A CHALLENGE TO LUDWIG VON MISES'S THEORY OF PROBABILITY

MARK R. CROVELLI*

Introduction

The theory of probability one encounters in Chapter VI of Ludwig von Mises's *Human Action* (1996 [1949]) is expressed in a manner that makes it difficult to both explain and critique. This is primarily due to the fact that Mises does not explicitly state a *definition* of probability in any easily recognizable way. Mises initially discusses probability only in the most general and vague terms and then rapidly proceeds to break down probability into the two conceptual subcategories that have since become ubiquitous in Austrian discussions of probability: "class probability" and "case probability." The reader is thus left with only the haziest idea of how Mises thought probability should be defined, beyond the fact that he thought that there were two distinct *sub*categories of probability. This haziness surrounding Mises's definition of probability winds up casting a veil of uncertainty over Mises's entire theory of probability.

This paper offers a critique of Ludwig von Mises's theory of probability. I first offer a description of Mises's theory of probability. Special attention is paid to his brief discussion of the definition of probability and to those respects in which his theory differs from his brother's dogmatic "frequentist" theory of probability. I then provide a brief discussion of the definition of probability and an argument as to why probability must be defined subjectively. I conclude by critiquing Mises's definition and theory of probability in the light of the subjective definition of probability.

*Mark R. Crovelli may be reached at mark.crovelli@gmail.com.

CITE THIS ARTICLE AS: Mark R. Crovelli, "A Challenge to Ludwig von Mises's Theory of Probability," *Libertarian Papers* 2, 23 (2010). ONLINE AT: libertarianpapers.org.

Ludwig von Mises's Theory of Probability

For most Austrians who have discussed Ludwig von Mises's theory of probability, (including this author, to some extent),[1] it has been common to label Ludwig von Mises as a proponent of the "frequentist" interpretation of probability advanced by his brother, Richard von Mises.[2] There are good reasons for doing this, to be sure, since there is much in Ludwig's discussion of probability that is unmistakably derived from Richard von Mises's work. This is most obviously true with respect to Ludwig's discussion of "class probability," because Ludwig utilizes the same examples as his brother,[3] virtually the same definition of "class" as his brother's "collective,"[4] and virtually the same proscription against applying numerical probabilities to anything but "classes" of events.[5]

Whether or not Ludwig von Mises can be so easily folded into the frequentist camp is not entirely clear-cut, however. In fact, there are important ambiguities in Ludwig von Mises's theory of probability that might lead one to place him in completely different company than his brother. Richard von Mises, for example, was completely unequivocal about the definition of probability. For Richard, probabilities *were* relative frequencies—or, more specifically, the limiting values of relative frequencies:

> The probability of an attribute (a result of observation) within a collective is the limiting value of the relative frequency with which

---

[1] Mark R. Crovelli, "On the Possibility of Assigning Probabilities to Singular Cases: Or, Probability Is Subjective Too!" *Libertarian Papers* 1(26) (2009)., p. 2.

[2] Rothbard, for example, explicitly claims that Ludwig von Mises "adopted" Richard von Mises's theory of probability in Murray N. Rothbard, "Keynes, the Man," in *Dissent on Keynes: A Critical Appraisal of Keynesian Economics*, ed. Mark Skousen (New York: Praeger, 1992)., pp. 179–80. Rothbard himself was unquestionably a devoted adherent to the frequentist theory. Thus, he writes: "…Richard von Mises, in his great work *Probability, Statistics and Truth*, developed the correct, objective, or "frequency" theory of probability." Murray N. Rothbard, "The Correct Theory of Probability," *Libertarian Review* 9, no. 2 (1975).

[3] Compare Ludwig's discussion of an hypothetical lottery and hypothetical mortality tables in Ludwig von Mises, *Human Action: A Treatise on Economics*, 4th rev. ed. (Irvington-on-Hudson, N.Y.: Foundation for Economic Education, 1996), pp. 107–108 with Richard von Mises's almost identical examples in Richard von Mises, *Probability, Statistics and Truth*, 2nd Revised ed. (New York: Dover, 1981 [1957]), pp. 16–17, 19–20.

