





## Research Note

# Framing Effects on the COVID-19 See-Saw

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**Abstract:** *This article explores people's preferences for different containment strategies and policy programmes for managing COVID-19 risks. Using a survey experiment administered to an online sample of 1'562 Italian respondents in April 2020, we test whether and to what extent individual preferences are influenced by different framings of equivalent scenarios on gains and losses attached to alternative policy measures aimed at containing the health and economic costs of the pandemic. We find that subjects tend to be more risk-averse or risk-seeking depending on whether they are confronted with a positive (gain) or a negative (loss) description of the consequences of the proposed policy initiatives. The results yield relevant implications for our understanding of citizens' support for national and EU-wide responses to the coronavirus pandemic and the role of framing in contexts of crisis.*

**Zusammenfassung:** *Dieser Artikel untersucht Präferenzen der Bevölkerung für unterschiedliche Strategien und Maßnahmen zur Eindämmung der mit COVID-19 verbundenen Risiken. Wir testen mithilfe eines Umfrageexperiments, das im April 2020 mit einer Online-Stichprobe von 1562 italienischen Befragten durchgeführt wurde, ob und inwieweit Framing die individuellen Präferenzen beeinflusst. Untersucht werden unterschiedliche Frames äquivalenter Szenarien zu Gewinnen und Verlusten, die mit alternativen politischen Maßnahmen zur Eindämmung der gesundheitlichen und wirtschaftlichen Kosten der Pandemie verbunden sind. Die Ergebnisse zeigen, dass die Risikobereitschaft der Probanden davon abhängt, ob sie mit einer positiven (Gewinn) oder negativen (Verlust) Beschreibung der Konsequenzen der vorgeschlagenen politischen Initiativen konfrontiert werden. Die Ergebnisse haben wichtige Implikationen für unser Verständnis der öffentlichen Unterstützung für nationale und EU-weite Reaktionen auf die Coronavirus-Pandemie und der Rolle von Framing in Krisenkontexten.*

**Résumé:** *Cet article explore les préférences de la population pour différentes stratégies et mesures politiques et sanitaires visant à limiter les risques liés au COVID-19. À travers une enquête expérimentale conduite en ligne avec 1562 personnes italiennes en Avril 2020, nous analysons si et dans quelle mesure les préférences individuelles sont influencées par des cadrages différents de scénarios équivalents en termes des gains et pertes produits par différentes mesures publiques visant à réduire les couts sanitaires et économiques de la pandémie. Nos résultats montrent que les personnes tendent à être plus ou moins enclins au risque en fonction de leur confrontation avec une description positive (gain) ou négative (perte) des conséquences de la mesure en question. Ces résultats ont des implications importantes pour comprendre le soutien des citoyennes au réponses politiques - nationales et européennes - à la pandémie du coronavirus, et soulignent l'importance du cadrage dans des contextes de crise.*

KEYWORDS: Framing, Covid-19, Health, Economy, Public opinion

## Introduction

The COVID-19 pandemic has urged governments to implement rapid measures to contain extensive damages on both public health and the economy. After the initial lockdown strategies, aimed at halting the spread of the virus and relieve pressure on health systems, a variety of policy initiatives have been introduced to stimulate an economic recovery. The normative, political and epidemiological implications of the alleged trade-off between protecting the health of citizens and preserving the country's economy are lurking behind most discussions going on in Europe and worldwide since the outbreak of the COVID-19 crisis. This is even more evident at the time of writing (autumn 2020), when many European countries are coping with a surge of infections and new restrictions have been announced.

While research has shown that the COVID-19 outbreak has affected political trust and support for both governments and their responses to the crisis (Bol et al. 2020; Merkle et al. 2020), it becomes relevant to understand the conditions under which public opinion is more or less likely not only to approve and comply with measures for containment of the pandemic (Hameleers 2020; Sanders et al. 2020), but also to accept the health and economic costs associated with them. In this context, the extent to which local and national authorities will be able to minimise their effects on health and job security, as well as the communication styles used to present new policy initiatives, are under public scrutiny.

