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Aggregate Shocks and the Formation of Preferences and Beliefs

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Aggregate Shocks and the Formation of Preferences and Beliefs

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ABSTRACT: A growing body of work has shown that aggregate shocks affect the formation of preferences and beliefs. This article reviews evidence from sociology, social psychology, and economics to assess the relevance of aggregate shocks, whether the period in which they are experienced matters, and whether they alter preferences and beliefs permanently. We review the literature on recessions, inflation experiences, trade shocks, and aggregate non-economic shocks including migrations, wars, terrorist attacks, pandemics, and natural disasters. For each aggregate shock, we discuss the main empirical methodologies, their limitations, and their comparability across studies, outlining possible mechanisms whenever available. A few conclusions emerge consistently across the reviewed papers. First, aggregate shocks impact many preferences and beliefs, including political preferences, risk attitudes, and trust in institutions. Second, the effect of shocks experienced during young adulthood is stronger and longer lasting. Third, negative aggregate economic shocks generally move preferences and beliefs to the right of the political spectrum, while the effects of non-economic adverse shocks are more heterogeneous and depend on the context.

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I. Introduction

The Global Financial Crisis and the COVID-19 pandemic are unique events in most living people's lifetimes, as was the Great Depression over 90 years ago. What legacy will these shocks leave? Will they leave different marks on different generations? The direct economic and social scarring will be large and persistent, but the effects on preferences and beliefs may be even more long-lasting. After all, the Great Depression had long-term effects on beliefs and attitudes decades after the direct economic effects had waned. Americans whose political views were formed during the Great Depression eventually grew up to support the Great Society of the 1960s. Many observers view the legendary German aversion to inflation as a legacy of the hyperinflation faced more than a century ago.

The economics profession has recognized the importance of preferences and beliefs for social and economic outcomes, including long-term growth, the performance of political regimes, and—more recently—the ability to respond to the COVID-19 emergency (Guiso et al., 2006; Algan and Cahuc, 2013, 2014a, 2014b; Alesina and Giuliano, 2015; Giuliano and Rasul, 2020). But what determines preferences and beliefs? This question has been investigated both theoretically and empirically for a long time, but only the use of large surveys and—more broadly—of new datasets on individuals' preferences has allowed a systematic analysis. Recently, the role of large aggregate shocks has attracted particular attention both because shocks help explain new trends (such as the rise of populism and anti-globalization) and because shocks help test alternative theories or conjectures concerning the formation of preferences and beliefs. Understanding the origin of preferences and beliefs is also crucial for policy. Roth et al. (2022) study the relevance of beliefs about the debt-to-GDP ratio to the demand for government spending and taxation. Settele (2022) examines the effect of people's beliefs about the size of the gender gap in the United States on the demand for policies to mitigate it.

The importance of shocks in forming beliefs has been long recognized also outside economics. One of the most famous examples in literature is Tolstoy's *War and Peace* which describes the conflict between generations with different values and beliefs. These values and beliefs differed across generations depending on the shocks, including wars, especially when experienced at a young age. Sociologists have also long recognized the importance of shocks on the formation of beliefs characterizing different generations (Mannheim, 1952). Historians and political scientists have used the sociological theory of generations to explain the formation of collective memories, the effect of the Chinese Cultural Revolution or the Great Depression, the rise of the feminist and civil rights movements, and new social norms such as attitude towards same-sex marriage.

Politicians organize political campaigns along generational lines. With American voters' party loyalty now determined more by cultural identity than by class interest, generations are becoming increasingly important and so are the shocks that shape them.¹ Policymakers, aware that shocks such as trade and immigration disproportionately affect specific generations, often tailor policies to address these generational impacts.

The purpose of this survey is to review what the economics profession has learned about the effects of aggregate shocks and, more broadly, what they reveal about the deep mechanisms of preference and belief

¹ Ronald Brownstein "[Is Gen Z Coming for the GOP?](#)" *The Atlantic*, June 8, 2023.

formation. We review the literature on the relevance of aggregate economic shocks, whether the period in which they are experienced matters, and whether they permanently alter preferences and beliefs. The evidence suggests that aggregate economic shocks permanently change various types of preferences and beliefs, ranging from political preferences to risk preferences to trust in institutions. The effect of shocks experienced in young adulthood is stronger and longer lasting.

