DEPARTMENT OF INTERNATIONAL AND EUROPEAN ECONOMIC STUDIES

ATHENS UNIVERSITY OF ECONOMICS AND BUSINESS

Accidents, disasters and crises: The effect on citizen perceptions and preferences

Sotiris Georganas

Phoebe Koundouri

Alina Velias

Working Paper Series

25-19

January 2025

Accidents, disasters and crises: The effect on citizen perceptions and preferences

Sotiris Georganas* Alina Velias‡

Phoebe Koundouri†

January 30, 2025

Abstract

This paper utilises natural experiments in Greece to investigate the impact of extreme events on citizen preferences. Leveraging a nationally representative sample (n=5000+), we align multiple data collection waves with extreme events like fires, floods, and train crashes. Analysing the temporal dynamics post-events, we observe fluctuations in preferences akin to hot-cold visceral states. Our findings contribute to the literature on how major events shape individual preferences. Methodologically, we explore the effectiveness of primes in comparison to real-life events, discerning the reliability of primes as proxies for experiences. The study holds implications for policymakers, highlighting the malleability of public sentiment in shaping expectations of government interventions during and after crises, providing valuable insights for effective governance and crisis management.

*Department of Economics, City, University of London, sotiris.georganas.1@city.ac.uk

†School of Economics and ReSEES Laboratory, Athens University of Economics and Business; Department of Technology, Management and Economics, Technical University of Denmark; Sustainable Development Unit, ATHENA RC; Sustainable Development Solutions Network-Europe; Academia Europea pkoundouri@aueb.gr

‡Department of Economics, Athens University of Economics and Business, avelias@aueb.gr

Keywords: natural experiments, disasters, extreme events, shocks, preferences

JEL Codes: A12, B34, C56

1 Introduction

Economic preferences are not necessarily stable, unlike what the textbook model would require. People might change in terms of fundamental parameters or even the way they view big economic decisions, such as Brexit. Indeed although leaving the EU commanded a majority at the time of the referendum in 2016, only 32% of Britons stil thought it was a good idea in late 2023. A major question exists whether changes in information lead to such drastic changes in views and preferences, or whether such behavior is less rational and explainable using behavioral tools.

This paper uses natural experiments to identify the effect of great, exogenous shocks in people's preferences, identifying cases where no new relevant information is acquired by the decision maker. Leveraging a nationally representative sample in Greece we conduct multiple waves of data collection (n=5000+), aligning them with the occurrence of various striking events in the region, such as fires, floods, train crashes, border and migration incidents. This approach allows us to explore the impact of events that provoke visceral reactions and emotional responses on individuals' perceptions and preferences regarding the government's resource distribution.

The temporal dynamics of preferences post-events are central to the investigation, recognizing that individuals may experience heightened emotions in the immediate aftermath. We observe inconsistencies in preferences over time in the data, akin to the inconsistencies shown in hot-cold visceral state within individuals (Loewenstein, 2000).

Our findings also contribute to the body of literature on how individual attitudes can be shaped by major macroeconomic events. Malmendier and Nagel (2011) show that depressions affect risk attitudes. They do not identify whether the effect stems from preferences or beliefs,

although they do find evidence suggestive of the latter channel.

Such shocks can have a measurable impact on the economy. For example, after a wave of wildfires and floods in Greece in the summer of 2023, Greeks were found to be overly pessimistic about the economy, although the floods hardly affected economic activity. An estimated 40%of Greeks expected unemployment to rise, up from 29% just two months before. The comparable rate in the EU was 21.8%, rising very modestly from 19.6% in July. Another indication that the effect of the shocks in Greece was not due to rational expectations comes from the fact that unemployment (seasonally adjusted) continued to fall in the next months. A possible channel for the oversized effect of shocks on expectations is economic anxiety, as found in Fetzer et al. (2021).

Similarly, such shocks can also have a measurable effect in politics. The first issue is that preferences on government spending are not stable, meaning that it is unclear what democratic governments should be doing if they want to heed the people's wants! A second issue is that this instability promotes populism. Strategic populists can just grab the important topic of the day, suggest irrationally high spending and attention on that particular issue to the detriment of long term economic and societal growth, and gain votes.

Methodologically, this paper provides an interesting contribution towards the body of evidence on the effectiveness of primes and other similar manipulations designed to increase the salience of topics in an individual's mind. As we collect individual responses right after the real events, we are in a position to compare them with reminders of such events in the later waves as well as compare effect of such reminders to individuals in different countries, who have not been exposed to the event directly. By comparing the responses derived from primes with those derived from real-life events, the study aims to discern the reliability of primes as proxies for actual experiences.

The findings have implications for policymakers, shedding light on the malleability of public sentiment and its potential role in shaping public expectations of government interventions during and after different crises. As governments strive to make informed policy

decisions, understanding the evolving nature of citizen preferences in response to a variety of impactful events is essential for effective governance and crisis management.

