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Your Money, Your Life, or Your Freedom? A Discrete-Choice Experiment on Trade-Offs During a Public Health Crisis

Research Article

Abstract: We conducted a discrete-choice conjoint analysis on a sample of residents in Italy to explore trade-offs between human lives, individual freedoms, and the economy that governments and their citizens face while coping with a public health crisis. Our results indicate that people prefer to avoid income losses over reduction in the number of victims by the same percentage. The relative preference for saving income over saving lives widens as the size of losses at stake increases. The duration of restrictions to individual freedoms per se does not appear to have a sizable impact on people's preferences once income and human losses are accounted for. Our study contributes to scholarship on the value of a statistical life and sheds light on morally problematic trade-offs. Further, we illustrate how conjoint analysis through discrete choice modeling can address public administration and policy issues that are inherently multidimensional.

Evidence for Practice

- Stark trade-offs between money, life, and freedom emerged during the COVID-19 pandemic in much the same way as they did during previous crises of public health and public safety.
- Italian adults seem to have a preference for saving income versus saving lives, with this preference growing as the losses at stake increase.
- Once economic and human losses are accounted for, the duration of restrictions on civil liberties does not strongly affect Italian adults' preferences between alternative lockdown measures.
- In coping with public health crises, discrete-choice experiments are cost-effective tools that can inform government adoption of policies that involve trade-offs between citizens' lives, their civil liberties, and the economy.

A grim calculus. Covid-19 presents stark choices between life, death and the economy.

The Economist (2020).

The COVID-19 pandemic has forced governments to make uncomfortable choices between citizens' lives, their freedoms, and the economy (e.g., Comfort et al. 2020; Gostin and Wiley 2020; International Monetary Fund 2020; McKee and Stuckler 2020; *The Economist* 2020). These trade-offs (Fiske and Tetlock 1997), which suddenly rose to the fore in the public debate, had previously been relegated to pure academic debate. As an example, scholarship on the value of a statistical life (e.g., Organization for Economic Cooperation and Development 2012; Viscusi 2018) has typically explored the trade-off between monetary and human losses as a thought experiment conducted in isolation, without taking into account other factors that come into play when

billions of individuals form this sort of judgment in the real world. The lockdown measures that governments across the globe have implemented in response to the COVID-19 crisis (e.g., Chorus et al. 2020; Gostin and Hodge 2020; Gostin and Wiley 2020) have offered an unprecedented setting for studying the relative importance that citizens attach to human and economic losses while factoring in the length of stay-at-home orders. Our study seizes this window of opportunity to disentangle the simultaneous and independent effects of the three main types of losses that are associated with government responses to health emergencies—namely human lives, income, and freedom of movement. In other words, adopting a descriptive and exploratory rather than normative and predefined approach, our work addresses the following research question: “What is the relative importance that citizens place on human life, income, and freedom of movement when forming their preferences regarding the lockdown measures that governments take to address a public health

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crisis?” To this end, we conducted a discrete-choice conjoint analysis on a sample of Italian adults.

The first contribution of our study lies in providing policy makers with precise estimates about how much of their income and freedom citizens are willing to give up to reduce the toll on life in the face of a health crisis. This type of information is valuable at a time when all countries are implementing lockdown measures to cope with the several waves of the COVID-19 pandemic. The second contribution is more theoretical and lies in advancing literature on the value of a statistical life (Viscusi 2018) and crisis management in public policy and administration (e.g., Boin and Lodge 2016; Christensen, Læg Reid, and Rykkja 2016, 2019; Farazmand 2007; Moynihan 2008). Moreover, our work provides novel empirical evidence that may be valuable for scholars interested in studying how extraordinary and unprecedented events such as a pandemic “follow from identity-driven conceptions of appropriateness more than conscious calculations of costs and benefits” (March and Olsen 2013, 482). The last contribution is methodological in nature and lies in advancing knowledge of how conjoint analysis through discrete-choice modeling can be used to address public administration and policy issues that involve multiple dimensions at the same time. While this multidimensionality has been emphasized in the literature, it can be difficult to model through other experimental methodologies. Discrete-choice experiments (DCEs) seem to strike a desirable balance between internal validity, on one hand, and the possibility to maintain multidimensionality, on the other.

Money, Life, and Freedom Trade-Offs: Theoretical Frameworks

Different taxonomies exist of trade-offs between losses in income and human lives, or between losses in civil rights and human lives, or among all three losses. For instance, Fiske and Tetlock (1997) qualify those as taboo trade-offs because they pertain to different models of human relations. Specifically, saving human lives is an element that belongs to the communal sharing model, whereby some groups of people such as communities are distinct and equivalent, and the emphasis is on commonalities rather than individual identities. Income, instead, is a prototypical example of the market pricing model of social life. In this model, making decisions that combine quantities is doable because there is a utility metric that makes ratios meaningful. Whereas trade-offs within each of the models are non-taboo, those between two different relational domains are taboo because “people find the questions more than merely confusing or cognitively intractable: they find such questions themselves morally offensive” (Fiske and Tetlock 1997, 255). In Fiske and Tetlock’s (1997) reasoning, trading off a communal sharing element and a market pricing element is the worst taboo. Recent scholarly developments in the same field provide a more granular distinction between routine, tragic, and taboo trade-offs, depending on the mix of spheres to which the attributes traded off against each other belong to. Trade-offs between secular elements that involve market transactions with a price attribute are routine. Trade-offs between sacred elements—for instance between capturing a terrorist and saving lives, or human dignity and life, or two human lives—are tragic. Trade-offs between a secular attribute—such as human life—and a sacred attribute—such as money—are taboo (Chorus et al. 2018).