The paper is organized as follows. Section 2 covers frameworks, from a variety of disciplines, that could explain the effects of shocks on preferences and beliefs. We review the sociology literature on the theory of generations, the social psychology literature on the age periods relevant for the formation of preferences and beliefs, and the economics literature on shocks as belief-twisting events and on the learning from experience models. In Section 3, we move to the empirical literature documenting what types of preferences and beliefs are altered by aggregate economic shocks and under which circumstances we observe a permanent change, as well as the magnitude of these effects. We discuss the main empirical methodologies, their limitations, and their comparability across studies, with plausible mechanisms whenever available.

In Section 4, we review the literature on personal experiences of non-economic aggregate shocks such as migration, wars, terrorist attacks, pandemics, and natural disasters. Section 5 summarizes our conclusions and highlights avenues for future research. Table 1 provides a summary of the papers reviewed in this article, organized by type of shock and by the affected preferences and beliefs.

II. Historical Experiences and the Formation of Preferences and Beliefs

This section reviews four approaches, taken from various disciplines, to explain why economic shocks can have long-lasting effects on preferences and beliefs. Standard models in economics have assumed that people are endowed with stable preferences (Stigler and Becker, 1977); that is, choices are influenced by experience and circumstances, but the underlying preferences are not. However, both historical examples and recent insights from behavioral economics and psychology suggest that individual experiences can indeed affect preferences such as those related to politics, social policies, risk and patience, and trust in government and in the financial market (Lowenstein and Angner (2003), Malmendeier and Nagel (2011), Giuliano and Spilimbergo (2023b), Stevenson and Wolfers (2011), Algan et al. (2017), Guiso et al. (2024).)

2.1. Shocks as belief-twisting events

A stream of literature has looked at shocks as “belief-twisting” events. Friedman and Schwartz (1963: 673) argued that the Great Depression “shattered beliefs in a ‘new era’. The contraction instilled an exaggerated fear of continued economic instability, of the danger of stagnation, of the possibility of recurrent unemployment.” Their main idea is that extreme events can cause fundamental shifts in beliefs by creating a mood of pessimism that affected financial markets for a long time. Cogley and Sargent (2008) formalized this intuition in a model in which the Great Depression altered confidence in common beliefs, generating pessimism. They then studied how pessimism together with Bayesian learning could explain the market price for risk. The persistence in the model is a result of the long time it takes to correct the pessimistic beliefs induced by a shock through the observation of macroeconomic data. The model is consistent with the idea that

the Great Depression created a “Depression generation” that behaved differently even many decades after the Depression ended. Although the authors study the Great Depression, the core idea of a belief-twisting event could apply equally to the persistent effect of other shocks on beliefs.

2.2. Experience-based learning

Malmendier and Nagel (2011, 2016) have produced a large body of evidence for a model of learning in which people learn from experience. In traditional economic thinking, people form beliefs by updating information. In a learning from experience model, individuals, instead of using all historical data, tend to give more weight to data experienced during their lifetimes, while neglecting data from too far in the past. This model has two important implications: the strength of updating does not depend on time but on age; and young people update their beliefs in response to news more strongly than older ones, because recent experience accounts for a greater share of their total lifetime experience.² Malmendier (2021a, 2021b) provides an overview of the literature on how experience-based learning matters for economic and financial outcomes such as stock-market participation, inflation expectations, consumption, home ownership, and mortgage choice (Malmendier and Nagel, 2011, 2016; Malmendier and Sheng Shen, 2024; Malmendier and Steiny Wellsjo, 2020). We review only their results regarding preferences and beliefs.

2.3. Formative-age hypothesis

A literature in social psychology hypothesizes that personal experiences have a permanent effect on the formation of preferences and beliefs. There are three groups of theories related to the time periods that matter for the formation of preferences and beliefs: the impressionable-years hypothesis, the increasing-persistence hypothesis, and the lifelong-openness hypothesis.