1.1 Literature Review

Recent developments in behavioural economics highlight that individuals' preferences are not necessarily stable over time. While differences in preferences across individuals have long been recognized and factored into policy evaluations [2], recent studies indicate that preferences may also fluctuate within individuals [4, 7]. Major life events, such as experiencing an economic recession, can significantly influence decision-making and potentially reshape preferences [3]. Even anticipated events, like retirement, can have a substantial effect on behaviour, leading to changes in consumption habits, leisure activities, and pro-social behavior [5, 6, 1]. Georganas, Healy and Weber (2015) show that strategic sophistication can also be unstable, using a series of games within one family and across families. They find high stability within family but low across families.

There is a small but growing literature on the stability of other-regarding preferences. Georganas, Laliotis and Velias (2022) study the impact of a ubiquitous economic shock, retirement, on prosocial behavior. Using the fact that for some people this shock is exogenous, they find that retirement increases prosociality.

2 Methodology

2.1 Design

We have run seven survey waves in the period between March 2023 and October 2025.

Each wave included new participants, but for waves 2-4 we also included some participants from previous waves. The waves have followed specific events:

Wave 1: Two weeks after a major train accident in Tempe Wave 2: Two weeks after a boat

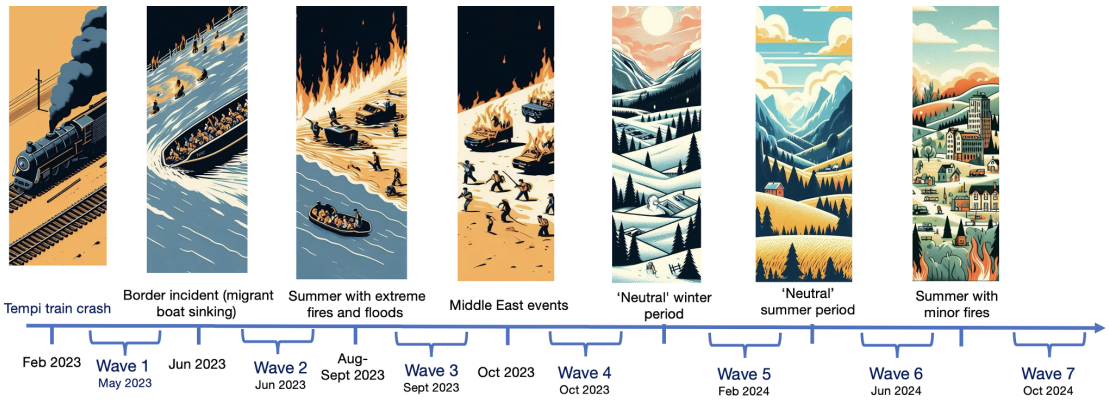

Figure 1: Timeline of the survey waves.

with refugees sunk off the southern coast of Greece Wave 3: Some weeks after the extreme wildfires (Northern Greece and elsewhere) and floods (Central Greece) Wave 4: Some weeks after intense fighting in the Middle East Wave 5: 'Neutral' winter wave Wave 6: 'Neutral' summer wave Wave 7: Some weeks after minor wildfires (no casualties)

The main identification strategy is to separate these events into events that are unusual and possibly offer information about the future states of the world, and those that are very much expected and cannot be offering much new information. In that sense, wildfires are very common in Greece, especially the south, while floods less so and train accidents very infrequent. We accordingly expect wildfires to offer no new information, while a train accident can lead to an updated belief about the probability of such accidents.

The formal hypotheses we posit follow in the next section.

2.2 Hypotheses

We test four hypotheses about the shocks and their effect on preferences.

Hypothesis 1: *A negative shock in one topic leads to higher allocations for that topic.*

Example: train accidents lead to more money allocated to train safety.

Hypothesis 2: *Shocks have a larger effect with smaller distance (culturally and geographically) and higher media exposure.*