Using the analytical lenses of behavioural economics, and relying on an experimental design, this study aims to ascertain whether and to what extent people's preferences are influenced by different framings of equivalent scenarios. To address this research question and examine whether different sub-groups of the population express more risk-averse or more risk-seeking positions depending on their possible exposure to the consequences of the pandemic, we replicated and expanded Tversky and Kahneman's equivalency framing experiment on the Asian disease (Kahneman and Tversky 1984; Tversky and Kahneman 1981) in Italy – one of the countries that was hit the hardest and earliest by the current health crisis – just at the time when the national government had announced the gradual re-opening of economic activities and the attenuation of social distancing measures (April 2020). Besides testing whether the significance and magnitude of risky prospects are confirmed when we move from a hypothetical ('unusual Asian disease') to a real (COVID-19) event, we evaluate if preferences depend on the formulation of scenarios involving life (health) or job (wealth) losses, and if they are shaped by utility considerations linked to personal characteristics and to the likelihood of suffering these losses.

## Framing Effects in Times of COVID-19

In an attempt to demonstrate that "people exhibit patterns of preference which appear incompatible with expected utility theory" (Tversky and Kahneman 1981: 454), Tversky and Kahneman conducted a series of experiments in which the same decision problem yielded opposed results depending on whether it was framed in positive (gains) or negative (losses) terms. In their Asian Disease Experiment (ADE), subjects were randomly assigned to two different scenarios in which two alternative programmes were presented to contrast an "unusual Asian disease expected to kill 600 people" (Tversky and Kahneman 1981: 453).

The ADE is considered as a prototypical application of the so-called equivalency (or valence) framing effect (EFE), which occurs when respondents are exposed to logically equivalent but semantically different information (Druckman 2001b; Olsen 2019). Nevertheless, the ADE is peculiar for four reasons. First, it deals with a hypothetical situation. Second, the outcome variable is a binary choice between a certain outcome (*risk-averse option*) and a probabilistic one (*risk-seeking option*). Third, in the different scenarios the framing is expressed in either positive (lives saved) or negative (lives lost) terms. Fourth, the effect assessment is done by comparing the percentage of those choosing the *risk-averse* instead of the *risk-seeking* option in the positive frame with the percentage of those choosing the *risk-averse* instead of the *risk-seeking* solution in the negative frame. Tversky and Kahneman (1981: 453) found a “choice reversal” in which the preferred option shifts from the *risk-averse* option in the positive frame to the *risk-seeking* one in the negative frame, interpreting this as a manifestation of the prospect theory.

Over the years, the ADE has been replicated in different national settings, with diverse experimental subjects and addressing other decision problems (e.g., Bless et al. 1998; Druckman 2001a; Fagley and Miller 1997; Kühberger 1995; Miller and Fagley 1991; Ruggeri et al. 2020). Results have been mixed as to the way and extent to which positive or negative frames affect individual preferences (Druckman 2001a; Levin et al. 1998). The literature has highlighted several factors affecting the framing effects, including: *a*) the nature of the issues – scenarios involving human lives produce stronger choice reversals than scenarios concerning economic and property issues (Miller and Fagley 1991; Wang 1996); *b*) the wording of outcome categories – substituting ‘die’ and ‘not die’ with ‘not saved’ and ‘saved’ depresses the framing effect (Kühberger 1995); *c*) message processing and task challenges (Miller and Fagley 1991; O’Keefe and Jensen 2008; Takemura 1994); *d*) demographic characteristics (Best and Charness 2015; Fagley and Miller 1990). Recently, a massive cross-cultural study (Ruggeri et al. 2020) successfully replicated Kahneman and Tversky’s experiment in 19 countries, confirming the validity of the initial results (*contra* Kellen 2020).

The COVID-19 crisis has offered an opportunity to explore how positive and negative frames about the novel coronavirus influence the public’s views of lockdown policies in a much more vivid context than the one usually surrounding the ADE. Embedding the experiment in a survey conducted in the United States and the Netherlands at the beginning of the crisis (March 2020), Hameleers (2020) showed that ‘gain’ frames elicited support for a more risk-averse approach and stricter preventive measures, whereas ‘loss’ frames resulted in higher support for risk-seeking alternatives and stronger negative emotions. These results confirm the expectation that gain frames yield higher levels of approval for prevention behaviours than loss frames, as suggested by the prospect theory literature in the field of health communication (Rothman and Salovey 1997). Another study (Sanders et al. 2020), carried out in the United Kingdom in May 2020, did not find a causal relationship between exposure to loss frames and preferences about lockdown or adherence to public health guidelines. Gantiva et al. (2021) tested the impact of health and economy-related message frames on motivation and awareness of self-caring behaviour, finding that the effect of gain-framed messages on motivations was stronger than the one of loss-framed messages, while the latter were more effective in increasing awareness. The authors also explored whether a health-related message performed differently from an economic-related one, proving that health-related messages have a stronger impact than economy-related ones.