Notwithstanding the nuances of taxonomies, extant evidence seems to agree that trading off between money, life, and freedom may be unavoidable. Fiske and Tetlock (1997), for example, note that politicians and public administrators are “required by resource scarcity and/or their social roles to make trade-offs that cross relational boundaries” (p. 257). Indeed, policy makers design rules and enforce regulations that have an impact on individuals’ risk of death. Estimating the costs of interventions aimed at reducing risks, on one hand, and the expected benefits of saving lives on the other, requires solid methodologies (OECD 2012). Although challenging and seemingly insensitive at first sight, pricing lives may hold the promise of creating a safer society for everyone (Viscusi 2018).

Theoretical frameworks and empirical approaches focused on valuing trade-offs between human and economic losses have caught the interest of scholars and practitioners alike across disciplines. Research on the value of a statistical life in economics (e.g. Viscusi and Aldy 2003) and work on cost–benefit analysis in public policy and administration (e.g., Baldwin and Veljanovski 1984; Boadway 2006; Weimer and Vining 2009) have increasingly overlapped for decades now. Consumers’ decisions to buy a hazardous product, smoke cigarettes, buy a house in a polluted area, and take on a risky job reflect how they simultaneously value health and fatality risks. The value of a statistical life is a measure of the trade-off between risk and money, for changes in the risks of fatalities (e.g. Viscusi 2014; Viscusi and Aldy 2003). More precisely, it is the ratio between individuals’ willingness to pay *ex ante* for the benefits of saving an unidentified life due to an intervention that decreases risk and the amount of risk reduction.

Similarly, scholarship on the trade-off between civil rights and public safety has flourished across such fields as public administration (Lewis 2005), political science (Davis and Silver 2004), economics (Viscusi and Zeckhauser 2003), and law (Viscusi and Zeckhauser 2005). On one hand, the Universal Declaration of Human Rights adopted by the United Nations General Assembly in 1948 as well as the constitutions of many countries around the world includes values such as equality, freedom of assembly, and freedom of movement as individuals’ civil rights. On the other hand, public safety and security are also government priorities. Extant scholarship argues that attaining the highest level of civil rights and reducing the number of victims from a terrorist act to zero are conflicting absolutes that cannot survive. More precisely, any society espousing full individual freedoms would need to accept a very high risk of deaths due to terrorist attacks. In much the same way, any society striving to save lives by eliminating the risk of terrorism would need to give up most—if not all—civil liberties (Viscusi and Zeckhauser 2003).

In public administration and policy scholarship, the value of a statistical life has typically served as a reference point for assessing the benefits of policies aimed at reducing risks in such domains as, for example, health, safety, and the environment (OECD 2012). Estimates of the value of a statistical life are a building block in government cost–benefit analyses. Initially applied to assess the social utility of alternative transportation investments, cost–benefit analysis has then been used in environmental protection interventions, healthcare promotion initiatives, and education improvement projects to compare the costs and benefits of different policy options and select one alternative for implementation

(Weimer and Vining 2009). By expressing benefits and costs in monetary terms adjusted at their net present value, cost–benefit analysis helps in comparing and ranking alternative interventions. The most common way to monetize the trade-off between costs and benefits is beneficiaries’ willingness to pay for a particular policy.

Whereas reviewing existing debates on theoretical refinements and computational appropriateness of the value of a statistical life and cost–benefit analysis (Ashenfelter 2006; Banzhaf 2014; Baldwin and Veljanovski 1984; Viscusi 2012) goes beyond the scope of this research, our work focuses on the core elements that are at play under an unprecedented public health crisis. Countries around the world are not extraneous to discussing the adoption of policies based on whether those pass a cost–benefit test. In the United States, since the Ronald Reagan Administration in the 1980s, executive orders require that federal agencies apply cost–benefit analysis in Regulatory Impact Analyses of major rules (Executive Orders 12,291, 12,866, 13,610). In the succeeding decades, the U.S. Congress has required that independent agencies not subject to executive orders perform cost–benefit analyses (Sherwin 2006). Indeed, “it is essential to be able to place a meaningful dollar value on fatality risks and other major health consequences of government policies” (Viscusi 2014, 388). However, it also seems imperative to acknowledge that “in any meaningful economic sense, small reductions in fatality risks are not priceless” (Viscusi 2014, 388). As societies are equipped with limited resources, “it is not possible to make an unbounded commitment to risk reduction, implying that eventually some trade-offs must be made” (Viscusi 2014, 388).

