities altogether and get Pascal's conclusion. Indeed, this is a nice result too.

One important clarification deserves attention before we get started. It seems that the wagerer can be ignorant of the probability that God exists in two distinct ways. First, they may be unable to assign a probability to this proposition due to their cognitive limitations. In this way, lacking the proper psychology prevents the wagerer from determining (maybe even conceiving) this probability. Second, as I just suggested, the wagerer may be unable to assign a probability that God exists due to incomplete evidence. In this interpretation, the wagerer's ignorance does not stem from a cognitive limitation in their own psychology. Rather, their inability to assign a probability to God's existence is a result of their limited and insufficient evidence. As I will argue later, ignorance so understood does not need to be

[10] Also, Joyce (2005) states that sometimes an agent's body of evidence E is less than completely specific about P's truth because E is ambiguous. This means that E's evidential import on P changes across distinct construals of E.

[11] If heaven (or salvation) has an infinite utility and the probability that God exists is infinitesimal, then wagering for God can have a finite expected utility. For more discussion on the use of infinitesimal probabilities in the context of the Wager, see Hájek (2003) and Wenmackers (2018).

permanent. An agent's evidential situation might evolve over time.[12] Although the first interpretation seems to be compatible with Pascal's above quotations, I understand ignorance in this latter way.

3 Wagering under Conditions of Ignorance

There are various suggestions in the decision theory literature of how best to choose among incompatible options under conditions of massive uncertainty. Perhaps the most straightforward route would be to apply the so-called *principle of indifference*—according to which each possible state of the world should be assigned equal probabilities if there is no reason to favor one of them over the others—and stick with the expected utility maximization rule as our criterion for making rational decisions.[13] It seems wrong, nevertheless, to assign equal probabilities to all possible prospects when we are faced with a decision under ignorance. To put it differently, the lack of sufficient evidence does not entitle us to assign any probability whatsoever to the possible states of the world. Ultimately, adopting a probability distribution in a decision problem under massive uncertainty is equivalent to treating it as if one possesses specific evidence about what possible prospect is the case when such evidence is rather indeterminate. It seems utterly wrong to act as if the severity of uncertainty were lower than it is.[14]

In what follows, I argue that Pascal's Wager, when understood as a choice under ignorance, succeeds according to two different criteria for decision-making in the simplest matrix we can think of. It is worth stressing that Craig Duncan (2003) has successfully established that the Wager goes through if one applies a higher-order version of those two principles. Duncan's approach assumes that the probability of God's existence is imprecise or vague. My results are more general than Duncan's in that they do not require any probabilities whatsoever (whether precise or imprecise). As I aim to show, however, the Many-Gods objection is the most critical challenge to Pascal's Wager as a decision under ignorance.

[12] Even if a decision-maker initially fails to assign a probability to a possible state of the world and its corresponding outcomes, this situation may change over time. By gathering more evidence, they may be capable of making a probability judgment about those states and outcomes. In this regard, Weirich (2004) offers a realistic perspective on decision theory, encompassing decision-making under ignorance, cognitive limitations, and unformed probabilities and utilities. It is beyond the scope of this paper, however, to examine the Wager from a dynamic perspective.

[13] John Maynard Keynes (1921: 45) coined the term *principle of indifference* for what earlier authors such as Jacob Bernoulli and Pierre Simon Laplace had called *the principle of insufficient reason*: "The Principle of Indifference asserts that if there is no known reason for predicating of our subject one rather than another of several alternatives, then relatively to such knowledge the assertions of each of these alternatives have an equal probability."

[14] Pascal also considers the strategy of assigning equal probabilities to each, the existence and non-existence of God, in what has become known as *the argument from expectation*. Borrowing a phrase from Hacking (1972: 189), this would be "a monstrous premiss" for a situation of incomplete evidence. McClennen (1994) suggests applying the principle of indifference to cases of massive uncertainty in what he calls *the uncertainty argument*. The crucial difference is that Morris's argument does not postulate equal probabilities as Pascal's argument from expectation does.

3.1 The Minimax Regret Rule

Although there is no widespread agreement among decision theorists on how to choose in a situation of ignorance, several good approaches have been advanced since the 1950s. One of the most promising criteria is the Minimax Regret rule, originally proposed by Savage (1951).[15] According to this criterion, one should choose the option whose maximum regret is the lowest among all available options. The regret of an outcome O is a value determined by the difference between the utility of the best outcome—viz. the outcome with the greatest utility—in a possible state of the world and the utility of O in that state.[16] It measures how much the decision-maker misses out on by choosing a certain act.[17]

One may articulate the Minimax Regret rule as follows:

(**Minimax Regret**)

Choose the act that minimizes the maximum regret value.

For the sake of simplicity, I will assume that H in Table 1 has a finite utility. More specifically, the utility of H will be an arbitrarily large finite number. Admittedly, the most natural way of interpreting Pascal's notion of salvation (or heaven) involves assigning infinite utility to H. However, as Duncan (2018: 153) correctly points out, this is just *one way of modeling* the amount of happiness given by H. Duncan suggests that the core idea behind Pascal's notion of salvation is that H is *incomparably good* (in contrast to the non-salvific utilities). Unlike H (a heavenly good), each u_i in Table 1 represents an earthly good. I'm sympathetic to Duncan's approach. Not only does it provide a plausible interpretation of Pascal's idea of salvation, but it also frees us from all complications that come with infinite utility.