- ✓ *Impressionable-years hypothesis.* Core attitudes, beliefs, and values are mostly formed in early adulthood (the so-called “impressionable years”) and do not change much afterwards. Evidence of significant socialization has been found between ages 18 and 25 (Krosnick and Alwin, 1989). Several studies document that the historical environment during the impressionable years shapes one’s basic values, attitudes, and worldview (Greenstein, 1965; Hess and Torney, 1967; Newcomb et al., 1967; Easton and Dennis, 1969; Dennis, 1973; Cutler, 1974; Sears, 1975, 1981, 1983).
- ✓ *Increasing-persistence hypothesis.* People are malleable and more responsive to the social environment when they are young, but their malleability decreases with age, due to a “decline in energy and loss of brain tissue, to disengagement and a decrease in interest in events distant from one’s immediate life, and to the accumulation of friends who share similar world views” (Glenn, 1980).
- ✓ *Lifelong-openness hypothesis.* People are highly malleable throughout their lives and constantly alter their attitudes in response to the social environment (Brim and Kagan, 1980).

Among these hypotheses, the main distinction is between the lifelong-openness hypothesis, which posits that people are flexible throughout their lives, and the remaining two, which posit that belief formation chiefly takes place in young adulthood. The latter two differ slightly on the degree of malleability at other ages,

² Their empirical analysis indeed indicates that people suffer from recency bias, meaning the tendency to put too much weight on recent experience.

with the impressionable-years hypothesis proposing that it drops just after the impressionable years and then remains low while the increasing-persistence hypothesis proposes that it decreases gradually throughout the rest of one's life. These last two theories agree with the experience-based-learning model that young people are more sensitive to new experiences than older people because they have less past experience on which to rely, whereas the belief-twisting-events model does not make specific predictions with regard to how far along in one's life a shock is experienced.

Insights from other disciplines could also help explain why young adulthood is relevant for the formation of preferences and beliefs. Recent literature on neurological development shows that the adolescent brain differs anatomically and neurochemically from the adult brain. In the developing brain, the volume of grey matter in the cortex gradually increases until about the age of adolescence, then sharply declines as the brain finds some neuronal connections superfluous during adulthood. The "synaptic tagging and capture" hypothesis (Frey and Morris, 1997) postulates a connection between experience and the neurological foundation of memory. An emotionally powerful experience induces a more stable connection between synapses, making it more likely to be remembered (Richter-Levin and Akirav, 2003; Talarico et al., 2004; Nisbett and Ross, 1980; Weber et al., 1993; Hertwig et al., 2004; Simonsohn et al., 2008). To the extent that a stronger experience could induce a stronger connection when young, this could also explain why experiences during young adulthood could potentially be more impactful.³

2.4. Sociological theory of generations

The sociology of generations, much more descriptive than the theories described so far, helps explain how some eras are distinctive in terms of political and cultural values or how certain political parties become more prominent during specific periods, indirectly contributing to the idea that cohort experiences matter for the formation of beliefs and preferences. Classic work by Mannheim (1952) and Bourdieu (1993) describes some of the social characteristics of different generations and argues that a cohort develops the character of a generation because of the socioeconomic and historical environment of their youth. Mannheim does not define the age interval in which a cohort becomes a generation, but seems to suggest "the age of 17, sometimes a little earlier and sometimes a little later" (Mannheim, 1952: 300). He also seems to suggest age 25 as the typical endpoint of major generational differences, therefore proposing an age range consistent with the idea in social psychology that late adolescence and early adulthood are the most important periods in forming political preferences. This is also consistent with views in developmental psychology that adolescence and young adulthood is the period in which individuals learn about society, whereas earlier years are more important for other tasks such as language acquisition (Braungart, 1984). Mannheim also points out that because only knowledge "personally gained in real situations . . . sticks," (Mannheim, 1952: 296), even very important political events and changes before one is born or old enough to be aware of them do not leave a clear mark, in line with learning from experience models. Examples of generational changes include the political participation

³ Laudenback et al. (2019) find confirmation of this hypothesis by looking at the long-term effects of living under a Communist regime on attitudes toward financial markets. Using data from Germany, they find that being exposed to positive "emotional tagging" induces East Germans to invest more in companies from Communist countries and less in American companies. Negative emotional tagging produces the opposite result.