This mixed evidence, coupled with some analytical limitations, does not allow us to draw any definite conclusion about the validity and size of EFEs in the midst of the COVID-19 health crisis. The three studies mentioned above test the EFEs with different research designs. While Hameleers (2020) offers a conceptual replication of Tversky and Kahneman's Asian disease experiment – subjects were provided with two alternative scenarios in which pairs of programmes to deal with the outbreak of the pandemic were expected to result in equivalent percentages of either survivors or deaths among contaminated people<sup>1</sup> – Sanders et al. (2020) did not require participants to indicate their preference for specific programmes. Rather, subjects were asked to make a series of judgments about the opportunity to ease some lockdown restrictions and their intention to comply with the government's guidelines after receiving absolute estimates of the number of lives that could be either saved (gain frame) through an extension of the lockdown or lost (loss frame) without such an extension. Moreover, as both studies acknowledge, one important limitation is that they focus on the 'health' dimension (i.e., gains and losses in terms of lives) without considering the social and economic dimensions of the crisis (e.g., job insecurity). As for Gantiva et al.'s (2021) experiment, it relies on an emphasis frame (Druckman 2001b), with positive and negative messages turning the respondents' attention to the potential benefits or losses of a prescribed set of behaviours.

## Hypotheses

Our study addresses the limitations of previous research in two ways. First, we replicate as closely as possible both the structure and the framing of the original ADE (Kahneman and Tversky 1981). This allows assessing the impact of the context in which the experiment was conducted (the strict lockdown imposed in Italy due to the pandemic) on framing effects. Second, we compare two different types of gains and losses, one relating to health (lives) and the other relating to the economy (jobs). For both domains, respondents had to express their preference for equivalent risk-averse and risk-seeking programmes. By testing the effect yielded by scenarios concerning lives and jobs in the Italian setting, we shed light on the real-life applicability of framing effects on two relevant policy domains in one of the countries that were hit hardest and earliest by COVID-19. Thus, we provide both internal and external validity to prior research on the topic. Additionally, we offer new insights on the potential activation of utility considerations and the *not-so-invariant* application of prospect theory to population groups that are more or less likely to suffer the risks of coexistence with the COVID-19 see-saw.

In both policy scenarios, we expect that exposure to positive (gain) frames would elicit risk-averse preferences, whereas negative (loss) frames would promote support for risk-seeking solutions. Based on previous research (Gantiva et al. 2021; see also Isernia et al. 2020; Wang 1996), however, we expect that individuals will be more responsive to health than economic costs of COVID-19-related policies.

H1a: Exposure to positive (gain) frames about the effects of policy programmes to deal with the COVID-19 pandemic increases support for risk-averse alternatives.

<sup>1</sup> Contrary to Tversky and Kahneman (1981, 1984), Hameleers' experiment (2020) reports losses and gains in percentage and not absolute terms.

H1b: Exposure to negative (loss) frames about the effects of policy programmes to deal with the COVID-19 pandemic increases support for risk-seeking alternatives.

H2: EFEs will be stronger when subjects are exposed to health costs than when they are faced with economic costs.

Moreover, we expect framing effects to be amplified when individual characteristics make participants more vulnerable to health (life) or wealth (job) losses, under the assumption that these vulnerabilities might change their risk perceptions. Thus, building on Susceptible-Infectious-Recovered (SIR) epidemiological models, we assess the role of individuals' actual risk profile, based on their position in the socio-economic system, instead of exploring subjective perceptions of risk. Studies using SIR models to assess the impact of alternative policy solutions to the fight against COVID-19 show that older generations are more exposed to health risks, because of the disproportionate death toll these cohorts pay in the pandemic (e.g., Acemoglu et al. 2020; Dowd et al. 2020). We also know that "the costs of reduced economic activity are disproportionately borne by younger [generations], which bear the brunt of lower employment" (Glover et al. 2020). Hence, we hypothesise that age should have an opposite effect on the probability of choosing the risk-averse (or risk-seeking) alternative, depending on whether the health or the economic costs of the pandemic are concerned. Specifically:

H3a: When the health consequences of the pandemic are concerned, older subjects display higher levels of support for the risk-averse alternative if confronted with a positive frame, and for the risk-seeking one if confronted with a negative frame.

