

Uncertain Policy Decisions During the Covid-19 Pandemic

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Abstract: The Covid-19 pandemic has shaken the world. It has presented us with a series of new challenges, but the policy response may be difficult due to the severe uncertainty of our circumstances. While pressure to take timely action may push towards less inclusive decision procedures, in this paper I argue that precisely our current uncertainty provides reasons to include stakeholders in collective decision-making. Decision-making during the pandemic faces uncertainty that goes beyond the standard, probabilistic one of Bayesian decision theory. Agents may be uncertain not just about factual properties of the world, but also about how to model their decision problems and about the values of the possible consequences of their options. As different stakeholders may have irreconcilable disagreement about how to resolve these uncertainties, decision-making procedures should take everybody's perspectives into account. Moreover, those communities that are hit harder by the pandemic are also those that are typically excluded from knowledge production. Thus, in the face of Covid-19 uncertainty, both democratic and epistemic considerations highlight the importance of stakeholders' inclusion in policy decision-making.

Keywords: uncertainty, policy making, decision-making, inclusion

JEL Classification: D81, D70, A13, B40

I. INTRODUCTION

The Covid-19 pandemic has taken the world aback. It has shaken almost every aspect of our individual and social life, presenting us with severe, novel challenges. These unprecedented circumstances are so fraught with uncertainty that making good decisions may be difficult. And yet, the pandemic requires timely and apt responses. In the face of this uncertainty, how should policy makers make decisions? While the pressure for timely responses may push towards swifter and less inclusive decision procedures, I argue that our current uncertainty provides both democratic and

epistemic reasons for the importance of stakeholders' inclusion in collective decision-making.

Bayesian decision theory provides important tools to deal with decision-making under uncertainty, but it assumes that the uncertainty faced by the agent can be captured entirely in probabilistic terms. However, our current uncertainty goes beyond this standard view: it concerns also the construction of decision models and the evaluation of the possible consequences of a policy. In both model and evaluative uncertainty, people may have irreconcilable disagreements due to their values and priorities. For this reason, these uncertainties call for the inclusion of all stakeholders in the decision-making processes. In the case of standard uncertainty, considerations of accuracy may point against this conclusion, privileging expertise over inclusion. However, the exclusionary nature of expertise keeps removed from our collective efforts of knowledge production precisely those communities that are more severely hit by the pandemic.

II. STANDARD UNCERTAINTY

When making decisions, policy makers face situations of practical uncertainty, that is, uncertainty concerning what to do (Peter 2021). Bayesian decision theory suggests that the way to resolve this uncertainty is to choose the option from which the agent expects the best outcome, given their beliefs about the world. The value of the different outcomes is represented by the agent's utility function, while their beliefs about the possibility of the contingencies on which these outcomes depend are captured by a probability function. Then, the agent should pick the available option leading to the highest utility given the probability of different scenarios.

This picture assumes that the agent's uncertainty can be entirely captured by the probability function representing their beliefs. While very elegant, this assumption is rather strict. By this, I do not mean to criticise the widespread Bayesian tenet that degrees of belief can be represented by probabilities. Rather, I will focus on the uncertainty that is left out of the picture even on the assumption that it is possible to represent degrees of belief with probabilities. Uncertainty can vary in severity and in nature: if it is too severe, or if it is not of the right kind, then it cannot be captured by probabilities.

Representing degrees of belief with probabilities requires, of course, that the agent be able to form degrees of belief. Yet, the severity of the uncertainty may be such that this is not possible. For instance, it may be

natural to represent the degree of belief in the effectiveness of a certain vaccine with the probability rate of its success. But we do not have probability measures of the likelihood that the government will fail, due to its inadequacy, in organising the vaccination campaign: the agent may have some degree of belief in that eventuality, but be little confident of its accuracy. In some more abstract cases, the agent may be unable to form degrees of belief at all, for example with respect to the possibility of the insurgence of a new pandemic or to the impact of restrictive measures on nationalist sentiments. And finally, there are also all the contingencies the agent is unaware of, that is, those things that the agent does not even know that they do not know.