Because H is incomparably good compared to the non-salvific utilities, the regret associated with choosing a secular life if God exists will surpass the regret associated with any other outcome. Presumably, there is no regret in wagering for God if there is a God, nor in wagering against God if there is no God. It is natural to think that a person sacrifices some earthly goods and pleasures by adopting a religious life if God does not exist. In such a case, a believer would forgo certain benefits that a non-religious way of living might offer. There is also regret associated with following a secular life if God exists, since it involves giving up certain benefits. Intuitively, the amount of missed opportunities

[15] For a overview, see Luce & Raiffa (1985 [1957], chapter 13) and Resnik (1987, chapter 2).

[16] Recall that an outcome is a combination of an act and a possible state (an act-state pair determines an outcome).

[17] Assume that your utilities are linear with money. Given a state S and two possible acts A and B, if choosing A under S gives you \$10 and choosing B under S gives you \$1.000, then you lose an opportunity to gain \$$990$ if you decide to choose A instead of B. While the regret of choosing A under S is \$$990$, the regret of choosing B is \$$0$ under S.

associated with this latter choice will be larger than that associated with the former. Pursuing a secular life implies forgoing all the potential goods and happiness of heaven, whereas choosing a religious life would involve, at most, forgoing worldly pleasures. Since giving up heavenly benefits is worse than giving up worldly benefits, one should prefer wagering for God according to the Minimax Regret rule.

Putting it more formally, consider first the case in which the outcomes associated with both wagering for God and wagering against God bring the same amount of utility if there is no God, namely $u_1 = u_3$. According to Table 2, the maximum regret for wagering for God is 0, whereas wagering against God has a maximum regret of $H - u_2$. Presumably, the difference between H and u_2 is a very huge number because of the magnitude of H. In this case, wagering for God minimizes the maximum regret value.

	G	$\neg G$
Wager for God	0	0
Wager against God	$H - u_2$	0

Table 2: Regret Table

It turns out that Minimax Regret justifies choosing the act of wagering for God even if $u_3 > u_1$, that is to say, even if the outcome associated with wagering against God brings more utility than that associated with wagering for God if there is no God. Since u_1 and u_3 are both earthly goods, the difference between them will be smaller than the difference between H and u_2. In other words, $u_3 - u_1$ is tiny in comparison with $H - u_2$. Hence, it is fair to say that $(H - u_2) \gg (u_3 - u_1)$. Wagering for God is also the act whose maximum regret is minimal if $u_3 > u_1$. The regrets are laid out in Table 3.

	G	$\neg G$
Wager for God	0	$u_3 - u_1$
Wager against God	$H - u_2$	0

Table 3: Alternative Regret Table

Before moving on, a few remarks are in order. First, like all original versions of the Wager, this variety does not depend on the particular numbers one assigns to each u_i. As already stressed, to reach Pascal's conclusion, the prospect of heaven must be incomparably good. This is because H outweighs the earthly goods given by each u_i. Second, if salvation were represented by ∞, then the regret of the outcome associated with wagering for God under G would be indeterminate; after all, $\infty - \infty$ has an indeterminate form. Lastly, if u_2 were negative by virtue of the fact, say, that God would condemn non-believers to hell, then the maximum regret of wagering against God would be even larger: $H + u_2$.

Notice that the Minimax Regret rule is a conservative decision-theoretic procedure like the Maximin rule.[18] Both are fundamentally risk-averse principles, since they aim at avoiding large losses. However, they take different approaches to identifying the worst-case scenario. While the Maximin principle tells the wagerer to directly picks out the act with the greatest minimum payoff, the Minimax Regret rule recommends them to determine the maximum regret associated with each act and then to select the act with the lowest maximum regret. By using the latter, the wagerer focuses on comparing the amount of missed opportunities of embracing a religious life with that of adopting a secular life. Also, the most notable difference is the fact that the Maximin principle needs nothing more than an ordinal scale, whereas the Minimax Regret rule requires an interval scale. As a consequence, the latter provides a more fine-grained representation of an agent's preferences and their corresponding utilities than the former. Interval scales are capable of encoding not only qualitative comparisons but also the magnitude of differences between utilities, although they lack a true zero point, unlike ratio scales.

3.2 The Hurwicz Criterion

The Minimax Regret rule focuses on the worst-case regret values of each available act. However, instead of exclusively considering the most pessimistic outcomes, Hurwicz (1951) puts forward a more balanced approach to decisions under ignorance. In his seminal paper, he suggests a method by which we can combine the best-case and worst-case scenarios of each act, allowing for more balanced choices.