	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	Wave 6	Total Sample	Greece*
Gender								
Males	50.4%	52.6%	50.9%	52.1%	48%	51.8%	50.7%	48.9%
Females	41.6%	47.4%	49.0%	47.9%	52%	48.2%	47.1%	51.1%
Other	7.9%		0.1%				2.1%	
Mean Age	40	38	40	42	40.8	42.1	40.1	45.8
	(12.49)	(12.21)	(14.57)	(14.21)	(14.13)	14.08	(13.4)	
Age Groups								
18-24	11.75%	16.76%	13.37%	16.36%	16.40%	11.31%	-	7.73%
25-34	15.64%	22.62%	18.56%	16.78%	20.35%	20.19%	-	12.71%
35-44	20.58%	27.21%	22.40%	25.87%	20.50%	23.48%	-	16.26%
45-54	24.73%	19.98%	17.95%	19.16%	18.61%	20.80%	-	18.69%
55-64	9.81%	11.60%	10.52%	15.80%	20.19%	17.52%	-	17.08%
65+	1.86%	1.84%	7.43%	6.01%	3.94%	6.69%	-	27.54%
Median Monthly Income	947**	904**	1133.5	-	1821	1326	1063	
	[974.24]**	[938.86]**	[1922.46]	-	[12420.9]	[5679.8]	[3345.6]	1381
	(477.81)	(464.1)	(2001.4)	-	(9694.5)	(9132.2)	(7076.4)	
Region								
Aegean Islands	5.68%	5.18%	4.15%	-	4.27%	6.42%	5.25%	4.99%
Central Greece	46.7%	42.2%	46.6%	-	42.8%	31.2%	42.5%	43.07%
Crete	6.45%	6.08%	5.78%	-	5.21%	8.96%	6.51%	5.96%
Epirus	4.30%	3.72%	2.51%	-	2.53%	5.33%	3.81%	3.05%
Ionian Islands	1.72%	1.46%	1.63%	-	1.11%	1.69%	1.53%	1.95%
Macedonia	15.6%	25.6%	23.5%	-	24.6%	21.4%	21.7%	21.62%
Peloponese	8.86%	6.76%	6.28%	-	7.58%	11.9%	8.25%	9.50%
Thessaly	6.45%	5.86%	5.90%	-	7.27%	10.0%	6.90%	6.57%
Thrace	3.87%	3.15%	3.64%	-	4.58%	3.03%	3.58%	3.30%
Spending Preferences								
Accommodation	191.6	182.8	202.3	-	195.6	194	194.1	
	(220.2)	(210.6)	(211.7)	-	(205.2)	(216.5)	(214)	
Groceries	266.3	255.8	282.3	-	291.5	290.5	275.9	
	(167.1)	(170.4)	(173.4)	-	(175)	(175.3)	(172)	
Eating Out	88.4	98.6	103.5	-	88.4	91.7	92.9	
	(89.8)	(124.6)	(160.2)	-	(85.6)	(87.7)	(112.7)	
Drinking Out	41.9	42.2	39.43	-	38.9	39.7	40.3	
	(68.4)	(60.7)	(55.3)	-	63.1	(59.6)	(62)	
Transportation	93.4	90.3	105.6	-	101.42	104.4	99.1	
	(107.4)	(105.3)	(105.6)	-	103	(114.29)	(109.1)	
Avg. Ambiguity Score	3.05	3.10	3.00	-	3.04	-	3.04	
	(1.75)	(1.78)	(1.75)	-	(1.76)	-	(1.76)	
Avg. Ambiguity Score 2	3.75	3.76	3.71	-	3.81	-	3.76	
	(1.79)	(1.81)	(1.85)	-	(1.82)	-	(1.81)	
Observations	1162	1075	796	718	648	826	5021	
(% of total sample)	(23.14%)	(21.41%)	(15.85%)	(14.3%)	(12.91%)	(16.45%)	(100%)	

Figure 2: Sample demographics, per wave and total.

Exampe: events leading to Greek citizens dying will have a larger effect than events involving non-Greeks.

Hypothesis 3: *Shock effects become weaker over time.*

We expect this drop to be measurable even within a year.

Hypothesis 4: *Shocks that offer new information should have stronger and longer lasting impact.*

Example: wildfires should not be considered as events that offer valuable information, leading

to posterios that are similar to the prioris, while a train accident or a flood could lead to stronger Bayesian updating.

Hypothesis 5: *Younger people are affected stronger by shocks than older people.*

Since you people have less life experience, we would expect them to update their beliefs more after a shock than older people.

3 Results

3.1 Nationally representative sample characteristics

We have used quotas during each wave to achieve representativeness, in terms of the observable characteristics.

Looking at the sample ex post, it includes a wide range of observable characteristics. Figure 4 plots monthly income by education level, across all waves. As expected, incomes rise by education level, except for the cases of no qualifications of primary school, which include just a few observations.

The income distribution itself in Figure 5 is approximately log-normal, as expected. The modal income is 1000 euros and the mean about 1500 euros per month. These numbers correspond to the ones reported in comparable surveys.

In terms of regional representation Figure 3 shows that most subjects are located in Central Greece which includes Athens, as expected. The second highest group of participants is located in Macedonia, which inlcudes Thessaloniki, the second biggest Greek city. The other regions are similarly well represented according to their population weight in Greece.

In general the observable characteristics, combined with the observed stability of allocations to unaffected topics, confirm that the samples in the different waves are to a large extent representative and comparable.