These illustrative cases show that decision-making in response to the pandemic involves uncertainty that is more severe than mere probabilistic risk. While classical expected utility theory may be inadequate to tackle decisions under more severe degrees of uncertainty, numerous sophistications have been developed to tackle these cases while still holding on to the Bayesian tenet (for example, Ghirardato 2001; Bradley 2017; Karni and Vierø 2017). While going beyond probabilistic risk, severe uncertainty can still be addressed within some expanded version of Bayesian decision theory.

However, this is possible only under two conditions: first, that the decision problem is already modelled; second, that the utilities are given. In the next two sections, I will explore each of these conditions in turn, showing how they lead to further uncertainty, and how they point to stakeholder inclusion as a requirement for decision-making during the pandemic.

III. MODEL UNCERTAINTY

Formal theories require that decision problems be structured in models that they can take as input. As Bayesian decision theory calculates the best option on the basis of the utility of the outcomes of the alternative options and of the probability of the contingencies on which these outcomes depend, then it can only be applied to problems that have been structured in a set of available alternative courses of action, a set of outcomes, and a set of contingencies (or states). But real-life problems do not come with pre-formed sets. Thus, the theory can only be applied once the problem has been modelled—yet the theory itself does not provide any instruction on how the model should be constructed. Insofar as agents

can be uncertain about the right way to model their decision, then practical uncertainty cannot be entirely resolved within the boundaries of Bayesian decision theory. And indeed, there are many reasons to expect uncertainty over decision modelling in policy responses to the pandemic.

As the current circumstances are unprecedented in our lifetimes, policy makers are exploring options that are outside of their usual protocol: extraordinary times require out-of-the-ordinary solutions. Restrictive measures that were unheard of in democratic societies are now commonly debated and implemented; creative solutions have been devised to host events without compromising safety; many activities have had to change shape and move online. This means that policy makers work with an open set of acts: rather than sticking to the old guidebook, they may have to come up with novel solutions to novel problems. For this reason, they may be uncertain as to whether they are really considering all the alternatives at their disposal.

Even in the identification of the sets of outcomes and contingencies there is an uncertain aspect. Any given action leads to an indefinite number of consequences: my decision to go to a certain café will have the consequence of me drinking a certain blend of coffee—but also of sitting on a stool, crossing the street, and entering the café with my left foot, among countless other actions. Not all these consequences will be relevant for my choice. The exact number of steps to get to the café is probably not relevant, while the overall distance may be. Some people may care about the comfort of their seat, while others may only care about the quality of the coffee. Clearly the agent should not consider all the minute consequences of an action, but only those relevant to the decision. The same applies to the description of the different possible scenarios: each state of the world is constituted by a myriad of factors, the relevance of which depends on the grain of specification one adopts and on the selection of consequences one cares about. This means that there is no unique way to model a certain decision problem. If this is so, then agents may well be uncertain about their model, and wonder whether they have included the relevant aspects. I will call this *model uncertainty*, to distinguish it from the standard uncertainty over beliefs that we have seen addressed in Bayesian decision theory.

Model uncertainty is particularly acute under the pandemic, as policies tend to intervene on complex situations made of several interconnected aspects. A policy may impact both public health and the economy, while also having environmental and political consequences. Of course,

one could strive to construct models that are as comprehensive as possible, but at some point a selection is inevitable—and the more complex the situation, the more controversial the selection may be. Moreover, given the severity of our standard uncertainty, it is possible to end up discarding some factors that may turn out to be relevant after all.

IV. EVALUATIVE UNCERTAINTY

Once the decision is modelled, the resolution of the agent's practical uncertainty requires more than just probabilities. As decisions are the result of both the beliefs and the desires of the agent, Bayesian decision theory requires a utility function to represent the agent's preferences as well. While probabilities (or lack thereof) are themselves representations of uncertainty, utilities are taken to represent value with certainty, as if desires were not subject to uncertainty the way beliefs are. Instead, I will refer to the predicament of the agent who is not certain about the value of consequences as *evaluative uncertainty*, to distinguish it from both standard and model uncertainty.