Estimates of individuals’ risk–money trade-offs can be based on revealed or stated preferences. In the former case, estimates are based on actual risky decisions, typically in market settings. For instance, studies using revealed preferences elicit the value of a statistical life based on the additional pay that workers accept for higher risks of death, price cuts that consumers are offered when buying properties in dangerous neighborhoods, or price premiums that drivers pay to get a safer car. Alternatively, scholarly work based on stated preferences estimates the value of a statistical life through choices that individuals make when confronted with hypothetical risky choices. Acknowledging the reduced contextual realism of hypothetical choices as compared to market choices, “reliance on survey data based on stated rather than revealed preferences is often useful for specific health risks not adequately addressed by market evidence” (Viscusi 2014, 388).

Money, Life, and Freedom Trade-Offs: Impact of the COVID-19 Pandemic

The sudden and fast spread of the COVID-19 virus has raised deep and broad attention from scholars and policy makers alike on the trade-off between the lives lost and the income reduction due to the lockdown restrictions that governments around the world implemented and that generated direct consequences on both losses. Measures such as closing schools and businesses, imposing social distancing, and canceling mass gatherings are among the nonpharmaceutical interventions that the Center for Disease Control and Prevention recommends for emergency preparedness when a novel virus with pandemic potential emerges. Those interventions are widely deemed effective and viable in slowing the transmission of a virus in communities before a vaccine

becomes widely available (Qualls et al. 2017). Nevertheless, from a legal perspective, gubernatorial actions restricting the freedom of assembly and movement inevitably raise moral concerns about civil liberties guarantees and the opportunity to hold policy makers accountable for protecting constitutional values (Gostin and Hodge 2020). In other words, although able to reduce the risk of contagion, stay-at-home orders that shut businesses down temporarily simultaneously tend to depress the economy, at least in the short term (e.g., Gostin and Wiley 2020). *The Economist* describes that trade-off as a “grim calculus” (The Economist 2020). Through their foreboding title—more timely than stark—McKee and Stuckler (2020) clarify how health and wealth policies are intertwined by nature: “if the world fails to protect the economy, COVID-19 will damage health not just now but also in the future.” Similarly, the International Monetary Fund (2020) has made the concerning prediction that “as a result of the pandemic, the global economy is projected to contract sharply by –3 percent in 2020, much worse than during the 2008–09 financial crisis.”

Building on the scholarship described in the previous section, recent research has investigated how individuals trade off between money, life, and freedom in the COVID-19 era. As far as experimental work is concerned, Chorus et al. (2020) investigated the preferences of a sample of the Dutch population in trading health effects (such as reducing the number of victims and injured individuals) against economy-related and education-related effects generated by policies aimed at relaxing lockdown measures. Indeed, limiting the spread of COVID-19 cases through lockdown had been the virtually uncontroversial priority during the acute phase of the pandemic. Later, however, accounting for the economic and educational impact of the lockdown has become an equally relevant goal. Their DCE revealed that citizens strongly dislike policies that causes increases in the following figures: number of deaths, number of individuals with lasting physical injuries, number of individuals with lasting mental impairments, number of children left with an educational disadvantage, number of households with persistent income loss, personal income taxes, and work pressure in the healthcare sector. Subsequently, a survey experiment with respondents from the United States and the United Kingdom revealed that while people have strong preferences for health over wealth, their priorities modify when participants are randomly presented with COVID-19 death estimates or COVID-19 income loss predictions (Hargreaves Heap et al. 2020). Relatedly, Reed et al. (2020) employed a DCE with a representative sample of U.S adults to investigate the size and characteristics of clusters with distinctive preferences for health (i.e., percentage of infected population) versus economic (i.e., increase in the percentage of households falling below the poverty line, years before the economy recovers to pre-COVID-19 levels, months in which restrictions for non-essential businesses are lifted) trade-offs.

A survey with a representative sample of the Danish voting-age population showed a positive correlation between the willingness to distance during the COVID-19 pandemic and a preference for minimizing the number of deaths at any cost as compared to accepting a few more deaths to save the economy (Olsen and Hjorth 2020). Using epidemiological and willingness-to-pay estimates from the United States, Echazu and Nocetti (2020) concluded that the lives saved and the morbidity avoided thanks to the social distancing interventions seem to justify the economic

costs of social distancing. In addition to observing the degree to which citizens think that preserving lives and preserving the economy is a priority, extant work also measures for how long respondents may be prone to abide by such measures as stay-at-home orders and social distancing (e.g., Pedersen and Favero 2020).

Combining insights from work on the value of a statistical life and cost–benefit analysis with recent evidence on taboo trade-offs, we conduct a discrete-choice conjoint analysis to explore the relative preferences for human lives, versus individual freedoms, and versus the economy. In fact, governments and their citizens are facing those trade-offs to cope with the public health crisis generated by the novel COVID-19 pandemic.