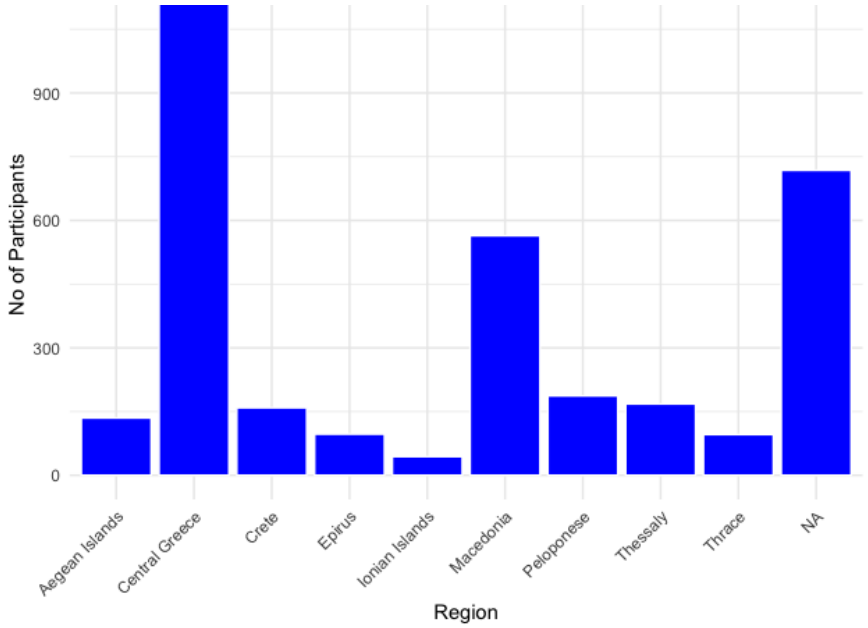

Figure 3: Distribution of subjects by region of Greece.

3.2 Shocks and resource allocation in public policy

In the next graphs we present the main result, people's preferences for the distribution of public funds across waves. There is a clear effect on sectors affected by a disaster, as can be seen in Figure 6.

For example the floods and wildfires just before wave 3 led to a sharp increase in the importance of protection against floods and fires. This effect is highly significant and in line with hypothesis H1. Event that are not affecting Greeks have a smaller effect, in line with H2, with the fighting in the Middle East not seeming to have large effects at all.

What we can also see in the graphs is a tendency for these effects to become weaker over time, in line with hypothesis H3. Observe that train and road safety seem to be becoming less important in waves 2-4. Also, floods and fires are already less important in wave 4.

Interestingly, a few topics such as healthcare and pensions are always found to be important by survey participants, independently of the season or the most recent shocks. On the other hand education seems to be falling in priority over time.

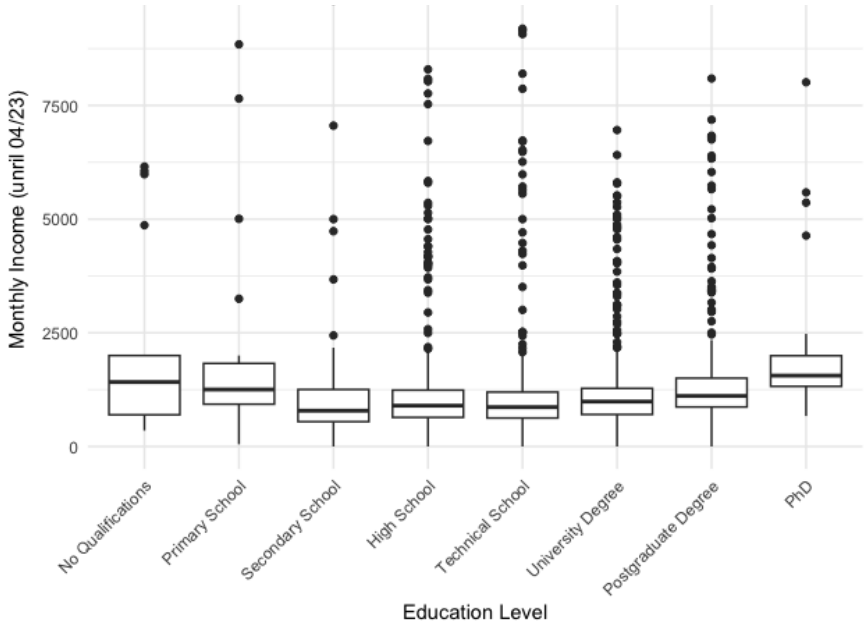

Figure 4: Income boxplots by education level.

3.3 Allocations and Demographics

How do preferences vary by demographic characteristics? First we look at the effect of income in Figure 8.

Participants with high incomes put a bigger weight on Border Defence than those with low incomes, and less weight on road safety and fire protection.

Figure 9 shows allocations by education levels. As would be expected, people with higher education seem to value education more. They also put a significantly higher weight on healthcare. On the other hand they do not support help for lower incomes or train safety as much as people with only high school education.

Finally, Figure 10 presents allocation decisions by the age of the participant. Age makes a difference for almost every allocation topic. Older people put a significantly bigger weight on border defence, pensions and healthcare. On the other hand, they do not support education, low income help or road safety as much as younger people.

Clearly, the three participant attributes presented above, correlate. More educated people have higher incomes, while education levels are higher in the younger generations. In order