Let min and max be the the minimum utility and the maximum utility of an act, respectively. For any act A, A's α-index is a weighted sum of min and max associated with A, where $\alpha \in [0, 1]$:

$$H_\alpha(A) = \alpha \times min + (1 - \alpha) \times max.$$

Both the Maximin and Maximax rules are special cases of the Hurwicz criterion. If $\alpha = 1$, then we have the Maximin principle: min. If $\alpha = 0$, then we have the Maximax principle: max. It should be noted that the values of α and $1 - \alpha$ are the weights assigned by the decision-maker to the worst and best possible outcomes associated with an act, respectively. They capture the relative importance of these outcomes. In particular, the number assigned to α measures how pessimistic a decision-maker is about a given decision problem. It is called *the coefficient of pessimism*. The greater the value

[18]The Maximin principle recommends that the decision-maker chooses the act that maximizes the minimum utility. Maximin is a conservative criterion because it selects the best possible outcome from the worst outcomes yielded by each available act. This criterion was originally suggested by Wald (1950).

of this coefficient, the more weight the decision-maker assigns to the worst-case scenario. It is worth stressing that the Hurwicz criterion is a decision procedure that selects the alternative that maximizes a weighted average of the best and worst potential outcomes in cases of massive uncertainty. The fact that the α-index of an act is a weighted sum like the expected utility formula does not imply that the values assigned to α and $(1-\alpha)$ are probabilities. In fact, it would be unwarranted to interpret α as representing the probability of the worst outcome when the probabilities are unknown or not meaningful.

With this in place, we can state the Hurwicz criterion:

> (**The Hurwicz Criterion**)
>
> Choose the act that maximizes the α-index.

Using Table 1, the α-index for wagering for God is:

$$\alpha \times u_1 + (1-\alpha) \times H.$$

Given that $u_3 > u_2$, the α-index for wagering against God is:

$$\alpha \times u_2 + (1-\alpha) \times u_3.$$

Clearly, the result of $H \times (1-\alpha)$ will be a large number because of the magnitude assigned to H. In general, $H \times (1-\alpha)$ will be greater than $u_3 \times (1-\alpha)$ for any $\alpha \in (0,1)$. This is true because $H > u_3$, whether or not $u_3 > u_1$. In other words, the option of wagering for God maximizes the α-index—provided that $1 > \alpha > 0$—because the utility assigned to H is much greater than that assigned to u_3. As I stated earlier, the benefits of heaven are incomparably good. Accordingly, the best outcome associated with wagering for God is much better than the best outcome associated with wagering against God. The large difference between these two outcomes is sufficient to achieve Pascal's conclusion. The Hurwicz criterion recommends wagering for God as the optimal act if $\alpha \in (0,1)$.

Because of H, both u_1 and u_2 have little impact on the choice between wagering for God and wagering against God. To see this, let us assume that u_1 and u_2 have approximately the same utility value. Thus, in this particular case, the outcome associated with wagering against God if He exists would not be eternal damnation; God would neither save nor condemn non-believers.[19] If this is the case, then the approximately same number will be added to each $H \times (1-\alpha)$ and $u_3 \times (1-\alpha)$. Therefore, so long

[19] If u_2 were a negative number, then the α-index for wagering against God would be lower.

as $\alpha \in (0,1)$, all that matters for the Hurwicz criterion is the difference between H and u_3.

There is a fundamental caveat regarding the conclusion that the Hurwicz criterion recommends the act of wagering for God whenever $\alpha \in (0,1)$. In order for the α-index for wagering for God to be greater than the α-index for wagering against God, α cannot be arbitrarily close to 1. Otherwise, the value of each u_i would become increasingly relevant to the wagerer's choice. As a matter of fact, the impact of the non-salvific utilities increases as α nears 1. In what follows, I provide a formal proof of the above conclusion as long as α is some definite number less than 1.

The important question is whether the following inequality holds:

$$\alpha \times u_1 + (1-\alpha) \times H - \alpha \times u_2 - (1-\alpha) \times u_3 > 0.$$

We can simplify this inequality:

$$\alpha \times (u_1 - u_2) + (1-\alpha) \times (H - u_3) > 0.$$

Because H is an arbitrarily large number, it follows that $(H - u_3) - (u_1 - u_2) > 0$. Thus, $(H - u_3) = (u_1 - u_2) + k$ for some $k > 0$. So the above inequality is equivalent to:

$$\alpha \times (u_1 - u_2) + (1-\alpha) \times ((u_1 - u_2) + k) > 0.$$

This inequality can be reduced to:[20]

$$k > \frac{(u_2 - u_1)}{(1-\alpha)}.$$

For this expression to be meaningful, $(u_2 - u_1) > 0$.[21] Note that the right-hand side of the inequality approaches ∞ as α approaches 1. In this way, the right-hand side increases without bound as $\alpha \longrightarrow 1$. What guarantees that the Hurwicz criterion recommends wagering for God is the fact that k is an arbitrarily large positive number like H. Hence, as long as α is some definite number less than 1, the

[20]Note that the inequality $\alpha \times (u_1 - u_2) + (1-\alpha) \times ((u_1 - u_2) + k) > 0$ is equivalent to $\alpha \times (u_1 - u_2) + (1-\alpha) \times (u_1 - u_2) + (1-\alpha) \times k > 0$. This expression simplifies to $(\alpha + (1-\alpha)) \times (u_1 - u_2) + (1-\alpha) \times k > 0$. Since $\alpha + (1-\alpha) = 1$, $(u_1 - u_2) + (1-\alpha) \times k > 0$. This in turn simplifies to $k > \frac{(u_2 - u_1)}{(1-\alpha)}$.