Research Design and Methods

Our study adopts a descriptive rather than normative approach and employs an online DCE. DCEs are particularly well suited for modeling real-world decisions that entail trade-offs (e.g., Hainmueller, Hangartner, and Yamamoto 2015; Ryan et al. 2012), such as those faced by policy makers called to choose between different public policies, debt plans, government reforms, and the like. In this type of choices, alternatives are bundles of attributes that differ along multiple dimensions, rather than a single factor. For example, when choosing between environmental policies, decision makers take into account simultaneously such features as pollution reduction, tax increase, health benefits, and political support.

Our DCE is a paired conjoint design with a forced choice (Hainmueller, Hangartner, and Yamamoto 2015), which aims at exploring the causes of preferences rather than how preferences are formed. A DCE allows estimating the relative importance of factors—called attributes—that simultaneously and independently affect people’s preferences when making decisions between alternatives. In this type of experiment, participants are presented with pairs of options (i.e., a choice set) that vary with respect to certain attributes and are asked to pick their preferred option from each set (e.g., Belle and Cantarelli 2018; Johnson et al. 2013; de Bekker-Grob, Ryan, and Gerard 2012; Hainmueller, Hangartner, and Yamamoto 2015; Ryan et al. 2012). By exposing participants to multiple pieces of information at once, conjoint analysis provides an enhanced realism relative to survey instruments that elicit preferences on single pieces of information at a time. This distinctive feature makes conjoint analysis less artificial than traditional survey experiments and thus better suited for capturing decision making in information-rich environments (Hainmueller, Hopkins, and Yamamoto 2014; Ryan et al. 2012). Moreover, our discrete-choice conjoint analysis sheds light on trade-offs that cannot be reliably estimated through standard self-report questionnaires, which “are often susceptible to respondents’ tendencies to answer in a more socially acceptable way, a problem known as social desirability bias” (Kim and Kim 2016, 445).

As illustrated in Table 1, subjects in our DCE were asked to choose between pairs of situations that differ along the following attributes: deaths avoided, length of lockdown, and income loss. Each attribute features the three levels presented in Table 1.

Following established standards for conducting a DCE (e.g., Ryan et al. 2012), the selection of attributes and their levels was

Table 1 DCE Attributes and Levels

Attributes	Levels		
	Level 1	Level 2	Level 3
Deaths avoided	25% deaths avoided in your region	50% deaths avoided in your region	75% deaths avoided in your region
Length of lockdown	1 month	2 months	3 months
Income loss	25% loss in your monthly income	50% loss in your monthly income	75% loss in your monthly income

theoretically informed by the scholarship we reviewed in the previous sections and complemented with up-to-date estimates and data on human losses, lockdown duration, and economic losses that were available during the peak of the COVID-19 spread (e.g., Flaxman et al. 2020). The use of percentage changes instead of absolute changes is meant to equalize the consequences of losses across such elements as mortality rates in respondents’ geographic area of residence and individuals’ income. Then, the use of percentages of avoided deaths and income losses as attributes is grounded in the literature on taboo trade-offs (Fiske and Tetlock 1997), value of a statistical life (Viscusi 2018), and cost–benefit analysis in government (Baldwin and Veljanovski 1984). Furthermore, at the outbreak of the emergency, the number of COVID-19 victims per Italian region was displayed every day in a press conference held by the top management of the National Institute of Health. The same figures were then reported and commented in newspapers and TV news. The same practice continued for months, regardless of the number of new coronavirus cases. Similarly, a few weeks after the outbreak of the crisis, the national governments started to announce a stimulus check for individuals with largest losses in personal income caused by lockdown orders. The rationale for including a lockdown duration attribute that entails temporary suspension of individuals’ freedoms protected by constitutional laws was twofold. First, it aligns with the action of governments around the world that announced restrictions of movements and stay-at-home mandates of different lengths. Second, previous literature either disregarded a length attribute or kept the time constant. Not including the lockdown duration would have compromised contextual realism considering the amount of attention from the public and the media coverage that this topic has received throughout the crisis. Lastly, we presented and discussed our study in a workshop with more than 100 healthcare professionals and public administrators so as to gauge the ecological validity based on the extent to which the findings that we obtained in our research environment resonate with target real-world contexts (Harrison and List 2004). Public managers and employees in the workshop easily identified the public policies that were in progress in the country with our experimental environment and operations.