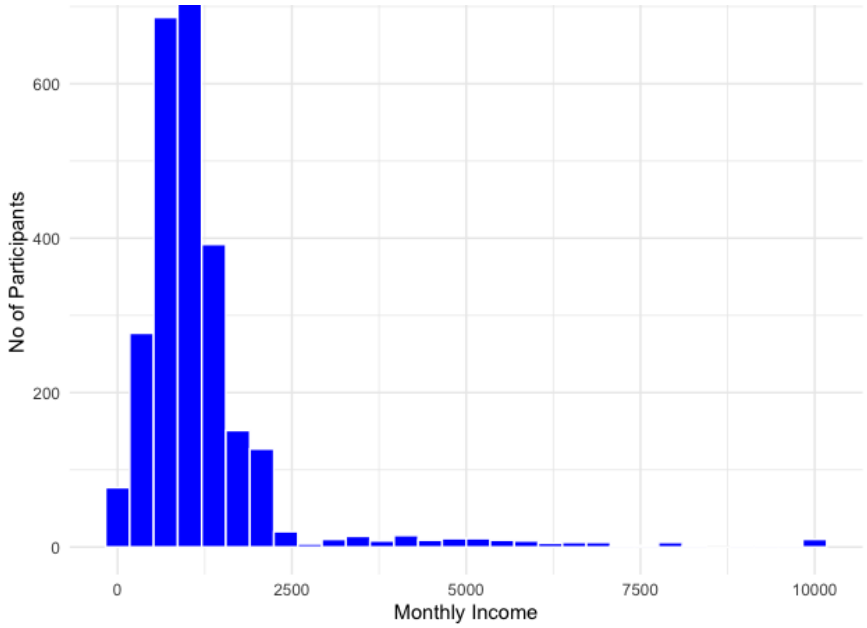

Figure 5: The income distribution. Monthly income in euros, self-reported.

to tease out the effects separately we run a regression.

[regression table here]

3.4 Primes versus actual experience

Previous research often tries to simulate shocks, by using mentions of real or imagined disasters as primes. We have included primes in the first waves to test how effective they can be.

In Figure 11 we are comparing the control treatment to three different primes involving floods, wildfires and train accidents. We can see that primes have an effect, for example mentioning floods increases the allocation towards flood prevention significantly. However, these effects are much smaller than the effects we measure after the actual disasters. For example mentioning a flood increases the allocated funds from about 6% of the budget to about 8%. The actual flood in wave 3 increased allocations from 7% to about 12% despite the fact that there were wildfires at the same time, possibly dividing people's attention.[1]

[1]The allocation numbers are not directly comparable because we used the primes on subsamples in each wave.

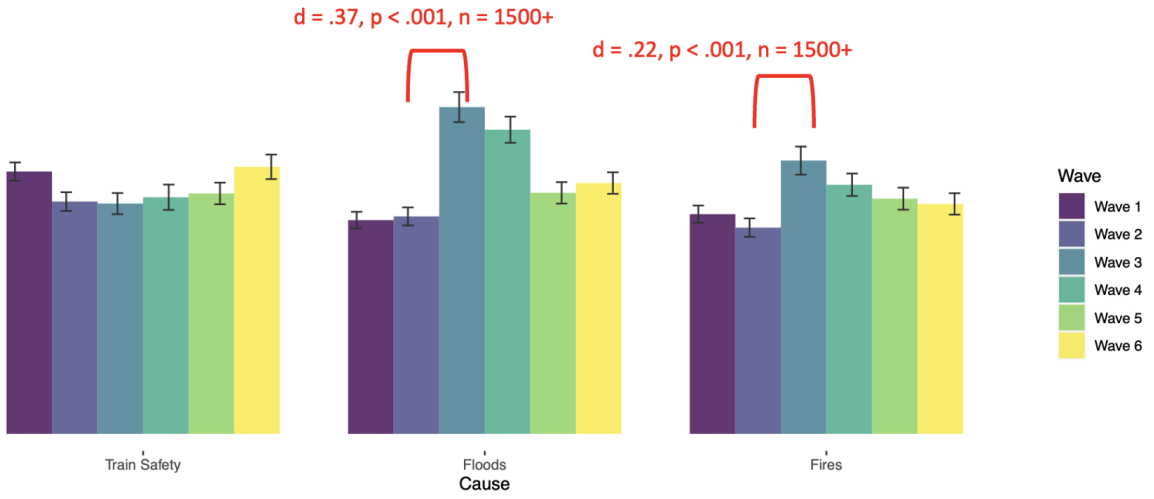

Figure 6: Allocations by topic, all waves.

4 Discussion

The instability we find in people's preferences is strong, and leads to many important questions. How should governments decide on resource allocation if they want to respect public opinion? Should they heed preferences in a hot state or in a cold one?

We propose that when deciding on preventative actions to events such as climate change, policy-makers need to evaluate its probability of happening and the extent of damage suing different sources for these paramerters, in part ignoring public opinion.

The estimated probability of damage should come from objective scientific measurements, which can be very different from people's estimates in a hot (overestimated) or cold state (underestimated).

However, governments should carefully measure the disutility of these extreme events, using people's actual preferences. The obvious questions is what estimates should be used for this? We argue that the disutility measure should come from people who have actually experienced the schocks, possibly after a small cooling-off period to avoid extremes. Note that primes are much less effective in simulating such shocks.