H3b: When the economic consequences of the pandemic are concerned, younger subjects display higher levels of support for the risk-averse alternative if confronted with a positive frame, and for the risk-seeking one if confronted with a negative frame.

In line with H2b, we expect poorer households to be less equipped to face the economic effects of the pandemic than wealthier households. Therefore, when the economic consequences of the COVID-19 crisis are concerned, members of the former should show higher levels of support for the risk-averse alternative when confronted with a positive frame, and higher levels of support for the risk-seeking alternative when confronted with a negative frame.

H4a: When the economic consequences of the pandemic are concerned, members of poorer households display higher levels of support for the risk-averse alternative if confronted with a positive frame, and for the risk-seeking one if confronted with a negative frame.

On the contrary, we do not have any reason to expect a significant effect of household wealth when the health dimension is addressed.

H4b: When the health consequences of the pandemic are concerned, the probability of choosing the risk-averse alternative when confronted with a positive or negative frame is not affected by household income.

## Sample and Experimental Design

Between April 24 and 28, 2020, we administered an online survey to a sample of Italian citizens aged 18 or older. Respondents were recruited from CINT's opt-in panel, using a quota sampling method based on gender, age-group and region. In order to improve the quality of the data and in line with Baker et al. (2010), we removed from the analyses those respondents who completed the interview in less than 50% of the median time spent by the whole sample to take the survey, ending up with 1'562 valid cases. Post-stratification weights based on gender, age-group, region, and educational attainment were applied to reflect the actual demographic composition of Italy's adult population with access to the Internet.<sup>2</sup>

To test our hypotheses, we conducted a controlled between-subjects experiment randomly submitting to respondents either positive (gain) or negative (loss) framing conditions and asking them to choose between two hypothetical programmes to deal with either the health or economic effects of a new wave of coronavirus infections in Italy. Although this situation might appear ominous at the time of writing, we paid attention to not deceive participants and made clear that both the scenario and the programmes they were presented with were purely hypothetical. While in the health scenario the new wave of infections was expected to cause the death of 30'000 people – an estimate that approximated the Covid-19 deaths suffered by the country at the time of the fieldwork (25'549–27'359) – in the economic scenario 600'000 jobs could be at risk – a figure based on the record in the previous months and the best available estimates for the month of May (D'Amuri et al. 2020; Voltattorni 2020). Participants were randomly assigned to only one of the four experimental conditions (i.e., two for each scenario), mimicking the wording of Tversky and Kahneman's ADE (Tversky and Kahneman 1981). Tables A1 and A2 in the Online Appendix show that the treatments were effectively randomised for age and income. Figure 1 displays the four treatments as administered to respondents.<sup>3</sup>

## Findings

We test our hypotheses estimating a logistic regression model in which the dependent variable is a binary one, scoring 1 if the respondent chose the risk-seeking alternative (the one involving a probabilistic formulation of the outcome, namely programmes B and D) and 0 if he or she chose the risk-averse one (namely programmes A and C). The explanatory variables are:

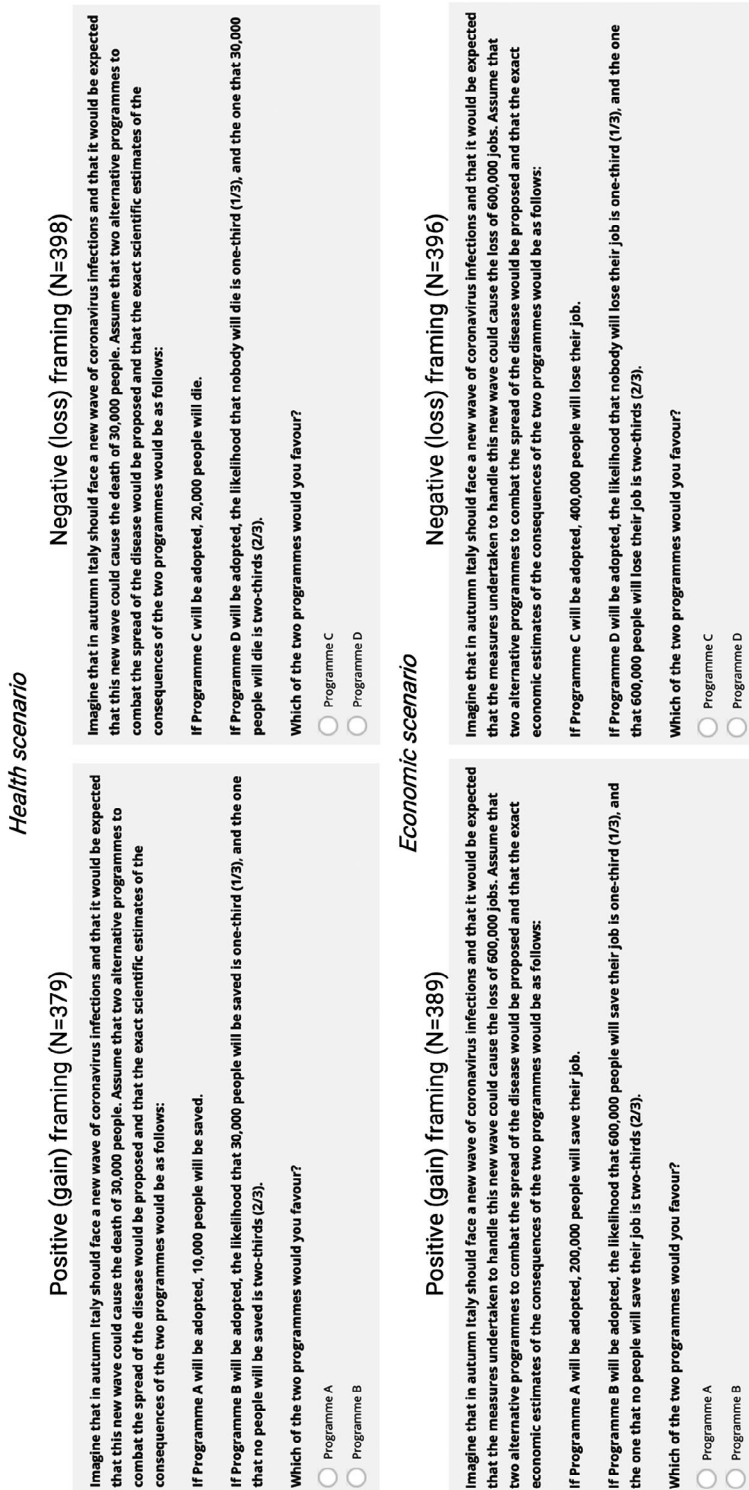
- (i) the experimental treatment variable, which takes two possible values in each scenario, that is, 0 positive (gain) framing or 1 negative (loss) framing;
- (ii) the respondent's age expressed in years, ranging from 18 to 78 (mean 43, median 43);
- (iii) the respondent's household yearly income, an ordinal variable with 11 categories, ranging from 'less than €10'000' to 'more than €100'000' (the remaining categories cover an interval of €10'000 each) – this variable is treated as a numerical one in our analysis.

For each of the two scenarios, we first proceed by estimating a model containing only the treatment as independent variable. In a second model, we add the other covariates, interacting them with the treatment (see Table A3 in the Online Appendix).

<sup>2</sup> Results are confirmed when data are not weighted. See Table A4 in the Online Appendix.

<sup>3</sup> For the text in Italian, see the Online Appendix.