Evaluative uncertainty is not usually included in Bayesian decision theory. Some authors have proposed extensions with families of utility functions, but their efforts aim at tackling incompleteness of preferences rather than uncertainty (for example, Bradley 2009; Ok, Ortoleva, and Riella 2012; Galaabaatar and Karni 2013). This is not surprising: it is somewhat counter-intuitive to think of uncertain desires, as these seem to be either trivial or reducible to standard uncertainty. Either the agent is unsure about their own tastes, in which case the uncertainty should be easily remedied with some more introspection; or they are uncertain about some factual properties about themselves or about some normative facts, in which case evaluative uncertainty can ultimately be reduced to standard uncertainty over the agent's beliefs (Bradley and Drechsler 2014). In either case, there is nothing particularly worrying about evaluative uncertainty.

However plausible this picture may be for individual decision-making, the situation is less straightforward for policy making. Even on the assumption that each stakeholder has definite preferences, these are not usually the same for everyone. Thus, there will be a variety of alternative preferences available to the decision-maker, who will be in a situation of evaluative uncertainty.

Once again, the complexity of the situation brought about by the pandemic makes this uncertainty particularly severe. As we have seen, policy

actions tend to impact many and various dimensions of the social world, and their consequences are not necessarily positive in all of them. This means that policy implementation will lead to important trade-offs, and stakeholders that are positioned differently with respect to these trade-offs will evaluate the outcomes of the policy differently. For the sake of illustration, we can imagine that policies protecting public health while halting the economy may be judged more favourably by the elderly, who are more exposed to the risks of the virus while potentially enjoying more secure financial situations, than by the youth, who tend to be less exposed to Covid-19 complications than to professional insecurity.

V. TWO ARGUMENTS FOR STAKEHOLDERS INCLUSION

We have seen three different types of uncertainty that play a role in decision-making. All three types are made particularly severe by the circumstances of the pandemic. This severity is due not only to our ignorance of crucial information regarding the virus, but also to the complexity of our current situation—which is constituted of many interconnected dimensions—and to the presence of a plurality of stakeholders. In this section, I will argue that all three types of uncertainty provide reasons for increasing the inclusion of stakeholders in decision-making. First, I suggest a democratic argument based on model and evaluative uncertainty; then, I propose an epistemic argument based on standard uncertainty.

V.I. A Democratic Argument

Under model uncertainty, the agent is uncertain about the way they have modelled their decision problem, for instance because they are not sure whether they have included all the options at their disposal or because they fear they have overlooked some relevant aspect of the situation. Under evaluative uncertainty, the agent is uncertain about the value to be assigned to the consequences they expect from the performance of the different actions. These states of uncertainty do not concern the agent's beliefs over some matters of fact and cannot be captured by probability distributions.

This means that standard uncertainty differs from model and evaluative uncertainty at least in one important respect. Insofar as something either is or is not the case, then there is a sense in which there is a correct solution to standard uncertainty. On the other hand, there is no unique solution to model or evaluative uncertainty, as there is no unique way of modeling a decision or of evaluating some consequences.

As for model uncertainty, different agents may disagree on whether something is relevant to the decision or whether some action is really available. Within some limits, this disagreement could be irreconcilable, in the sense that it ultimately boils down to disagreement over values and priorities. The same goes for evaluative uncertainty: people may disagree on how to evaluate some outcome, even more so given the amount of trade-offs required by the complex policies responding to the pandemic. There is no system of values that is the uniquely correct one for evaluating such consequences.

While there is no reason why, on matters of values and priorities, some viewpoints should hold more influence than others, lack of inclusion will typically favour the more powerful. In February 2020, the Italian city of Bergamo was severely hit by the pandemic. The size of the tragedy was partly due to the late adoption of restrictive measures. In those crucial weeks, Bergamo's influential Confederation of Industry (Confindustria) started a campaign pressuring the city not to stop its activities, and lobbied politicians to avoid lockdowns (Horowitz 2020). In a situation of uncertainty over the value of their alternatives, decision-makers under time pressure adopted the evaluative stance of the most influential stakeholder.