The topic of personal characteristics is more complicated. Should only old people decide

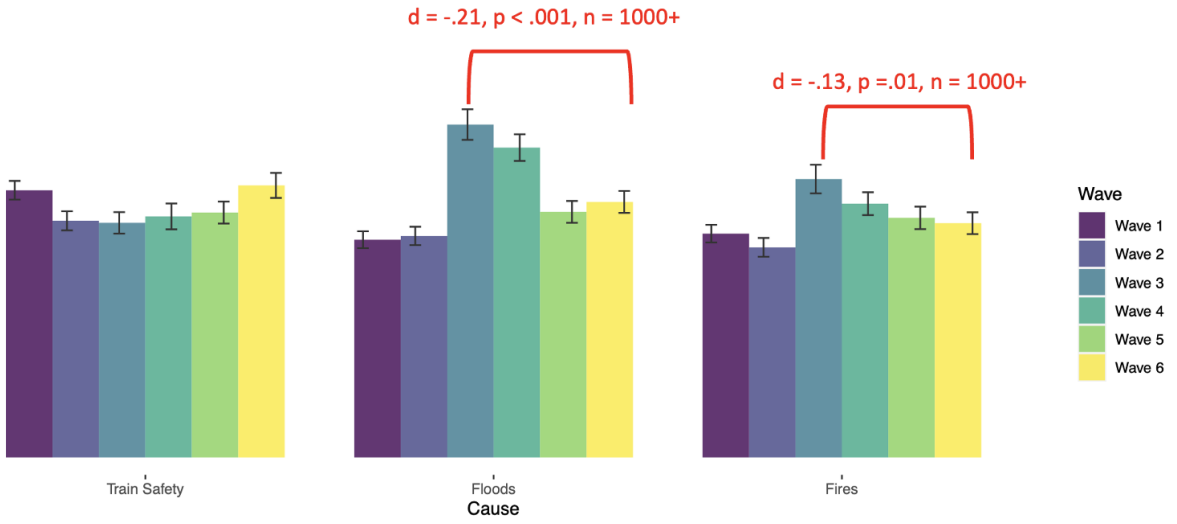

Figure 7: Allocations by topic, all waves. Focus on affected topics.

on pensions, or all of society? Following the arguments above, it is hard for people who have not yet experienced a state (e.g. retirement) to estimate their preferences when they will be in that state. It is an open question what the valid preferences are in this case, and we leave it for future research.

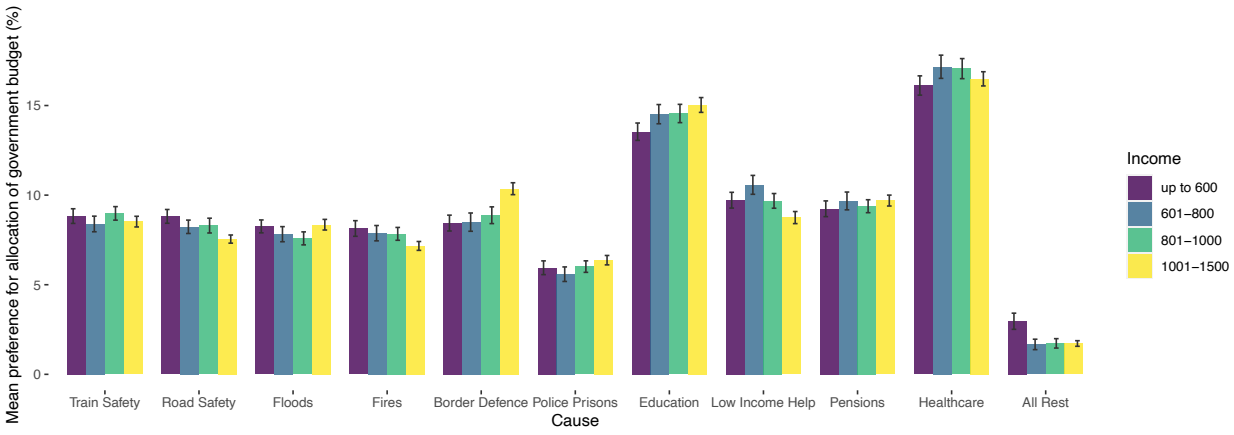

Figure 8: Allocations by topic and income, all waves.

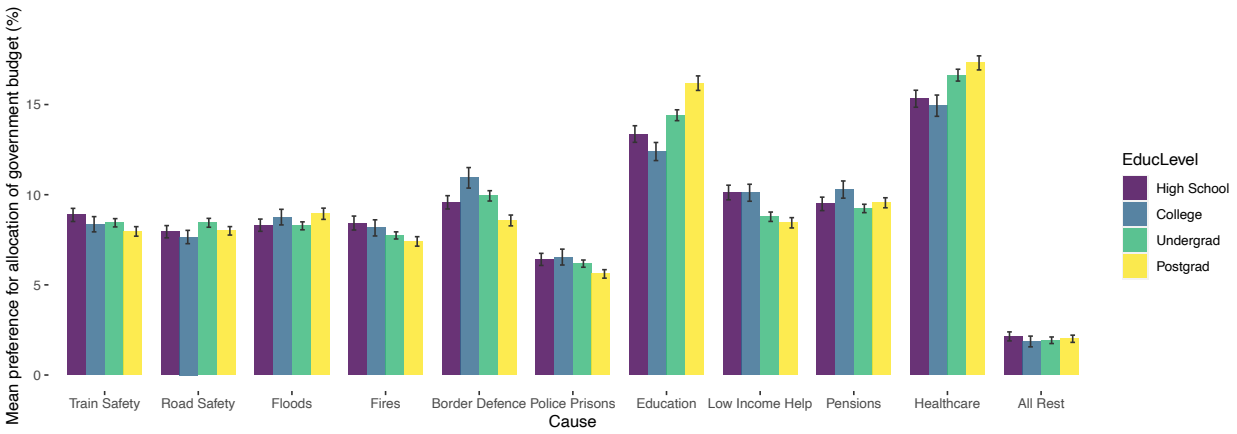

Figure 9: Allocations by topic and education, all waves.