[4] Compare Richard von Mises's definition of a "collective" in Mises, *Probability, Statistics and Truth*, pp. 11–12 with Ludwig von Mises's definition of a "class" in Mises, *Human Action*, p. 107.

[5] Compare Richard von Mises's proscription against applying numerical probability to anything but "collectives" of events in Mises, *Probability, Statistics and Truth*, pp. 11–12, with Ludwig von Mises's similarly explicit proscription in Mises, *Human Action*, pp. 113–15.

> this attribute recurs in the indefinitely prolonged sequence of observations.[6]

For Ludwig von Mises, in contrast, the idea that the concept of probability was virtually synonymous with relative frequencies was nothing but a "prejudice" of the mathematicians:

> The problem of probable inference is much bigger than those problems which constitute the field of the calculus of probability. *Only preoccupation with the mathematical treatment could result in the prejudice that probability always means frequency.*[7]

Unlike his brother, therefore, Ludwig von Mises apparently espoused a more catholic, and certainly less dogmatic, definition of probability that encompassed more than just relative frequencies. Beyond this, however, it becomes much more difficult to pin Ludwig von Mises's definition down, because nowhere does he provide an explicit definition of probability. He does provide us with a general definition of the word "probable" as it applies to statements, but he never informs us how the definition of the word "probable" relates to the definition of "probability."[8] He simply offers us a definition of the word "probable," and then immediately proceeds to his discussion of what he viewed to be the subcategories of probability; "class probability" and "case probability." This leaves the reader wondering: "class probability" and "case probability" are subcategories of *what,* exactly?

It is interesting and important to note, however, that Ludwig von Mises does refer to both "class" and "case" probability *as probabilities*. He does not follow his brother in this regard, who went out of his way to differentiate probability as a supposedly "scientific concept" from everyday usages of the

---

[6] Mises, *Probability, Statistics and Truth*, p 221.

[7] Mises, *Human Action*, p. 107, Emphasis added.

[8] Ludwig von Mises writes:

> A statement is probable if our knowledge concerning its content is deficient. We do not know everything which would be required for a definite decision between true and not true. But, on the other hand, we do know something about it; we are in a position to say more than simply *non liquet* or *ignoramuss.*

Mises, *Human Action*, loc. cit.). Professor Hoppe claims that this statement constitutes a "general (wide) definition of probability" (Hans-Hermann Hoppe, "The Limits of Numerical Probability: Frank H. Knight and Ludwig Von Mises and the Frequency Interpretation," *Quarterly Journal of Austrian Economics* 10, no. 1 (Spring 2007), p. 8). This seems to miss the mark, however. In the first place, Ludwig's definition here is only of the word "probable," not the concept of "probability." Second, Ludwig's definition of the word "probable" is essentially nothing more than a rephrasing of the standard dictionary definition of the word. Since this hardly clarifies anything, it is quite a stretch to label this a "general (wide) definition of probability."

word.[9] For Ludwig von Mises, in contrast, "class" and "case" are radically different types of probability, but he nonetheless persists in using the term "probability" for both. A more important difference between Ludwig and Richard's respective theories lies in the fact that Ludwig von Mises conspicuously places his entire discussion of probability in his chapter on uncertainty. In fact, his discussion of probability takes up almost the whole chapter on uncertainty in *Human Action*. From Richard von Mises's lengthy definitional discussion, in contrast, one could walk away without the slightest inclination that the concepts of probability and uncertainty are related to one another.[10]

Since Ludwig von Mises provides us with no explicit general definition of probability, his subcategories of probability essentially constitute the whole of his theory of probability. Into the subcategory of "class probability" Ludwig von Mises placed all those situations which are open to evaluation by the relative frequency approach. Importantly, he adopts Richard's view that "numerical probability" is virtually synonymous with the relative frequency approach, which implies, quite obviously, that numerical probability is *only* applicable in situations where one can construct a "class" of similar events, and from which one can derive relative frequencies. This restrictive view of "numerical probability" rules out, *by definition,* applying numerical probabilities to singular cases, or any other situation where it is impossible to construct a "class."[11]