Figure 1: Screenshots of treatment conditions administered to respondents

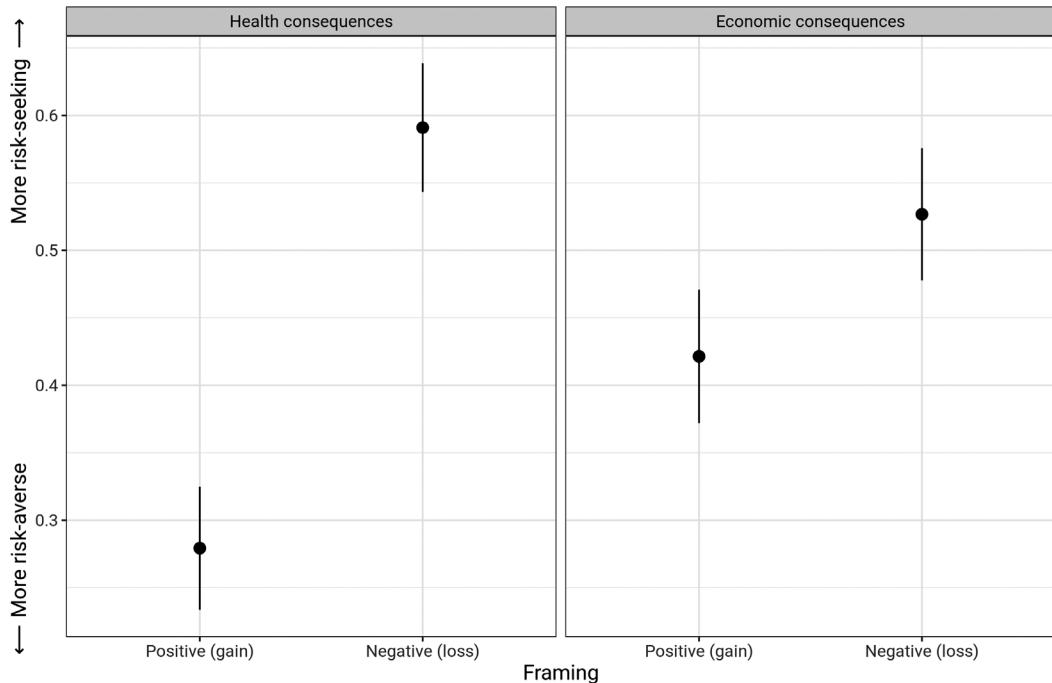


In line with Hameleers (2020), we find that positive (gain) frames elicit a more cautious and risk-averse behaviour (*H1a*), whereas negative (loss) frames make people more likely to express a more risk-seeking policy preference (*H1b*). This result is confirmed in both the health and the economic scenario, albeit starker in the former than in the latter (*H2*) (see Figure 2).

In the health scenario, support for the risk-seeking solution is higher among those who received the negative frame (59%) than among those exposed to the positive frame (28%). In the economic scenario, the pattern remains the same and the difference statistically significant. However, the magnitude of framing effects on risk-seeking and risk-averse preferences is less pronounced in this case: support for the risk-seeking solution among those exposed to the negative frame is 53%, as compared to 42% of those assigned to the positive frame.

We can therefore conclude that the framing effect is stronger when it is about lives than when it is about jobs. This would confirm what the literature has shown about the differential impact of the nature of the issue on framing effects (Levin et al. 1998). One could speculate that, when the decision is about health issues, subjects become more focused on the possible costs (lives lost) or benefits (lives saved) – along the prospect theory line of reasoning – than when one is asked to express his or her preference on economic-related issues. In this respect, Wang (1996) explained similar effects as a result of the respondents’ higher aspiration level for the health domain (life-death choice) as compared to the job domain.

Figure 2: Effect of the four treatments on the predicted probabilities of choosing the risk-seeking alternative (based on Models 1 and 3, Table A3)





We also explored the moderating role that two indicators of differential exposure to the (health and economic) pandemic risks play on framing effects, namely age and income. As predicted by SIR epidemiological models, we expected older generations to be more sensitive to health risks because of the COVID-19's higher mortality rate in these cohorts but less exposed to the unemployment risks because of their occupational status as retired or workers in regular, permanent jobs. The opposite, instead, was expected for the younger cohorts, who face higher economic threats but less health risks than their older fellow citizens.

Indeed, age seems to amplify, albeit not significantly, the framing effect in the health scenario (*H3a*). Although subjects maintain a higher propensity to select either the risk-averse or the risk-seeking option based on the frame they were assigned to, those exposed to the positive (gain) frame tend to be more risk-averse as their age increases. By contrast, the probability of selecting the risk-seeking option increases with age in case of a negative (loss) frame.

While the interaction coefficient between age and the treatment condition does not pass the significance test, this tendency seems to be in line with research suggesting that older age cohorts are generally more sensitive to heuristics (Kim et al. 2005; Mata et al. 2011; *contra* Best and Charness 2015) – including the framing of the health consequences of the pandemic (Biroli et al. 2020) – than younger cohorts.