The combination of the three attributes—with three levels each—generated a total of 27 (i.e., 3³) unique situations. Using a full factorial design, we kept all 27 combinations derived from the full set of attributes and levels. This procedure avoided any restrictions on the possible attribute combinations, thus making the attributes mutually independent (Hainmueller et al. 2014). Using a cyclical fold-over approach (e.g., Street, Burgess, and Louviere 2005), we built 27 choice sets by pairing each unique situation with its mirror image, obtained by moving each attribute to its next level. For example, for a situation in which 25 percent of deaths

in the Region would be avoided, a one-month lockdown, and a prospective monthly income loss of 25 percent, the mirror situation would feature a 50 percent avoided deaths, a two-month lockdown, and a 50 percent loss in monthly income (Appendix A). To limit cognitive fatigue, each participant was presented with four choices, which were randomly selected from the 27 possible choice sets. The random assignment of participants to choice sets guarantees that each subject has an equal and nonzero probability of being exposed to any pair of alternatives, thus eliminating the risk of “systematic differences over conditions in respondents’ characteristics that could also cause the observed effect” (Shadish et al. 2002, 55). This randomization maximizes the internal validity of our inference.

We conducted our DCE on a sample of 1500 respondents aged 18 or above belonging to the adult population living in Italy. The Qualtrics Software Company recruited the subjects and collected responses between April 28 and May 8, 2020. Our sampling procedure followed from empirical work that collects data among individuals registered to web panels that are dedicated to administering surveys online (e.g. Baekgaard and Serritzlew 2016; Christensen, Yamamoto, and Aoyagi 2020; Horvath, Banducci, and James 2020; Nagtegaal et al. 2020; Olsen 2017; Vogel and Willems 2020). At the time of the survey, Italy had the second highest number of confirmed COVID-19 cases and the highest number of deaths among European countries (WHO 2020). Moreover, the lockdown measures enforced by the Italian Government were among the strictest according to the Government Response Stringency Index (Hale et al. 2020). At the time of data collection, lockdown measures were taken at the national level and thus were consistent across regions.

Because the dependent variable in our DCEs is binary, following the guidelines by Ryan et al. (2012), we fitted a conditional logit model, which is required to analyze stacked data where we have two rows for each choice set. Conditional logistic regression “will yield exactly the same results as the binary logit” (Ryan et al. 2012, 57). Regression results (i) provide information about the relative impact of each attribute on subjects’ choice and (ii) control for the characteristic of the alternative that is not selected. Furthermore, the inclusion of at least a continuous variable in a DCE enables inferring the trade-offs between each attribute and the continuous variable.

Results

The respondents were 50 percent female and 50 percent male. With respect to age group, about 15 percent of the sample was between 18 and 29 years, 16 percent between 30 and 39, 23

percent between 40 and 49, 26 percent between 50 and 59, and 20 percent 60 or older. In terms of educational background, 38 percent of participants held a university degree, 53 percent a high school diploma, and 9 percent completed up to mandatory education. The demographic characteristics of our sample resemble the Italian adult population in terms of sex and age. However, subjects in our experiment tended to be more educated than in the general population, where 62 percent hold a high school diploma or higher degree. In general, our sampling procedures share the same limitations that are common to most web surveys that use online panels of self-selected respondents, such as MTurk samples (e.g., Favero and Kim 2020). However, concerns about the representativeness of such samples are mitigated by evidence showing few noticeable disparities relative to other types of samples (e.g., Berinsky, Huber, and Lenz 2012).

Table 2 displays the results of a conditional logit model that we used to account for the binary nature of the dependent variable and the hierarchical structure of the data featuring four choices per respondent. For each of the three attributes in our DCE, we used the middle level—i.e., 50 percent deaths avoided, two-month lockdown length, and 50 percent loss in monthly income—as the reference category in the regression model. Table 2 reports the coefficient (b), the associated standard error (SE), the z -value (z), the p -value ($p > z$), 95 percent confidence interval, and percentage change in odds for the other levels relative to the middle level. In other words, for each of the DCE attributes, Table 2 shows how the odds of choosing a given situation change when we move from the middle level to the one indicated in the table. For instance, the coefficients associated with the level *25% deaths avoided in your Region (vs. 50%)* indicates that, other things being equal, the odds of preferring a situation with 25 percent deaths avoided are 35 percent lower than the odds of choosing a situation with 50 percent deaths avoided (i.e., the omitted reference level). Moving to the next row in Table 2, keeping everything else constant, the odds of preferring a situation with 75 percent deaths avoided are 45 percent higher than the odds of choosing the omitted reference level of 50 percent deaths avoided. With regards to a two-month lockdown, a one-month lockdown did not change the odds of preferring a situation, whereas a three-month lockdown marginally decreased the odds by 8 percent. The odds of choosing a situation increased by 59 percent when the loss in monthly income was 25 percentage points smaller and decreased by 53 percent when the monthly income loss was 25 percentage points larger. As a whole, subjects in our sample showed a strong preference for situations characterized by larger percentages of deaths avoided and smaller

Table 2 Estimates from a Conditional Logit Model Predicting Change in Odds of Choice Caused by Changes in Levels of Deaths Avoided, Length of Lockdown, and Income Loss

	b	SE	z	$p > z$	95% CI		%
25% deaths avoided in your region (vs. 50%)	-.38	.04	-9.37	.000	-.46	-.30	-32
75% deaths avoided in your region (vs. 50%)	.37	.04	9.12	.000	.29	.45	45
One-month lockdown (vs. two-month)	.02	.04	.43	.667	-.06	.10	2
Three-month lockdown (vs. two-month)	-.08	.04	-1.93	.054	-.16	.00	-8
25% loss in your monthly income (vs. 50%)	.46	.04	11.58	.000	.38	.54	59
75% loss in your monthly income (vs. 50%)	-.75	.04	-18.54	.000	-.83	-.67	-53
Const	-.01	.03	-.49	.627	-.07	.04	

Notes: Number of respondents = 1,500; Number of observations = 12,000; LR χ^2 (7) = 1,229.93; Prob > χ^2 = 0.0000; Log likelihood = -3,543.9193; Pseudo R^2 = 0.1479.

percentages of losses in income and a marginally significant preference for shorter lockdown.