[21]If $(u_2 - u_1) < 0$, then the fraction in the right-hand side would approach $-\infty$. This would make the inequality trivially true: that is, the inequality would be true irrespective of the value assigned to k.

inequality holds true.[22] Given this proviso, k is greater than the right-hand side of the above inequality.[23]

Let us now examine the special cases. Assigning 0 to α means that the best-case scenarios are what matters most for the wagerer. Put another way, there is absolutely no emphasis on the worst-case scenarios. If $\alpha = 0$, then wagering for God is also preferred over wagering against God: viz. $H > u_3$. Conversely, assigning 1 to α means that the wagerer puts all the emphasis on the worst-case scenarios. If $\alpha = 1$, then the α-index for wagering for God and wagering against God will be u_1 and u_2, respectively:

$$H_{\alpha=1}(\text{Wager for God}) = u_1,$$

$$H_{\alpha=1}(\text{Wager against God}) = u_2.$$

Here we would need to know which of these outcomes (if any) brings more happiness to the decision-maker in order to get a verdict from the Hurwicz criterion. Unlike the previous cases, it is not clear that assigning 1 to α makes wagering for God the only optimal act in a Pascalian 2×2 matrix. Ultimately, the choice between these two acts depends on what comes from wagering against God if He exists. As we saw in section 3, Pascal uses the term *misery*—or, as sometimes translated, *wretchedness*—to refer to such an outcome when he presents the first of his famous arguments. It seems to me that there are two main ways of understanding this outcome: *misery* means either *hell* or *annihilation*.

It is plausible to expect that u_2 will be a negative number if one adopts the former interpretation. The disutility of an afterlife of eternal suffering exceeds any potential good received in life. Of course, the matter would be settled if u_2 were negative. So, under this interpretation, a coefficient of 1 leads to Pascal's conclusion that one should choose the act of wagering for God's existence. On the other hand, a God who decides to annihilate all non-believers on account of their beliefs and lack of certain religious practices obviously refuses to grant eternal happiness to them. But, more crucially, annihilation does not imply at all that u_2 is a negative number: God will just cease the existence of all non-believers. In such a case, there is no eternal punishment for agnostics and atheists. If so, as I have already indicated, it seems that u_2 will be on a par with u_1. In either case, the wagerer will end up with all earthly goods they received in life. Both utilities will be represented by a positive finite number. Yet, it is far from clear which of these two outcomes—adopting a secular way of life in the case where God exists or choosing

[22] I am indebted to an anonymous referee for prompting me to demonstrate the formal result above.

[23] An anonymous referee rightly observed that the Hurwicz criterion can be subject to the swamping effect when extreme payoffs, such as H, are included in a decision problem, rendering the coefficient α less effective than intended. A standard approach to addressing this issue is to normalize the payoffs by rescaling them to a range between 0 and 1. If we define normalization as $\frac{(u_i - min)}{(max - min)}$, then all non-salvific utilities will approach 0 as $H \longrightarrow \infty$, while the utility of heaven (or salvation) will become 1. The advantage of this method is that it prevents distortions induced by outlier utility values. Even in this case, however, the Hurwicz criterion still recommends wagering for God.

the theistic option in the case where there is no God—brings more happiness to the decision-maker, however small it may be this difference. In short, there is room for a tie between wagering for God and wagering against God under these narrow conditions, namely, if both $\alpha = 1$ and annihilation hold.

At this stage, some might reasonably wonder why the Hurwicz criterion should be applied to the Wager. Like the Minimax Regret rule, the Hurwicz criterion also requires an interval scale. Yet, it offers a more balanced approach to decision-making compared to conservative rules such as Maximin and Minimax Regret. The primary motivation for this criterion is its ability to select an act that balances well the best and worst outcomes, avoiding overly optimistic or pessimistic courses of action. As we have seen, a Pascalian 2×2 matrix presents a decision problem with two extreme possible outcomes. Wagering for God if God exists leads one to a life of extraordinary happiness in heaven. On the other hand, wagering for God's non-existence if God exists leads one either to annihilation or eternal damnation. Given these extreme outcomes and the massive uncertainty around God's existence, the Hurwicz criterion provides a plausible approach to the Wager as a decision under ignorance. It is a balanced method for addressing a situation where eternal life and annihilation (or damnation) are at stake.

4 Objections

The Minimax Regret rule and the Hurwicz criterion (except for the possible case where $\alpha = 1$) both recommend wagering for God as the optimal choice in a 2×2 decision matrix. In this section, I examine three possible objections to both strategies above. I address the first two challenges. The response to the last objection—namely, the Many-Gods objection—would demand a more thorough examination into the consequences of adopting a set of religious practices as a way of life as opposed to those of embracing a secular lifestyle. I will not attempt to develop a full response against this objection here. In what follows, I will restrict myself to just providing a few considerations on how to tackle this issue. As I intend to show, the Many-Gods objection presents a more powerful challenge to the Wager under conditions of ignorance.

4.1 The Probability Objection

Obviously, some might balk at construing Pascal's Wager as a decision under ignorance. Put differently, one might contend that we actually have sufficient information that permits us to assign a probability to God's existence. Perhaps the wagerer's evidence is not that scarce as suggested above.

However, this claim by itself does not threaten the rationality of the theistic option. It is important to note that such a move will lead us to take the Wager as a decision either under risk or under mild uncertainty. If a non-zero and non-infinitesimal probability is somehow available to the wagerer, then one can appeal to the argument from EU Maximization to justify the theistic option: given a 2×2 matrix, the act of wagering for God maximizes the expected utility for any $p \in (0, 1]$. In order to block this reasoning, non-theists should argue for the rationality of a distribution that assigns 0 to God's existence, viz. $p = 0$. In summary, denying that the wagerer might face a decision under ignorance does not suffice to show the irrationality of wagering for God, nor the rationality of wagering against God.