Ludwig von Mises included in his definition of "case probability," consequently, all those situations in which man is radically uncertain about the factors affecting an event's outcome, and which are impossible to assign to a conceptual "class."[12] According to Ludwig, these two subcategories of probability are properly employed only in certain fields of science; namely, "class probability" is applicable only in the natural sciences, and "case probability" is applicable only in the sciences of human action:

> There are two entirely different instances of probability; we may call them class probability (or frequency probability) and case probability (or the specific understanding of the sciences of human action). The field for the application of the former is the field of the natural sciences, entirely ruled by causality; the field for the application of

[9] Mises, *Probability, Statistics and Truth*, pp. 8–10.

[10] See the first lecture in Ibid.

[11] "Case probability is not open to any kind of numerical evaluation." (1996, p. 113). For further discussion of this point, see Crovelli, "On the Possibility of Assigning Probabilities to Singular Cases: Or, Probability Is Subjective Too!", p. 6.

[12] Mises, *Human Action*, pp. 110–13.

> the latter is the field of the sciences of human action, entirely ruled by teleology.[13]

This distinction allows Ludwig von Mises to neatly integrate his theory of probability into his general epistemological, methodological, and praxeological schema, which is based upon a profound methodological dualism separating the natural sciences from the sciences of human action.

There are also important differences between Richard and Ludwig von Mises's respective views about randomness, or "indeterminism." Richard von Mises was an outspoken indeterminist who called for the abandonment of what he called "the naïve concept of causality."[14] Richard's defense of indeterminism drew heavily from the work of Heisenberg, whose work was interpreted by Richard to have established the basic indeterminism of the world at both the macrophysical and microphysical levels.[15] This view of the world as inherently indeterministic allows Richard to take the position that probabilities are objective "physical properties" of things in the world:

> The probability of a 6 is a physical property of a given die and is a property analogous to its mass, specific heat, or electrical resistance. Similarly, for a given *pair of dice* (including of course the total setup) the probability of a 'double 6' is a characteristic property, a physical constant belonging to the experiment as a whole and comparable with all its other physical properties.[16]

Ludwig von Mises, on the other hand, does not follow his brother down this indeterministic road. In the first place, Ludwig was a *determinist,* who held that everything that occurs in the world has a prior cause:

---

[13] *Ibid*., p. 107.

[14] Mises, *Probability, Statistics and Truth*, p. 210.

[15] Thus, Richard writes,

> The essential consequence of Heisenberg's considerations can be summarized by saying that the results of *all* measurements form collectives. In the realm of macrophysics the objects of measurement are themselves statistical conglomerates, such as the length of a ruler which is a mass of molecules in motion. The notion of an absolutely exact length measure has therefore obviously no meaning with respect to objects of this kind. In microphysics, where we are concerned with measurements on a single elementary particle, the inexactness is introduced by the statistical character of the light quanta striking the particle during and through the very act of measuring. *In both cases we are faced with the indeterministic nature of the problem as soon as we inquire more closely into the concrete conditions of the act of measuring.*

Ibid., p. 215. Emphasis added.

[16] *Ibid*., p. 14. Emphasis in original.

> All things in the universe are interconnected, and all changes are the effects of powers inherent in things. No change occurs that would not be the necessary consequence of the preceding state. All facts are dependent upon and conditioned by their causes. No deviation from the necessary course of affairs is possible. Eternal law regulates everything.[17]

Hence, according to Ludwig von Mises, the idea that there exists a basic indeterminism in the world was simply wrong:

> It is impossible…for the human mind to think of any event as uncaused. The concepts of chance and contingency, if properly analyzed, do not refer ultimately to the course of events in the universe. *They refer to human knowledge, prevision, and action. They have a praxeological, not an ontological connotation.*[18]

Thus, according to Ludwig von Mises, the idea advanced by men like his brother, that probabilities are objective "physical" or "ontological" properties of things in the world, is mistaken. The word "chance" is thus used in a *subjective* sense by Ludwig von Mises, in the sense that "chance" is only related to man's perceptions of the world, and is not a mysterious property "in" the world. What appears to be "chance" in the world is really just human uncertainty about what is going on. This interpretation is buttressed by the fact that Ludwig placed his discussion of probability in his chapter on "uncertainty," and specifically labeled probability a "primary concern of praxeology," rather than a primary concern of the natural sciences.[19] If probabilities were objective "physical properties" of things in the world, as Richard von Mises claimed, then probability would be the exclusive concern of the natural sciences, not praxeology.