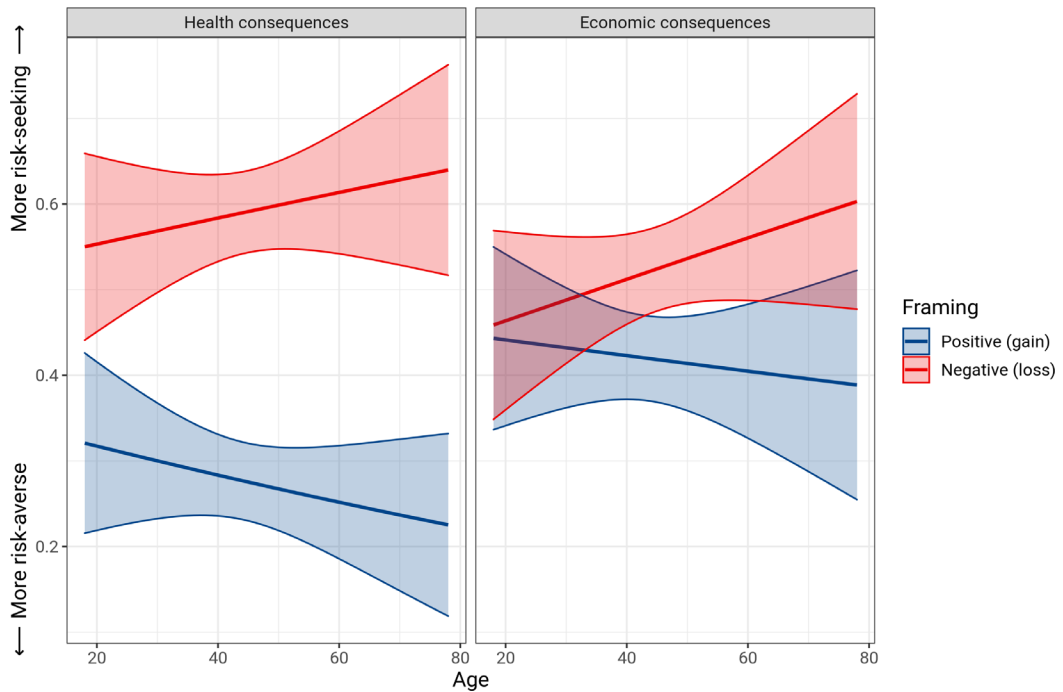
Yet, the opposite pattern is not found when the costs of the pandemic are presented in terms of job losses. Contrary to our expectation (*H3b*), younger generations are not more likely to opt for the risk-averse solution than older cohorts when confronted with a positive frame about the economic effects of the pandemic. Older subjects still show a more risk-averse posture in the positive (gain) frame and express more risk-seeking preferences in the negative (loss) frame than their younger counterparts. Again, this result is not statistically significant (see Figure 3).

As for the moderating effect of income, we find that members of poorer households tend to express higher levels of support for the risk-averse alternative when exposed to positive frames about the economic consequences of the pandemic, whereas they show more risk-seeking preferences than wealthier subjects when confronted with a negative formulation. While the interaction term is not statistically significant, this framing effect shows up for those at the lowest income levels, thus suggesting a different sensitivity to risky prospects depending on how closely an individual is, at least in principle, affected by the risk herein explored, i.e., unemployment. This result is in line with our expectation (*H4a*). However, we also find that members of wealthier households express higher levels of support for risk-averse solutions when exposed to positive (gain) frames about the health consequences of the pandemic. Household wealth was not expected to moderate framing effects when individual preferences about the health dimension were investigated (*H4b*). If this is the case when subjects are confronted with a negative frame, such an expectation is not confirmed when the decision is about saving lives (positive frame). In this circumstance, members of wealthier households are more risk-averse than those belonging to poorer households (see Figure 4).

## Conclusion

Our framing experiment, conducted in a period in which the Italian government was discussing how to reopen the national economy after almost two months of severe lockdown measures, shows that people react to different frames in the ways expected by

Figure 3: Effect of the four treatments and age on the predicted probabilities of choosing the risk-seeking alternative (based on Models 2 and 4, Table A3) [Colour figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