A series of tests of equality between pairs of coefficients shows that the disutility of losing 25 percentage points more in monthly income is larger than the disutility of avoiding 25 percentage point less deaths ($p < .0005$). The effect of a 25 percentage points smaller income loss is statistically equal to the impact of avoiding 25 percentage points more deaths ($p = .093$).

The presence of a continuous variable in a DCE enables a quantitative estimation of the trade-offs between each attribute and the continuous variable. In our case, the ratio of the coefficient on the 25 percent income loss to the coefficient on the 75 percent avoided deaths indicates the relative preference for a 1 percentage point reduction in income loss compared to a 1 percentage point reduction in the number of victims. A ratio greater than 1 suggests that avoiding an income loss matters more than avoiding a comparable loss in human lives. Based on our data, a percentage point reduction in income loss, from 50 percent to 25 percent, matters 1.24 times more than a percentage point increase in avoided victims, from 50 percent to 75 percent. In other words, respondents seem to value income 1.24 more than human lives. Conversely, the ratio of the coefficient on the 75 percent income loss to the coefficient on the 25 percent avoided deaths indicates the relative preference for a 1 percentage increase in income loss compared to a 1 percentage point reduction in the number of avoided victims. A ratio greater than 1 suggests that incurring an income loss reduces respondents' utility more than avoiding fewer victims. Our results show that our respondents dislike a percentage point increase in income loss, from 50 percent to 75 percent, 1.97 times more than they dislike a percentage point decrease in avoided victims, from 50 percent to 25 percent. Overall, avoiding an income loss seems to matter more than avoiding human losses that are comparable in percentage terms. Further, the relative preference for saving income over saving lives appears to widen as the size of losses at stake increases.

Our pattern of results holds true across different areas of the country that have been differently impacted by the COVID-19 crisis. Indeed, a series of interaction analyses did not show any statistically significant differences between regions with higher versus lower mortality rates. Moreover, the pattern of results appears the same across areas of the country with different levels of income, which is about one-fourth lower in the South compared to the North (ISTAT 2021). Similarly, additional interaction analyses did not show any noticeable differences compared to the main results presented above for the following groups: respondents over 64 years versus under 64; retired versus non-retired; female versus male; unhealthy versus healthy; self-employed versus non-self-employed; unemployed versus employed; and below versus above 20,000 euros of yearly net income. The lack of differential effects among such groups should be read in light of the following two clarifications: On one hand, when we collected data for the current research project (i.e., a few weeks after the first COVID-19 case in Italy), lockdown measures were taken at the national level and were thus consistent across regions. On the other hand, we designed the operations for our constructs of interest so as to equalize the consequences—thus letting the absolute size of the losses vary—for the groups mentioned above.

Overall, our sample of Italian adults has a strong preference for lockdown measures that prevent more deaths and lead to lower income losses. The duration of the lockdown restrictions appears to be less relevant to our respondents, with the preference for shorter lockdowns being only marginally significant *ceteris paribus*. In other words, in shaping their preferences for alternative lockdown measures that governments take to address public health crises, Italian adults appear to value money over lives, with time of freedom restrictions being marginally relevant.

Discussion and Implications

This study illuminates our understanding of taboo trade-offs under the global public health emergency triggered by the spread of the COVID-19 virus. Respondents in our DCE showed a sizable preference for avoiding losses in monthly income over increasing the number of lives saved by a numerically equal percentage. This relative preference widened at higher levels of economic and human losses. Once avoided deaths and income reduction were controlled for, participants' choices were not strongly affected by the length of individual freedoms restrictions imposed through lockdown orders.

Our work provides several contributions that may be valuable for scholars and policy makers alike. First, we disentangled the effects of three types of losses that countries and their citizens face when coping with a public health crisis. To the best of our knowledge, our study is one of the very first attempts to use discrete-choice conjoint analysis to estimate the relative preferences of citizens for human lives, income, and individual freedoms in the context of a lockdown. Knowing how citizens may react to public policy interventions that are multidimensional in nature may prove crucial for successful policy implementation and goal attainment. Our evidence seems to nicely and meaningfully complement recent work conducted under the COVID-19 threats on trade-offs among health, economy, and education for lockdown relaxation policies (Chorus, Sandorf, and Mouter 2020), health and wealth (Hargreaves Heap et al. 2020; Reed et al. 2020), and willingness to abide by social distancing and stay-at-home mandates (Echazu and Nocetti 2020; Olsen and Hjorth 2020; Pedersen and Favero 2020).