In this section I have made several important observations about Ludwig von Mises's theory of probability. First, that his theory of probability conspicuously and curiously lacks a general definition of probability. Second, that his theory of probability is built, not on a general definition of probability, but rather on what he claimed to be the two general subcategories of probability. And third, that his theory of probability differed in important respects from that of his brother, especially with regard to the concept of "randomness." In the section that follows, I undertake an independent investigation into the definition of probability that will be used to fill the definitional void in Ludwig von Mises's theory of probability.

---

[17] Mises, *Human Action*, p. 74.

[18] *Ibid.*, p. 90. Emphasis added.

[19] Ibid., p. 106.

The Definition of Probability

As was just seen, Ludwig von Mises's theory of probability conspicuously lacks a general definition of probability. He is extremely careful to define what he views to be the *sub*categories of probability, but he does not devote similar attention to the general definition of probability. In this section, I attempt to fill that void with a general definition for probability that comports with what we know to be true about both the world and human knowledge. This definition is known as the "subjective" or "subjectivist" definition.[20]

Like Ludwig von Mises, I take the concept of uncertainty as the starting point for this analysis. The concept of uncertainty is of critical relevance to the concept of probability, because man can only have a use for probability in a world that is at least partially uncertain to him. Indeed, if man already knew *everything* there is to know about the past, present and future, he would not only have no use for probability, such a concept would be absurd and useless for him. In such a world, there would only exist for him an infinite collection of facts, propositions, and (non-inferential) statistics about which he was already *absolutely certain*. In such a world, man would never be in a position where he would say "the probability of event E occurring is 50%," because man would already know whether or not E will occur. He would simply say "E *will* occur," or "E *will not* occur."

Man is obviously *not* omniscient, however. He thus often has a need or a desire to develop and use methods that are capable of giving him some indication of the likelihood that particular events and phenomena will or will not occur. This is the sole reason why man develops and uses the round-about methods of probability. He presumes that the methods of probability are capable of yielding him some indication of the likelihood that events will or will not occur, because he does not know the outcomes *a priori*.

Given that the very existence of probability is predicated on the existence of uncertainty, the central task in the philosophy of probability is to explain *why* man is uncertain about some of the events and phenomena that occur in the world. Is he uncertain about these events and phenomena because there exists an inherent degree of randomness or indeterminism *in* material things themselves, or does the uncertainty arise simply by virtue of

[20] For a more thoroughgoing defense of the subjective definition of probability outlined here, see Crovelli, "On the Possibility of Assigning Probabilities to Singular Cases: Or, Probability Is Subjective Too!" For more general discussions of the various definitions and interpretations of probability, see Roy Weatherford, *Philosophical Foundations of Probability Theory* (Boston: Routledge and Kegan Paul, 1982), and Reuben Abel, *Man Is the Measure* (New York: Free Press, 1976), Ch. 16.

the fact that man is not omniscient? Put simply, is uncertainty an existential "physical" feature of the world, or is it something that exists solely in man's head?

The reason why this question is so important here is that the answer we come up with will dictate the definition of probability we must adopt. If we determine that uncertainty is an existential "physical property" of things in the world, as Richard von Mises claimed, then we are free to adopt Richard's frequency definition of probability. If, on the other hand, we determine that "the world" contains no uncaused randomness whatsoever, then this fact will force us to adopt a subjective definition of probability. This is true, because *if every event and phenomenon that occurs in the world has a cause of some sort, then the reason why man is uncertain about those causes would lie in man's own mental limitations, not "out there" in the world.* As I. J. Good explains, the definition of probability hinges upon the position we take on this question:

> [If] we assume determinism we can get physical probabilities only by having an incompletely specified physical setup. In this incomplete specification there must be probabilities. If we are determinists we must attribute these latter probabilities to our own ignorance and not merely to something basic in nature 'out there.' Whether or not we assume determinism, every physical probability can be interpreted as a subjective probability or as a credibility. *If we do assume determinism, then such an interpretation is forced upon us*...Those philosophers who believe that the only kind of probability is physical must be indeterminists.[21]

Hence, as Good points out here, the definition of probability is inextricably intertwined with the nature of the world. If the world is deterministic, in the sense that every event has a cause of some sort,[22] then any uncertainty man might have about what goes on in the world must be a result in man's own mental limitations. *Probability in such a world would thus necessarily be a measure of man's subjective beliefs about the world, rather than an "objective" measure of a property that exists in the world, because all outcomes, events and*

[21] I.J. Good, *Good Thinking: The Foundations of Probability and Its Applications* (Minneapolis, Minn.: University of Minnesota Press, 1983), p. 72. Emphasis added.

[22] The word "determinism" is used here synonymously with the concept of "causal determinism." That is, the word is only used in the sense that every event and phenomenon that occurs in the world has a *cause* of some sort. The word "determinism" is not used here in any sense that implies man has no free will, or that God or some other force directs everything that occurs in the world. The question of free will is a completely different metaphysical question from that we are investigating here. For more on this, see Crovelli (2009, p. 9ff).

phenomena in a causally deterministic world have absolutely certain causes.[23] If man were in a position to know in advance all of the causal factors affecting any given event or phenomenon, he would not have to resort to the round-about methods of probability to predict outcomes. He would know in advance, and for certain, whether any given event would or would not occur.

Since the definition of probability hinges upon whether all events in the world have causes, it is thus critical for our purposes to determine whether the events and phenomena that occur in the world do indeed all have causes, or whether there exists a degree of uncaused randomness in the world. This task is simplified, ironically, by the work done by Ludwig von Mises. As was seen above, Ludwig von Mises was a determinist who took the position that the principle of causality in the world was implied by human action itself. Human action, he observed is only conceivable in a world so constituted.[24] It is Hans-Hermann Hoppe, however, who has established the axiomatic character of the principle of causality in the world:

> [T]he principle of causality must be understood as implied in our understanding of action as an interference with the observational world, made with the intent of diverting the 'natural' course of events in order to produce a different, preferred state of affairs, i.e., of making things happen that otherwise would not happen, and thus presupposes the notion of events which are related to each other through timeinvariantly operating causes. An actor might err with respect to his particular assumptions about which earlier interference produced which later result. But successful or not, any action, changed or unchanged in the light of its previous success or failure, presupposes that there are constantly connected events *as such*, even if no particular cause for any particular event can ever be preknown to any actor...It is simply by virtue of acting and distinguishing between successes and failures that the a priori validity of the principle of causality is established; even if one tried, one could not successfully refute its validity.[25]

Importantly, moreover, the principle of causality is implied by the relative frequency method for generating probabilities itself, because the

---

[23] It should be noted that this statement of the subjective definition of probability is slightly revised from the formulation in Crovelli (2009). More will be said about this below, but for now it is enough to note that this formulation does not require that probabilities be stated in *numerical* form, whereas my previous formulation did include this requirement.

[24] Mises, *Human Action*, p. 22, and Ludwig von Mises, *Theory and History* (Auburn, Ala.: Ludwig von Mises Institute, 1985), p. 74.

[25] Hans-Hermann Hoppe, *Economic Science and the Austrian Method* (Auburn, Ala.: Ludwig von Mises Institute, 1995), pp. 77–78. Emphasis in original.

method is based on the unstated but necessary assumption that the individual cases making up a "collective" or "class" are sufficiently similar to one another to be conceptually treated as virtual repetitions of the same event. This means that each case or observation must be assumed to be affected by the causal factors at work in the world in *exactly* the same way, or else man would not be in a position to conceptually group them together as a "class" or "collective." In order to use Richard von Mises's relative frequency method, in other words, one must assume causal determinism operating in the world.[26] In sum, both the nature of human action and the nature of the relative frequency method for generating probabilities establish that the principle of causality governs all events that occur in the world, and this means that we must adopt a subjective definition of probability.