4.2 The Inadequacy of Decision Rules Objection

A more serious objection would be that neither the Minimax Regret principle nor the Hurwicz criterion provides a sound rule for decisions under ignorance. Although each of those criteria may seem intuitively appealing, one might claim that any procedure rule for decision-making under severe uncertainty has to satisfy a set of formal desiderata in the first place. Pushing this line of objection still further, if those criteria do not satisfy one of these desiderata or conditions, then one can dismiss them as inadmissible. If so, the rationality of choosing the option of wagering for God will be a contentious issue.

A well-known version of an axiomatic approach to rules of choices under ignorance is suggested by Milnor (1954). Based on ten axioms, his analysis introduces an ordinal ranking of all acts—namely, a complete ordering. According to his results, Minimax Regret fails to satisfy the axiom of irrelevant alternatives: that is, introducing new acts into a decision problem might alter the ordering between former acts; and the Hurwicz criterion fails to abide by the axiom of randomization: that is, any randomization between two equally preferable acts does not necessarily yield an equally preferable act.[24]

It turns out, however, that other popular criteria—particularly, the Maximin rule and the criterion based on the principle of indifference—fail to satisfy some of Milnor's axioms as well.[25] So, should we rule out all these candidate rules as inadmissible? Some might think we can hardly do this. In response, a natural suggestion would be to take some of the formal desiderata as having more significance than others. Indeed, doing so could give us a rationale for selecting a certain decision rule as more admissible

[24] The Hurwicz criterion also does not satisfy the axiom of column linearity. For more discussion about axiomatic approaches to decisions under ignorance, see Luce & Raiffa (1985 [1957], chapter 13) and Peterson (2017, chapter 3).

[25] Jordan (2006) argues that one can derive the strongest version of Pascal's Wager—*the Jamesian Wager*—from a decision-theoretic criterion he calls *the Next Best Thing rule*. This rule is also a criterion for decision-making under severe uncertainty. As far as I am aware, it is an open question whether his rule abides by Milnor's formal desiderata.

than the other candidate rules. This demanding task will lead us far afield, and I will not pursue it here. Another interesting response is to embrace a pluralist stance towards the rules of decision-making in situations of ignorance. Given that each candidate rule has its own advantages and drawbacks, there may not be just a single criterion that works for every particular circumstance. Instead, there might be a set of acceptable rules that one can adopt. If there are multiple suitable rules that could be used in different situations, then the decision-maker's choice of which rule to adopt will depend on what is more appropriate or matters most to them in a given decision problem. In some situations, a decision-maker will give more weight to the worst possible outcomes. Sometimes, the best possible outcomes will matter most to them. Also, the regret associated with each available course of action can often be a significant influence on one's choice. Considering that those criteria impose different conditions for optimal choices, they can nonetheless yield inconsistent recommendations for the same decision problem. The challenge lies in identifying clear conditions for implementing each of them effectively.

In sum, providing an axiomatic foundation for rules governing decision-making under ignorance, as is done by Milnor (1954), is indeed central to decision theory. I acknowledge the force of this point. Despite the importance of axiomatic foundations, I still regard the Hurwicz criterion and the Minimax Regret rule as promising candidates when it comes to decision-making under massive uncertainty.

4.3 The Many-Gods Objection

The Many-Gods objection is the most prominent objection to the Canonical Wager. In the remainder of this section, I shall examine whether this criticism also poses a challenge to the two strategies presented above. In particular, I shall discuss whether the conclusion of Pascal's Wager as a decision under ignorance continues to hold if one includes more deities in the matrix, not just the Christian God.

The objection relies on the claim that the Wager presents an overly simplified decision-theoretic problem: any person facing a choice like that should take more deities into account, not just a particular kind of God. In a nutshell, we need to extend the partition of possible theistic hypotheses—or, alternatively, the partition of possible states of the world. Since each possible God corresponds to a given religious worldview, it is natural to think that they form a set of mutually exclusive theistic hypotheses. Trouble arises if each of those different Gods promises to grant extraordinary happiness or salvation to its followers in the afterlife. In response to Pascal, Denis Diderot (1875 [1746], §LIX) writes:

> "Pascal has said: if your religion is false, you risk nothing by believing it to be true; if it is

true, you risk it all by believing it to be false. An imam can say just as much as Pascal." (*Pensées Philosophiques*, 1875 [1746], LIX).

Diderot was probably the first author to raise the many-Gods objection. More recently, the objection has been endorsed in some way or another by a number of philosophers, including most notably Flew (1960), Cargile (1966), Dalton (1975), Martin (1983), Mackie (1982), Oppy (1991), Gale (1991), Mougin & Sober (1994), Gustason (1998), Carter (2000), and Saka (2001). Just as Christian believers might suggest that their God will grant the benefits of heaven to them, so too could followers of Islam make a case for a Muslim God using much the same reasoning. Accordingly, these theistic hypotheses will be rival in the sense that they promote different religious conceptions and creeds, while it is expected that their followers will receive salvation. In our formulation of the Wager, betting on the Muslim God, similar to betting on the Christian God, will be a rationally permissible act. For concreteness, let us consider the most straightforward case of a two-Gods decision matrix, where G_C represents the Christian God hypothesis and G_I stands for the Muslim God hypothesis (Table 4).