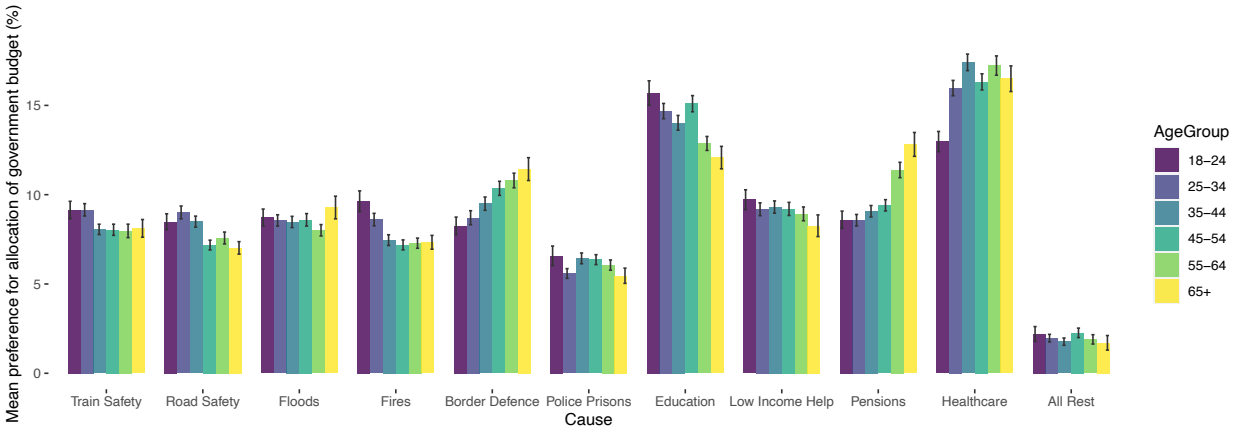

Figure 10: Allocations by topic and age, all waves.

5 Conclusions

This study harnessed the power of natural experiments to dissect the profound impact of exogenous shocks on individual preferences, focusing on Greece as a case study. Through a meticulously design and multiple waves of data collection involving over 5000 participants, we strategically aligned these waves with extreme regional events such as fires, floods, train crashes, and border and migration incidents. Our exploration aimed to uncover the repercussions of visceral reactions and emotional responses provoked by such events on individuals' perceptions and preferences regarding government resource distribution.

Crucial to our investigation were the temporal dynamics of preferences post-events, rec-

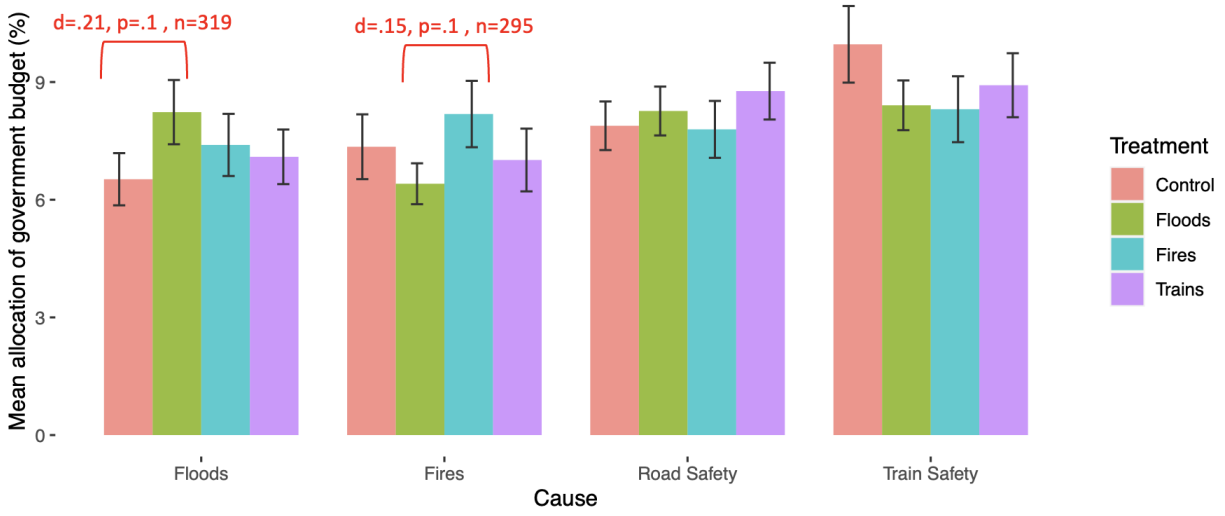

Figure 11: The effect of primes. Allocations by topic and primes, all waves.

ognizing the heightened emotions individuals experience in the immediate aftermath. The discerned inconsistencies in preferences over time, reminiscent of the hot-cold visceral state within individuals, present a nuanced understanding of how macroeconomic shocks can shape individual choices, aligning with existing literature on the subject (Malmendier and Nagel, 2011).