From the argument presented in this section I have established that the definition of probability depends upon where uncertainty resides in the world. If uncertainty stems from a fundamental randomness or indeterminism in the world itself, this allows for a frequentist definition of probability. If, on the other hand, uncertainty stems merely from the basic fact of human ignorance, then this forces us to adopt a subjective definition of probability. I have argued that the principle of causality does indeed govern all events that occur in the world, and this fact forces us to adopt a subjective definition of probability. Probability should thus be defined as a measure of man's subjective uncertainty about the likelihood that particular events will or will not occur.[27] I now turn to a critique of Ludwig von Mises's theory of probability in the light of the subjective definition of probability.

A Critique of Ludwig von Mises's Theory of Probability

Having outlined the major contours of Ludwig von Mises's theory of probability, and having established that probability must be defined subjectively, I am now in a position to critique Ludwig von Mises's theory of probability in the light of the subjective definition of probability.

The first part of Ludwig von Mises's theory of probability that I will examine is the idea of assigning numerical probabilities to singular cases. As was seen, Ludwig von Mises follows his brother in claiming that it is completely inappropriate to assign numerical probabilities to singular cases. In the light of the subjective definition of probability, however, I shall argue that this claim is not justifiable. In order to see why this is the case, it is important to first note that if probability is defined subjectively, then this

[26] For a more thorough defense of this argument, see Crovelli (2009, pp. 13–15).

[27] Robert Crovelli has brought to my attention the fact that, strictly speaking, given the scale, probability is a measure of human *certainty*, not human *uncertainty*.

means that *all* probabilities, *including those generated by Richard von Mises's relative frequency method*, are nothing but measures of subjective human uncertainty about the world. In this respect, therefore, there is nothing sacrosanct or exceptional about probabilities generated by the relative frequency method as opposed to any other method we might devise and use to measure our ignorance about the causal factors at work in the world. A number generated by the relative frequency method, like any other method we might devise, only tells us how certain *we think we are* about the outcome of some event.

This observation alone goes a long way toward undermining Ludwig and Richard von Mises's claim that numerical probabilities cannot be applied to singular events. For, if the numbers generated by the relative frequency method are nothing but numerical statements of how certain we are about the outcome of some events, then *so are any other numbers we might generate that would yield similar information about our uncertainty*. This conclusion follows necessarily from the very definition of probability as a subjective measure of man's uncertainty, because according to the subjective definition all measures of man's uncertainty are probabilities—*by definition*.

The brothers von Mises reached their restrictive conclusion about applying numerical probabilities to singular events because of Richard von Mises's definition of probability.[28] Since Richard von Mises defined probability as *virtually synonymous with the relative frequency method*, it was merely definitional that all other numbers generated by any other means should be defined away (and ridiculed by Richard von Mises) as something other than probabilities. In other words, Richard von Mises's definition of numerical probability essentially *forced* the brothers to define away anything that was not derived from the relative frequency method as something other than probability. The subjective definition of probability, in contrast, *forces us* to take the position that *all measures of human uncertainty are probabilities*, not merely those numbers generated by the relative frequency method.[29] In fact, the

[28] For more on this, see Crovelli, "On the Possibility of Assigning Probabilities to Singular Cases: Or, Probability Is Subjective Too!", p. 6.

[29] This is not to say, however, that the subjective definition compels us to view all probabilities as equally useful or equally accurate predictors of future outcomes, or that all methods for generating probabilities are capable of being fruitfully employed in all situations. Quite the reverse, we are free to use and interpret these probabilities with our rational minds as we do with any other empirical data, since they represent nothing more than measures of some man's (or some men's) uncertainty about the world. We are thus free to attack and dispute probabilities as useless, inaccurate or even self-contradictory, (as does Professor Hoppe in his thorough demolition of the use of probability in the rational expectations model in Hoppe (1997)), but, if we are to be faithful to the subjectivist definition, we *do not* have a right to condemn other men's numbers as "not probabilities," just because we disagree with how they were generated. Just as we have no right to

subjective definition of probability forces us to go even farther than this, because there is no non-arbitrary reason to restrict the definition to *numerical measures* of human uncertainty. There is no non-arbitrary reason why, for example, the "terror alert system" in the United States, (with its scale of "red" "orange" "yellow" and "green") should not also qualify as a measure of human uncertainty about future outcomes. It, like the relative frequency method, ostensibly seeks to measure our uncertainty about the likelihood of future terrorist attacks against the United States.[30]