A second contribution of our study goes to scholarship on the value of a statistical life (Viscusi 2018), which provides a foundational ground for cost-benefit analyses in government. More precisely, our research design allows estimating taboo trade-offs that market research could hardly unveil. Similarly, our work speaks to recent literature on taboo trade-offs aversion. At its core, this stream of literature posits the existence of a penalty parameter for policy scenarios that involve taboo choices such as trading more victims (sacred attribute) for lower taxes (secular attribute). Based on the work of Chorus et al. (2018), the aversion to taboo trade-offs can be best estimated in confirmatory and purposefully designed empirical research efforts when a status quo policy exists, an alternative policy is presented in terms of its effects with regard to the status quo along a set of sacred and secular attributes, there are no chances to opt out from making a decision, and respondents are asked to state their preference for supporting or opposing the alternative policy for all possible cases. Binary logit estimates can account for taboo trade-off aversion through a penalty parameter for each pair of policies that entails trading off a sacred against a secular attribute. This methodology has recently been applied in the context of a

series of choices between alternative policies meant to relax the lockdown status quo in place at the time of data collection (Chorus et al. 2020). Our work, thus, paves the way for strengthening the connection between public administration research and choice modeling work aimed at accounting for aversion to taboo trade-offs.

A third contribution of our evidence lies in taking up recent calls for public administration scholars to simultaneously prioritize the study of disaster management and incorporate citizen preferences in governmental crisis management. Addressing these calls together may be useful in enhancing emergency preparedness, response effectiveness, and performance. On one hand, in the words of Boin and Lodge (2016), “the study of crisis and disaster management remains the province of specialized journals and a niche group of interdisciplinary academics and practitioners. If crises and disasters are indeed becoming an integral part of the ‘new normal’, the time has come to bring the study of crises and disasters into the mainstream” (p. 295). On the other hand, knowing citizens’ preferences on the spot of an unprecedented emergency allows politicians and experts to account for people’s thinking and feelings in their policies. This is crucial because individuals ultimately act based on their preferences (e.g., Christensen and Læg Reid 2020; Donahue, Eckel, and Wilson 2014; Wise 2006). Indeed, “when governmental preparedness and crisis management match the expectations of citizens, the response process works well and governmental performance is perceived as good. When there is a mismatch between capacity and expectations, the government response process runs into trouble” (Christensen, Læg Reid, and Rykkja 2016, 889). As an anonymous reviewer noted, this is not to say that decision makers should blindly match citizen expectations in emergency response situations. As “science can inform, but it cannot solve societal problems” (Van Dooren and Noordegraaf 2020, 610), our work serves as a cautionary tale for policy makers because rigorous and timely evidence about citizens’ preferences can help them predict the degree of opposition or support to lockdown measures, which may in turn affect compliance. We help fill these research gaps through an experimental design that scores high on causality links and contextual realism at the same time. As to the latter, in fact, data were collected during the COVID-19 pandemic toward the end of phase 1 in Italy. This strengthens our confidence that the attributes in our DCE were salient. Overall, knowing citizens’ preferences aids policy makers in decision environments—such as those of crises—that require nontraditional and nonhierarchical structure and flexibility.

Limitations and Future Research Avenues

The findings presented above are not immune to the usual limitations that apply to conjoint analyses based on DCEs. Encouragingly, this design is well equipped to estimate the causal impact that our factors had on citizens’ stated preferences for a situation, thus scoring high on internal validity. However, the adoption of artificial scenarios detracts from both external and construct validity. As to the generalizability of our findings, we do not have evidence that the results we observed may extend beyond our DCE to naturally occurring settings, in Italy and/or in other countries around the world. As to the construct validity of results, mono-operation bias and the use of arbitrary treatment levels are potentially concerning threats. Indeed, although grounded

in extant knowledge and informed by up-to-date statistics and key informants, the identification of attributes and attribute levels emerge from a series of judgment calls. These limitations notwithstanding, DCEs have proven effective in predicting how individuals choose and behave in reality (e.g., de Bekker-Grob, Ryan, and Gerard 2012) and “stated rather than revealed preferences is often useful for specific health risks not adequately addressed by market evidence” (Viscusi 2014, 388).

The shortcomings inherent to the research design that we adopted pave the way to future research avenues. To strengthen external validity, we suggest employing two different strategies: replicate our research and adopt mixed-methods approaches. Study replication across elements such as types of experiments, outcome measures, experimental tasks, study participants, and national contexts allow testing for variations in the findings. Along the same lines, study replications that employ different strategies to recruit participants may prove useful in gauging the generalizability of our findings, both concerning main effects and interactions across subjects’ socio-demographic characteristics. Then, replications with citizens of other countries around the world and/or other health and economic emergencies may be especially relevant for policy implications. Indeed, our findings may provide a baseline against which to compare the results of future studies aimed at exploring the relative impact of human, economic, and freedom losses on individual preferences and willingness to pay in a post-pandemic time.