Our findings provide tangible evidence of the measurable impact that shocks can have on both the economy and political landscape. For instance, following the wave of wildfires and floods in Greece in the summer of 2023, the disproportionate pessimism about the economy among Greeks reveals the intricate relationship between perceived and actual economic conditions. This disparity challenges the notion of rational expectations and underscores the need to comprehend the emotional underpinnings of public sentiment in the wake of crises.

In the realm of politics, our study exposes the instability of preferences on government spending, raising questions about the appropriate course of action for democratic governments. The potential for instability to fuel populism further complicates the landscape, as strategic populists capitalize on the shifting priorities of the public, promoting short-term gains at the expense of long-term economic and societal growth.

Methodologically, this paper contributes to the understanding of the effectiveness of

primes and similar manipulations designed to enhance the salience of topics in an individual's mind. By comparing responses derived from primes with those stemming from real-life events, our study seeks to discern the reliability of primes as proxies for actual experiences, enriching the methodological toolkit for future research in this domain. The main finding is that primes are substantially less powerful than actual experience.

In its totality, this research holds implications for policymakers, illuminating the malleability of public sentiment and its pivotal role in shaping expectations of government interventions during and after diverse crises. As governments strive for informed policy decisions, a nuanced comprehension of the evolving nature of citizen preferences in response to impactful events is indispensable for effective governance and crisis management.

References

[1] Sotiris Georganas, Ioannis Laliotis, and Alina Velias. The best is yet to come: The impact of retirement on prosocial behavior. *Journal of Economic Behavior & Organization*, 196: 589–615, 2022.

[2] James Heckman. Accounting for heterogeneity, diversity and general equilibrium in evaluating social programmes. *The Economic Journal*, 111(475):654–699, 2001.

[3] Ulrike Malmendier and Stefan Nagel. Depression babies: do macroeconomic experiences affect risk taking? *The quarterly journal of economics*, 126(1):373–416, 2011.

[4] Stephan Meier and Charles D Sprenger. Temporal stability of time preferences. *Review of Economics and Statistics*, 97(2):273–286, 2015.

[5] Nicolas Moreau and Elena Stancanelli. Household consumption at retirement: A regression discontinuity study on french data. *Annals of Economics and Statistics/Annales d'Économie et de Statistique*, (117/118):253–276, 2015.

[6] Jan E Mutchler, Jeffrey A Burr, and Francis G Caro. From paid worker to volunteer: Leaving the paid workforce and volunteering in later life. *Social forces*, 81(4):1267–1293, 2003.

[7] Hannah Schildberg-Hörisch. Are risk preferences stable? *Journal of Economic Perspectives*, 32(2):135–154, 2018.

References

[1] Baker, S. R., Farrokhnia, R. A., Meyer, S., Pagel, M., & Yannelis, C. (2020). How Does Household Spending Respond to an Epidemic? Consumption during the 2020 COVID-19 Pandemic. *The Review of Asset Pricing Studies, 10*(4), 834–862.

[2] Dolan, P., & Metcalfe, R. (2008). Comparing Willingness-to-Pay and Subjective Well-Being in the Context of Non-Market Goods. CEP Discussion Papers. Centre for Economic Performance, LSE. Retrieved from `https://EconPapers.repec.org/RePEc:cep:cepdps:dp0890`

[3] Fetzer, T., Hensel, L., Hermle, J., & Roth, C. (2021). Coronavirus Perceptions and Economic Anxiety. *The Review of Economics and Statistics, 103*(5), 968–978. doi: `https://doi.org/10.1162/rest_a_00946`

[4] Georganas, S., Healy, P., & Weber, R. (2015). On the Persistence of Strategic Sophistication. *Journal of Economic Theory, 159*(PA), 369-400. Retrieved from `https://EconPapers.repec.org/RePEc:eee:jetheo:v:159:y:2015:i:pa:p:369-400`

[5] Georganas, S., Laliotis, I. & Velias, A. (2022). The best is yet to come: The impact of retirement on prosocial behavior, *Journal of Economic Behavior & Organization*, Elsevier, vol. 196(C), pages 589-615.

[6] Lichtenstein, S., & Slovic, P. (Eds.). (2006). *The Construction of Preference*. New York, NY: Cambridge University Press. doi: http://dx.doi.org/10.1017/CBO9780511618031

[7] Loewenstein, G. (2000). Emotions in Economic Theory and Economic Behavior. *American Economic Review, 90*(2), 426-432.

[8] Malmendier, U., & Nagel, S. (2011). Depression Babies: Do Macroeconomic Experiences Affect Risk Taking? *The Quarterly Journal of Economics, 126*(1), 373–416. Retrieved from http://www.jstor.org/stable/23015670