	G_C	G_I	$\neg(G_C \vee G_I)$
Wagering for G_C	H	u_1	u_2
Wagering for G_I	u_3	H	u_4
Wagering against all Gods	u_5	u_6	u_7

Table 4: The Many-Gods Objection (MGO1)

Let us now convert Table 4 into a regret table. For the sake of simplicity, let us assume that all three outcomes associated with $\neg(G_C \vee G_I)$ are exactly the same in value (namely, $u_2 = u_4 = u_7$). This assumption implies that adopting a religious life is no worse than pursuing a secular life in the absence of God. Given this assumption, we obtain a new regret table, as laid out in Table 5.

	G_C	G_I	$\neg(G_C \vee G_I)$
Wagering for G_C	0	$H - u_1$	0
Wagering for G_I	$H - u_3$	0	0
Wagering against all Gods	$H - u_5$	$H - u_6$	0

Table 5: MGO with Regret

It is not clear which of these acts minimizes the maximum regret value. Notice that the dispute is not merely between wagering for the Christian God and wagering for the Muslim God. It seems that wagering against all Gods is also a viable option. More precisely, it is doubtful whether the option of choosing non-theism is rationally impermissible. Of course, the matrix could be expanded to include more religious traditions such as Judaism, Mormonism, Sikhism, and so forth. Nevertheless, this move would not help to clarify whether there is a *uniquely* optimal choice. Far from it. It remains unclear whether the Minimax Regret rule requires one to prefer some religious option over non-theism. It is worth mentioning that this conclusion does not depend whether $u_2 = u_4 = u_7$. If adopting a secular life is better than embracing a religious life in the absence of God, then u_7 will be greater than u_2 and u_4. It turns out, however, that both $(u_7 - u_2)$ and $(u_7 - u_4)$ are tiny in comparison with $H - u_i$ for any u_i. Since the Minimax Regret rule tells us to choose the act that minimizes the maximum regret value, the outcomes associated with a godless universe will make no difference for the choice.[26]

The Hurwicz criterion tells us to choose the option that maximizes the α-index in situations of ignorance. To begin with, note that wagering against all Gods is a rationally impermissible act according to this rule. Choosing non-theism has the lowest α-index for the decision matrix laid out in Table 4. This is because heaven is the best outcome of both wagering for G_C and wagering for G_I, whereas non-theism grants at best earthly benefits to atheists and agnostics. It is unclear, however, which of these two religious options maximizes the α-index. To see this, suppose that $k \in \{1, 2\}$ and $j \in \{3, 4\}$. It means that the worst outcome associated with wagering for G_C can be u_1 or u_2, while the worst outcome associated with wagering for G_I can be u_3 or u_4. Thus, the α-index for wagering for G_C is:

$$\alpha \times u_k + (1 - \alpha) \times H.$$

The α-index for wagering for G_I is the result of the following weighted sum:

$$\alpha \times u_j + (1 - \alpha) \times H.$$

The key point here is that both u_k and u_j play an essential role in determining how choiceworthy these two options are. Moreover, notice that $H \times (1 - \alpha)$ is a shared feature of the α-indexes for wagering for G_C and wagering for G_I. In truth, we can generalize it to all religious traditions. If we include more deities in the decision matrix laid out in Table 4, then this quantity will be a common element of the α-index of all religious options. As Jordan (2006: 4) puts it, the wagerer will be left with *an embarrassment of riches*. Since $H \times (1 - \alpha)$ is a ubiquitous influence in all α-indexes, the worst outcomes

[26] Unlike the Minimax Regret rule, the comparison between the utility of adopting a religious life and that of pursuing a secular life in the absence of God is central to the Jamesian Wager defended by Jordan (2006).

associated with each of those different religious options are what will ultimately settle the matter.

Including more deities in the matrix makes trouble for our two strategies, one based on the Minimax Regret rule and another on the Hurwicz criterion. What is more, since probabilities do not play any role in choices under ignorance, one cannot appeal to them—for instance, by using a principle such as Schlesinger's criterion (1994)—to break the tie among different theistic options. We have a whole new ballgame here. As I have indicated, the utilities will have a major role in the wagerer's choice. A well-known advantage of the Canonical Wager is its independence from non-salvific utilities. In light of expected utility maximization, the option of wagering for God is the uniquely optimal act in a Pascalian 2×2 matrix. As I demonstrated, the same conclusion holds in general when applying the Minimax Regret rule and the Hurwicz criterion to that original matrix. However, it is important to emphasize that this advantage disappears when one distinguishes between various religious worldviews.

As noted earlier, the afterlife benefits are extraordinarily larger than any other utility. Therefore, the difference between H and any u_i is vastly greater than the difference between any of those earthly goods in Table 4. In the case of the Hurwicz criterion, the difference between the α-indexes for betting on G_C and betting on G_I is expected to be negligible for any $\alpha \in (0, 1]$.[27] Nonetheless, as stated by this criterion, adopting a religious way of life is still preferred to choosing non-theism. Things are murkier with respect to the Minimax Regret rule. Recall that the regret captures how much one misses out on by deciding on a course of action. The problem is that we would have to know how much the wagerer misses out on by adopting a religious worldview; and the same goes for the option of choosing non-theism. Unless we fill in the regret values in Table 5, the option of wagering against all Gods is still alive. For this reason, the verdict of the Minimax Regret rule is more inconclusive than that of the Hurwicz criterion with respect to the decision matrix presented in Table 4.