Combining experimental data with qualitative inquiries and mixed-methods approaches hold the promise of balancing between unbiasedness in the average treatment effect estimate and fine-grained understanding of micro mechanisms behind observed effects. Whereas our research design could establish the why of the pattern of preferences among money, life, and freedom that we find, it is unable to explain how individuals formed their preferences. In this regard, scholarship on the logic of appropriateness (March and Olsen 2013) and/or the logic of consequentiality may provide a lens to discuss how much individuals take actions by matching health crisis situations with their identities and rules prescribing what is appropriate action in a democratic political order rather than alternative logics, such as cost–benefit calculations. For example, the logic of appropriateness and consequentiality have been used to look at government organizational change and reorganization processes (Entwistle 2011; Christensen and Læg Reid 2021). More in general, thus, although it was outside the scope of our investigation, exploring “under what conditions rules of appropriateness may overpower or redefine self-interest, or the logic of consequentiality may overpower rules and an entrenched definition of appropriateness” (March and Olsen 2013, 492) is a research avenue worth pursuing.

To mitigate concerns of construct validity, we call for the adoption of two primary strategies: First, we encourage more theoretical refinements for the determinants of preferences in taboo trade-offs. In particular, it may be valuable to refine theories about the impact of quality-of-life years and consequences of temporary restriction to civil liberties. As to the quality-of-life years, it may be worthwhile understanding how the health status after recovery from a disease such as the COVID-19 impacts preferences. Regarding the consequences of lockdown length, it seems reasonable to investigate

how variations in subjects' working activities under stay-at-home orders (e.g., whether the same activities are carried out from home or the lockdown translates into lack of work) impact preferences. Second, work that uses different operationalization and treatment levels is needed to avoid confounding the effect of constructs with levels of constructs. For instance, our operation for human losses did not preclude or stressed the risk that the participant could be one of the avoided deaths. Similarly, our operation for income losses did not distinguish between economic depression in the shorter time versus quicker recovery in the longer time. More in general, adding specifications to the operations of our target constructs may be particularly interesting for policy making, especially as we move away from the initial pandemic outbreak. Indeed, whereas more details about losses of lives, income, and freedom were harder to be deemed realistic when we collected data for the present study, policy consequences along these dimensions have become more tangible over time.

From a theoretical perspective, then, expanding our research framework by incorporating insights from the study of individuals' aversion to taboo trade-offs (Chorus et al. 2018) may be a working priority. In particular, research that manipulates aversion to taboo trade-offs hold the promise of shedding light on potential moderating or mediating mechanisms that influence preferences for stark choices.

Lastly, our study shares the same concerns of reliability and representativeness of the sample that affect extant public administration research collecting data by means of an online platform and a pool of participants recruited among subjects registered to online panels. The main advantages of this procedure are large-scale recruitment of individuals in a short time and a reasonably low cost. The main shortcomings, however, are a low control over the environment in which the survey is taken and over participants' dropout. We certainly encourage scholars and practitioners to use our findings in light of this limitation and call for more work in contexts where the opportunity to control the reliability and representativeness of the sample is higher.

Conclusion

The COVID-19 pandemic has suddenly made current scholarship on morally problematic trade-offs a prescient area of inquiry. Our study contributes to this vein of research by providing timely estimates of how citizens approach stark choices between human lives, their individual freedom, and the economy. We are convinced that our findings may speak to both policy makers and public administration scholars. The results of our DCE with a sample of the adult population in Italy constitute an actionable indication for governments that have to enforce lockdown measures. More specifically, our findings urge policy makers to take prompt measures that address citizens' concerns about income loss in the event of a lockdown. Our experiment suggests that people's preferences are not strongly affected by the duration of stay-at-home measures per se, once life and income losses are taken into account.

Our study also serves as an example for conducting timely evaluations of the relative preferences of citizens toward a wide range of policies that involve taboo trade-offs. Unlike traditional

surveys or other experimental designs, discrete-choice conjoint analysis allows estimating the relative importance that citizens attach to the different features of policy interventions that are inherently multidimensional, especially under crisis management conditions. Applications span well beyond the stark choices between life, death, and the economy and may well apply to most of the trade-offs that public policies inevitably involve.

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Appendix A: Example of 1 of 27 Choice Sets in Our DCE

To limit the number of COVID-19 victims, measures to contain the contagion (so-called “lockdown”) such as social distancing, a ban on travels without proven needs, and the suspension of all nonessential activities are in place. The lockdown also entails economic losses. In the next few screens, you will be presented with pairs of situations. For each pair, please select the situation in which you would prefer to find yourself in.

Which of the following two situations would you prefer to find yourself in?

X	Y
25% of deaths avoided in your region	50% of deaths avoided in your region
One-month lockdown	Two-month lockdown
25% loss in your monthly income	50% loss in your monthly income