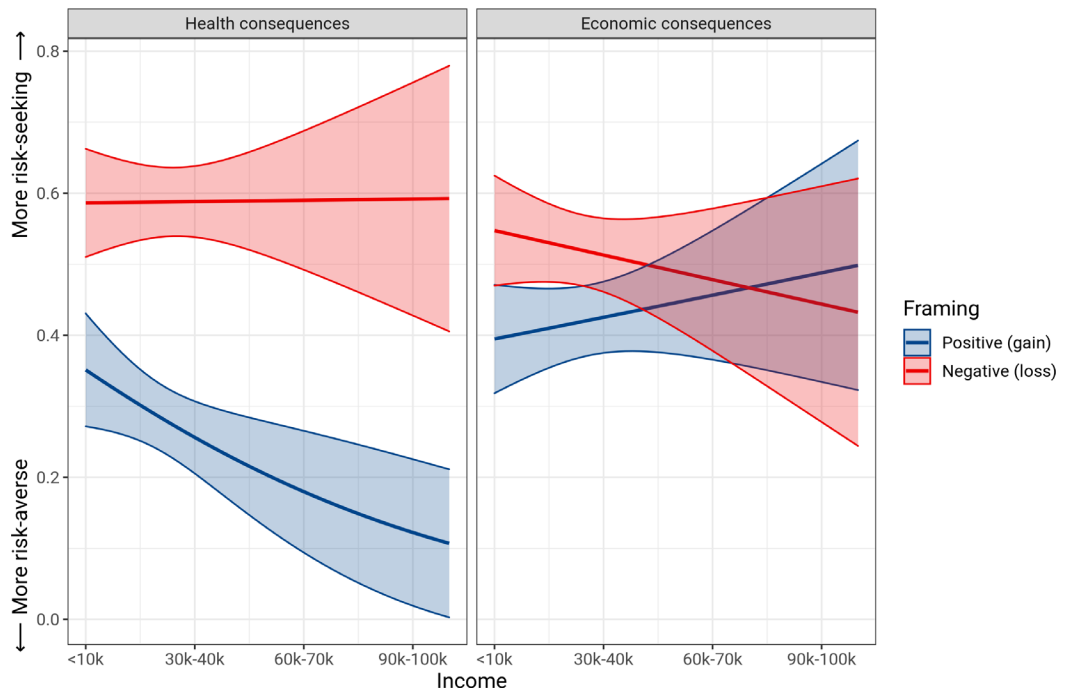


prospect theory and that this effect is by far more pronounced when respondents are confronted with health risks than when economic risks are concerned. At least in the Italian case, people are (or, more precisely, were at that time) by far more sensitive to the expected number of deaths from COVID-19 than to the number of jobs lost due to containment measures undertaken to handle a new wave of coronavirus infections.

These effects seem to be only partially affected by the respondents' risk profile, as assessed by their position in the socio-economic system, measured by age and income. When health costs are concerned, older subjects tend to prefer a more risk-averse option if confronted with a positive (gain) frame and a more risk-seeking alternative if confronted with a negative (loss) frame. Similarly, when economic costs are concerned, members of poorer households (but not younger generations) tend to express a higher degree of support for the risk-averse option if exposed to a positive frame and more support for the risk-seeking alternative if exposed to a negative frame. These asymmetric responses, while not statistically significant, suggest that people would differently react to gains and losses depending on the values at stake.

These results are potentially relevant both theoretically and politically. Theoretically, they suggest that the EFE might have more than a 'limited' ecological validity, as it works in a context – a worldwide pandemic – in which the salience of personal effects and consequences should lead one to expect preference invariance among the general public. In this context, our results are an attempt to answer to a plea (Olsen 2019) for a better understanding of EFE in real world political settings. Politically, these results are relevant

Figure 4: Effect of the four treatments and household income on the predicted probabilities of choosing the risk-seeking alternative (based on Models 2 and 4, Table A3) [Colour figure can be viewed at [wileyonlinelibrary.com](https://onlinelibrary.wiley.com)]



first for the narrative through which messages about health and economic measures are transmitted to the public. Even when the events affect people in a very personal and direct way, the impact on people's preferences is still mediated by framing effects. Our results, which confirm what others (e.g., Biroli et al. 2020; Hameleers 2020) have also suggested, imply that governments should carefully nuance their public communication about risks and losses, being them human or financial. Second, we document a *not-so-invariant* perception of risks by people differently affected by the effects of the pandemic – something equally relevant for public communication. In other words, there is no one-size-fits-all message when it comes to convey the risks and losses states face in the fight against the COVID-19 pandemic. Different generations and households tend to react differently to positive and negative messages, and they have different sensitivities to losses and gains.

This raises the troubling implication – to which more attention should be devoted – that framing strategies designed to reach certain audiences and to promote functional behaviours might have counterproductive effects on other sectors of society. Keeping in mind the distinction between reflection and framing effects (Fagley 1993), these results suggest that even in a very concrete and dramatic situation, universally affecting all respondents, perceptions count more than reality. Given the importance such a consideration might have for the effectiveness of state policies in time of current and future crises, our results deserve further investigation.

## Funding Information

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## Data Availability Statement

The replication data set is available at: [https://osf.io/psmz2/?view\\_only=ec6a57d762724e63b2205e59ebb00240](https://osf.io/psmz2/?view_only=ec6a57d762724e63b2205e59ebb00240) - <https://doi.org/10.17605/OSF.IO/PSMZ2>

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## Supporting Information

Additional Supporting Information may be found in the online version of this article:  
Supplementary Material

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