Some philosophers—notably Mackie (1982: 203), Martin (1983: 59-60), Oppy (1991: 165), and Duncan (2018: 151-155)—propose an even more challenging version of the Many-Gods objection for the proponents of the Wager. Unlike traditional religious worldviews, non-theists might advance the hypothesis of a skeptic-loving God who rewards *only* non-believers with heaven. Including this deity in the decision matrix can prevent one from concluding that the act of wagering against all Gods is rationally impermissible. This is a common line of objection against the Canonical Wager. I will now show that accepting the hypothesis of a skeptic-loving God also poses a problem for the strategy based

[27] If $\alpha = 0$, then all religious options will have exactly the same α-index.

on the Hurwicz criterion.

The matrix in Table 6 includes such a possibility (where G_S stands for the skeptic-loving God).

	G_C	G_I	G_S	$\neg(G_C \vee G_I \vee G_S)$
Wagering for G_C	H	u_1	u_2	u_3
Wagering for G_I	u_4	H	u_5	u_6
Wagering against all Gods	u_7	u_8	H	u_9

Table 6: The Many-Gods Objection (MGO2)

Introducing a skeptic-loving God into the matrix does not change the verdict given by the Minimax Regret rule. The same conclusion holds for this new matrix. Although Table 6 adds a new column, it remains unclear whether some religious option minimizes the maximum regret value. We still have to determine the regret values of the relevant outcomes, and then compare them with each other.

If we apply the Hurwicz criterion to the matrix depicted in Table 6, then the α-index for wagering against all Gods—namely, wagering for non-theism—will be very close to the α-indexes for each wagering for the Christian God and the Muslim God. Here's the α-index for wagering for non-theism:

$$\alpha \times u_i + (1 - \alpha) \times H.$$

Moving to Table 6 complicates matters considerably with respect to the Hurwicz criterion. Now, this criterion does not definitively rule out the option of wagering against all Gods. Allowing for the possibility of a skeptic-loving God puts non-theism on a par with both Christianity and Islam. All these three options share the expression $(1 - \alpha) \times H$, rendering the Hurwicz criterion inconclusive unless the values of the non-salvific utilities can be determined. Consequently, the prospects of heaven in the afterlife turn against Pascal's Wager as a decision under ignorance in two different matrices.

In closing, I will tentatively explore a few possible responses to the Many-Gods objection. One natural suggestion would be to gather more information about the non-salvific utilities. If these values can be reliably determined, then maybe our two criteria for decision-making might resolve the tie among various religious options. Although theoretically possible, this is a challenging task for the proponents of the Wager. Sometimes we know the consequences of our acts, but we are not capable of giving sharp utilities to them. Of course, the severity of the uncertainty the decision-maker faces is allegedly worse when they cannot even know what outcome is yielded by the combination of an act and a possible state of the world. Note that I am not claiming that the wagerer is faced with massive uncertainty concerning the outcomes themselves or their utility values. My point is simply that we would need more detailed, relevant information about the consequences of adopting a religious worldview, and those of choosing a secular way of life, to get a definite verdict from of our two criteria. More precisely, distinguishing among various theistic hypotheses brings a new complication. As I claimed earlier, under conditions of massive uncertainty about God's existence, accepting a more fine-grained decision matrix requires knowing more facts about the outcomes of each option in order to achieve a more definite rational recommendation. Although it is difficult to determine whether adopting a religious way of life brings more happiness and benefits than a secular lifestyle, perhaps experimental findings on life satisfaction and well-being could rescue the advocates of the Wager. The utilities should reveal the potential benefits a non-religious person might forego by not engaging in religious activities, such as experiencing spiritual fulfillment and a sense of purpose. In summary, since the goods of this life play a crucial role in our new decision matrices, empirical evidence comparing the happiness of actively involved religious people and the happiness of people who do not follow a religious group might be informative on this issue.[28]

A different line of defense of the Wager would be to provide a supplementary criterion that can rationally favor embracing a religious option over choosing non-theism. As commonly understood, the Many-Gods objection disputes a central assumption of Pascal's Wager. The objection posits that the original 2×2 matrix is not thoroughly specified, particularly in its oversimplified representation of a Pascalian decision problem by considering only two possible states of the world.[29] It argues that the wagerer should instead consider multiple conceivable deities and their associated worldviews. As I stressed above, the most straightforward approach is to appeal to the relevant probabilities as a way of justifying the act of wagering for the Christian God. However, as long as the wagerer faces a decision under ignorance, they cannot assign a probability to the possible states and their corresponding outcomes. Hence, there is no reason to think that Pascal's Wager holds under such conditions.