The conclusion that must be drawn from this, therefore, is that the brothers von Mises are right to say that numerical probabilities cannot legitimately be applied to singular cases, *if* numerical probability is defined virtually synonymously with the relative frequency method. They are wrong to make this claim, however, *if* probability is defined as a subjective measure of man's uncertainty.

These observations lead naturally to the question of Ludwig von Mises's definition of probability—or, rather, his *lack* of a definition of probability. Since, as was just seen, the legitimacy of assigning numerical probabilities to singular cases depends inexorably on the definition of probability, it is important to determine which definition of probability fits in with the rest of Ludwig von Mises's epistemological and praxeological system. We are compelled to do this because Ludwig von Mises did not provide an explicit definition of probability in his work. From what was noted in the previous section it should be clear that the subjective definition of probability, *and only the subjective definition*, comports with the rest of his epistemological and praxeological system. This is true, because Ludwig von Mises was a *determinist*, which means that he must take the position that probability is a measure of human uncertainty, and not a measure of some mystical "physical property" in the world. Ludwig von Mises seems to be vaguely aware of all this when he observes that the concept of "chance" is a reference to human knowledge and *not* to the world:

---

condemn another man's opinion as "not an opinion," solely because we disagree with it, so too do we lack any right to condemn his probabilities as "not probabilities," solely because we disagree with how they were generated. This is true, quite frankly, because *probabilities are opinions*.

[30] Again, this is not to say that we must agree with the probabilities generated by the "terror alert system"—or any other system, for that matter. We might object, for example, that this system is far too coarsely scaled, completely closed to outside inspection, and completely arbitrary from our point of view. But, these are only reasons why we might discount or dismiss the probabilities generated by such a system, they are *not* reasons why we should not still call them "probabilities." The labeling of these types of measures as probabilities constitutes an important revision to Crovelli (2009).

> It is impossible…for the human mind to think of any event as uncaused. The concepts of chance and contingency, if properly analyzed, do not refer ultimately to the course of events in the universe. *They refer to human knowledge, prevision, and action. They have a praxeological, not an ontological connotation.*[31]

Unfortunately, Ludwig von Mises does not consistently apply this insight to the problem of probability, for he rather unquestioningly adopts his brother's view that the only legitimate numerical statements of probability are frequencies derived from "classes." His brother could be excused for taking this position as an *in*determinist, but Ludwig von Mises *qua* determinist has no such excuse to fall back on, because the rest of his causal-deterministic epistemological and praxeological system *demands* the adoption of a subjective definition for probability.

The next important facet of Ludwig von Mises's theory of probability that must be examined is his claim that there are two radically different subcategories of probability: "class probability" and "case probability." To repeat, Ludwig von Mises breaks down probability into "class" and "case" probability basically along the lines of Richard von Mises's definition of probability. What he has basically done is to label as "class probability" all those situations in which Richard von Mises's method could be applied, and labeled everything else as "case probability." However, Ludwig von Mises goes even beyond Richard von Mises in restricting the realm of "class probability" to the natural sciences alone. This division, as was noted, made for a neat integration of his theory of probability into his general methodological and epistemological framework. But, it is clear that this division is completely artificial—and not only in the light of the subjective definition of probability, *but also from the view of the frequency definition*. For, it is obvious that the relative frequency method can legitimately be applied to a great number of classes of human actions. Obvious examples abound in the realm of sport, for example, where relative frequencies of occurrence are indeed calculated, such as free throw percentages in basketball, tackling percentages in football and rugby, and batting averages in baseball and cricket. It is difficult to conceive of a reason why these types of repetitious human actions, *where people do indeed calculate relative frequencies of occurrence ad nauseaum*, are not open to interpretation and use as numerical probabilities, as Ludwig claims. It stretches credibility to claim that a basketball player's past free throw percentage is not an eminently useful numerical probability of him making future free throws. It is also difficult to conceive of a reason why our knowledge about these classes of human actions is different in any relevant

[31] Mises, *Human Action*, p. 90. Emphasis added.

way from Ludwig von Mises's "table of mortality."[32] For, if ever there existed "classes" of events in the way Ludwig von Mises defines them (and in the way Richard von Mises defines "collectives"), these repetitious sporting actions certainly qualify.