Of course, Confindustria's position was not wrong: it reflected a system of values. Indeed, evaluative differences may be due to different relations to the matter at stake. As each stakeholder has a different perspective on the decision and on its results, the inclusion of more stakeholders in the decision-making process implies a more comprehensive and diversified perspective on the matter—one that better represents its complexity. For this reason, model and evaluative uncertainty point to the importance of including all relevant stakeholders in policy decision-making.

V.II. An Epistemic Argument

While democratic considerations in the face of model and evaluative uncertainty call for inclusion, in the case of standard uncertainty epistemic considerations seem to push in the opposite direction. If there is a correct answer to standard uncertainty, then we should not treat all possible solutions equally. Our priority should be to find the correct one, and therefore the guiding principle in assessing the alternative ways to solve the uncertainty should be one of accuracy. For this reason, addressing standard uncertainty is usually the role of experts and scientific advisors in

policy making. However, the exclusionary nature of expertise provides an epistemic argument for the inclusion of stakeholders in decision-making.

The attainment of epistemic authority requires long years of education and access to epistemic institutions. However, these two conditions are not open to all individuals equally. Education costs time and money, and people from low-income backgrounds may not have the possibility to devote resources to it. Academic institutions are by no means immune to structural inequalities (Gillborn and Mirza 2000; Davies and Zarifa 2012), and access to quality education is more difficult for minorities and under-represented groups (Carnevale and Strohl 2013). Thus, epistemic authority is not equally distributed among society, and expertise tends to be exclusionary.

However, this is not just democratically problematic—it is also epistemically problematic. The Covid-19 pandemic does not affect everybody equally: it hits disproportionately ethnic (Millett et al. 2020; Kirby 2020) and sexual (Banerjee and Nair 2020) minorities. These communities are more exposed not only to the disease, but also to the psychological (Pedrosa et al. 2020; Suen, Chan, and Wong 2020) and economic (Hu 2020; Kantamneni 2020; Mo et al. 2020) consequences of the pandemic. If this is so, then their members hold an important epistemic vantage point on the pandemic and its impacts.

By itself, diversity in science and in scientific institutions is an epistemic value (Intemann 2009). Moreover, feminist epistemology has highlighted that knowers are socially located, standing in particular relations to what is known (Anderson 2020). The under-representation of minorities in science leads to the exclusion of people with first-person access to the experience of Covid-19 and of its effects: our collective enterprise of knowledge production with respect to the pandemic lacks the perspective of some of the most hit communities. For this reason, in the face of standard uncertainty, decision-makers should strive to include a variety of stakeholders in their deliberations, and especially those whose epistemic perspective on the pandemic is particularly relevant for policy making, while also being traditionally excluded from institutional knowledge production.

VI. CONCLUSION

The Covid-19 pandemic has shaken our lives. It presents us with a continuous series of novel problems, requiring often drastic solutions. Policy

making in response to this situation may be particularly difficult, especially given the uncertainty under which we have to make decisions. Even though the pressure to produce timely responses to the crisis may lead to swifter and less inclusive decision procedures, I have argued that the inclusion of stakeholders in decision-making processes is important for both democratic and epistemic reasons. This is so because the uncertainty we face is of at least three different types, all of which are made particularly severe by our current circumstances. Agents can be uncertain not only about some factual issues, but also about the best way to model their decision problems, as well as about the value of the possible outcomes of different policy actions. Different stakeholders may have irreconcilable disagreements about these last two types of uncertainty, which underline the importance of including all perspectives in our collective decision-making. But different stakeholders may also hold different standpoints in relation to the pandemic, and their inclusion is therefore also epistemically necessary to resolve our standard uncertainty—especially since the communities that are affected most by the pandemic are also those that are traditionally excluded by our knowledge production institutions.

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