It should be emphasized that ignorance is not necessarily a permanent condition. It is possible that the impoverished epistemic situation in which the wagerer finds themselves evolves as they gather more evidence about different religions. The wagerer might start entirely in the dark about God's

[28]Although some studies have consistently correlated religiosity positively with life satisfaction, it is a matter of controversy whether following a religion is the only factor that can play a decisive role in increasing people's happiness. A study from Lim & Putnam (2010) found that religious people tend to have a greater level of life satisfaction because of their social engagement in congregations and community services. In addition, Gebauer et al. (2012) showed that religious people have more psychological benefits such as social self-esteem in more religious societies, whereas both religious and non-religious people tend to have similar levels of psychological benefits in societies where religiosity is less important.

[29]See, for instance, Jordan (2006), Bartha & Pasternack (2018), and Hájek (2024).

existence, but as they acquire new evidence, they may gradually become capable of making a probability judgment about it. If their evidential situation improves, they can even judge one theistic hypothesis as more probable than another. However, it is also possible that their evidential situation never changes significantly. Even if the wagerer learns more about different religious worldviews, it might be the case that their evidence regarding the existence of a supernatural being such as God continues to be sufficiently incomplete. If so, then it is still rationally permissible that one fails to make a probability judgment about the existence of a God. To clarify, this does not mean that rationality requires one to refrain from assigning a probability to the existence of the Christian God, the Muslim God, and so on. Rather, I am suggesting that the wagerer's evidence may justify withholding from assigning a probability to the existence of such gods. It depends on how their evidence about this matter evolves over time.[30]

Finally, there is an additional reason for considering wagering for non-theism as an impermissible choice that is worth mentioning. While Table 4 includes only traditional religions, the matrix presented in Table 6 introduces a theistic hypothesis that, as Jordan (2006: 80) points out, lacks "the backing of a living tradition" found in both Christianity and Islam. There is no theology, no historical narratives, no sacred texts, and no community of believers engaged in worshiping and sharing their faith in a skeptic-loving God. It is reasonable to think that the absence of these elements undermines the plausibility of the hypothesis of a skeptic-loving God, making it potentially inadmissible. Indeed, lacking these aspects counts as a major drawback against it. The question is whether this is sufficient to support a zero probability assignment to the existence of a skeptic-loving God. It is natural to think that if the wagerer finds themselves in a situation of incomplete evidence regarding God's existence in general, then they cannot judge how probable the existence of a skeptic-loving God is. If the wagerer's evidence leaves them in the dark about God's existence, then it will likely leave them in the dark about a particular kind of God as well. As I said, nonetheless, the state of ignorance does not need to be a condition for a lifetime. Having no backing of a living tradition might justify dismissing the hypothesis of a skeptic-loving God as a live possibility.[31] Be that as it may, moving from Table 6 back to Table 4 still leaves the wagerer with a plethora of theistic options according to the Hurwicz criterion.

[30] Although I lack the space to discuss it here, one interesting exploration would be to take Pascal's Wager not as a single but a sequence of decisions in which one's evidential circumstances change over time. Bartha (2012) proposes a similar view in his dynamic approach to the Wager. He examines how an agent revises her probabilities in different theistic hypotheses using the Replicator Dynamics. By stating an equilibrium condition for probability distributions, Bartha argues that the Many-Gods objection (in its finite version) does not constitute a problem for the Wager.

[31] Although attractive, the argument that the absence of sacred texts and a living tradition justifies dismissing the hypothesis of a skeptic-loving God remains contentious. For an opposing perspective and a more favorable assessment of this hypothesis, the interested reader may consult the argument defended by Duncan (2018).

5 Conclusion

In this paper, I have explored the Wager as a decision problem where the uncertainty is massive. As I have argued, the Minimax Regret rule and The Hurwicz criterion (except perhaps if $\alpha = 1$) both vindicate wagering for God as the optimal choice in a 2×2 matrix. Unlike dominance reasoning, a distinctive feature of those criteria is that one can achieve Pascal's conclusion even if wagering against God is strictly preferred to wagering for God if there is no God.

Just as with the Canonical Wager, the Many-Gods objection is the most prominent challenge to those two versions of the Wager. There is not only one but many different conceptions of God, each of which represents a specific religious worldview, promising a heavenly reward in the afterlife to its followers. If one includes those different deities in the matrix, then wagering for the Christian God is no longer the unique rational response. Confronted with a decision problem under ignorance, the wagerer cannot appeal to the strategy of choosing the act that gives them the best chance to get heaven in the afterlife. If we take the hypothesis of a skeptic-loving God as a live possibility, then the Hurwicz criterion is inconclusive about whether adopting a religious life is preferred over choosing non-theism. And what is more, even if it is rationally permissible to assign a zero probability to the existence of a skeptic-loving God because it does not constitute a genuine religion, the Hurwicz criterion still leaves the wagerer with multiple religious options. I have also argued that the Minimax Regret rule is inconclusive in both matrices, with and without a skeptic-loving God. To conclude, future research is needed to explore ways of addressing the Many-Gods objection under conditions of ignorance.

Acknowledgements: I am grateful to the John Templeton Foundation for funding during my year as a 2019-20 LATAM Bridges Mentoring Fellow at Purdue University. I am especially indebted to Paul Draper for his generous help and advice during my stay at Purdue. I would like to thank the two anonymous referees for Erkenntnis for their extensive comments and valuable suggestions. Finally, I am grateful to Agnaldo Portugal, Leonilson Gomes, Bruno Ribeiro, and Rodrigo Silveira for their feedback on a previous version of this paper, presented during a session of the Epistemology of Religion Laboratory at the University of Brasilia.

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