Moreover, if Ludwig von Mises had adopted a subjective definition for probability, *as the rest of his epistemological and praxeological system demands*, there is no need whatsoever to try to break down probability into subcategories at. For, if *all* probabilities are merely measures of man's subjective uncertainty about the world, *including those generated by the relative frequency method*, then any subcategories we might create amount to nothing more than *methodological* subcategories. Dividing probability into Ludwig von Mises's subcategories, in other words, amounts to saying nothing more than this: "Some probabilities are generated by the frequency method, and some probabilities are not." Seen in this light, Ludwig von Mises's famous subcategories appear trivial and unnecessary.

Conclusion

In this paper I have challenged most, but not all, of Ludwig von Mises's theory of probability. I have argued that the definition of probability inexorably depends upon the nature of the world, and that a deterministic world obliges us to adopt a subjective definition for probability. I have argued that Ludwig von Mises, too, ought to have adopted this definition for probability, because his deterministic epistemological, methodological and praxeological system demands such a definition. Ludwig von Mises did not adopt such a definition, although I have noted that *he did not provide any general definition of probability at all.* Had he adopted the subjective definition implied by the rest of his system, however, this would have required him to lift his proscription against applying numerical probabilities to singular cases, and perhaps even withdraw his trivial methodological subcategories of probability.

Ludwig von Mises was not a proponent of the subjective definition of probability, but he ought to have been. What Ludwig von Mises should have said to counter his brother's claim that probability is a "physical property" in the world, in short, is what the great subjectivist Bruno de Finetti declared:

PROBABILITY DOES NOT EXIST.[33]

[32] Ibid., p. 107.

[33] Bruno de Finetti, *Theory of Probability*, vol. 1 (New York: John Wiley and Sons, 1974), p. x.

Bibliography

Abel, Reuben. *Man Is the Measure*. New York: Free Press, 1976.

Crovelli, Mark R. "On the Possibility of Assigning Probabilities to Singular Cases: Or, Probability Is Subjective Too!" *Libertarian Papers* 1(26) (2009): 1–17.

de Finetti, Bruno. *Theory of Probability*. Vol. 1. New York: John Wiley and Sons, 1974.

Good, I.J. *Good Thinking: The Foundations of Probability and Its Applications*. Minneapolis, Minn.: University of Minnesota Press, 1983.

Hoppe, Hans-Hermann. *Economic Science and the Austrian Method*. Auburn, Ala.: Ludwig von Mises Institute, 1995.

———. "The Limits of Numerical Probability: Frank H. Knight and Ludwig Von Mises and the Frequency Interpretation." *Quarterly Journal of Austrian Economics* 10, no. 1 (Spring 2007): 3–21.

Mises, Ludwig von. *Human Action: A Treatise on Economics*. 4th rev. ed. Irvington-on-Hudson, N.Y.: Foundation for Economic Education, 1996.

———. *Theory and History*. Auburn, Ala.: Ludwig von Mises Institute, 1985.

Mises, Richard von. *Probability, Statistics and Truth*. 2nd Revised ed. New York: Dover, 1981 [1957].

Rothbard, Murray N. "The Correct Theory of Probability." *Libertarian Review* 9, no. 2 (1975): 9.

———. "Keynes, the Man." In *Dissent on Keynes: A Critical Appraisal of Keynesian Economics*, edited by Mark Skousen, 171–98. New York: Praeger, 1992.

Weatherford, Roy. *Philosophical Foundations of Probability Theory*. Boston: Routledge and Kegan Paul, 1982.