of young adults in the Civil Rights Movement of the late 1950s and early 1960s and the effect of the Great Depression on economic and political attitudes.⁴

There is no systematic empirical evidence on the theory of generations. The only evidence comes from asking interviewees to remember the major national or world events or changes of the past 50 years and then showing that the pattern of these specific memories is consistent with the hypothesis that there is a specific age range in which the recollection of events is strongest. In 1985, Schuman and Scott (1989) asked a sample of 1,140 Americans, 18 and older, to remember one or two national or world events or changes of the past 50 years that seemed especially important. World War II and Vietnam were the events most frequently recalled, followed by space exploration, the assassination of John F. Kennedy, the Civil Rights Movement, the nuclear threat, advances in communication and transportation, and the Great Depression. The authors find a peak for the ages 16–24 for World War II and 15–27 for the Vietnam war, very close to the 17–25 range suggested by Mannheim and by the impressionable-years hypothesis. For most of the other major events, memories were associated disproportionately with the period in which responders were in their teens or early twenties, confirming the idea that adolescence and early adulthood is the most important period for the formation of political memories.

In sum, various disciplines, including political science, economics, social psychology, and sociology, have emphasized the importance of individual experiences of aggregate shocks in the formation of preferences and beliefs. However, these various hypotheses differ in the emphasis on the effect of timing (for instance, shocks experienced during one's formative age or recently) and the extent of persistence of the effect of aggregate shocks.

III. What preferences and beliefs are altered by aggregate economic shocks?

In this section, we review how the experience of recessions, trade shocks, and inflation impacts preferences and beliefs. Theoretical models treat preferences and beliefs differently. Some cultural values, such as the level of trust or risk preferences, are considered more primitive characteristics embodied in preferences. At the same time, parents transmit beliefs to their children, which are continually updated as parents gather information from real-world experiences. Guiso et al. (2008) present a model in which parents transmit trust priors to their children, but then transmit updated beliefs later in life after learning from experience. The two interpretations are not mutually exclusive; in Benabou (2008), they interact systematically, with “mental constructs” included in a political-economy model. These mental constructs, in turn, interact with institutions and generate beliefs that could persist.

It is very hard, however, to distinguish empirically between preferences and beliefs. Malmendier (2021b) points out that “it is very hard to distinguish whether we want to capture the re-wiring of our brain following a different experience as the alteration of preferences or as assigning different probabilities to future events”. Survey measures do not usually disentangle belief and preference components, making interpretation

⁴ When sociologists use the term “generation,” they might refer either to a specific cohort (people born in a given year) or to a group of people identified by an historically based social movement. The Civil Rights Movement is an example of a social movement that could identify a generation. This movement may have changed views about race for Americans overall, not just the cohort growing up in the 1960s.

difficult, and different studies have emphasized one aspect over the other. For instance, Luttmer and Singhal (2011), by documenting a correlation between preferences for redistribution among second-generation immigrants and preferences in their countries of origin, seem to support a preference-based interpretation. On the other hand, Alesina and Fuchs-Schundeln (2007) and Giuliano and Spilimbergo (2023b), by showing that political regimes or macroeconomic shocks can alter the desire for redistribution, implicitly support a belief-based interpretation. In most empirical papers, survey questions do not differentiate between preferences and beliefs. Nevertheless, we will highlight the few instances in which authors successfully identify changes in preferences versus beliefs following a shock.

3.1. Recessions

3.1.1. Political preferences and support for redistribution

Early empirical evidence on the importance of the impressionable years for the formation of political preferences comes from Krosnick and Alwin (1989). They use two panels from the National Election Studies, each divided into age groups: 18–25, 26–33, and so on.⁵ They find that people are more likely to change their political preferences during their early adult years; the malleability drops off immediately after that. Although indicative of the importance of the impressionable years, the study does not control for other covariates and could not disentangle the relevance of cohort versus age effects. Moreover, sample sizes for each age group were relatively small. Finally, because the National Election Study does not interview people younger than 18, the authors cannot test if the period up to 18 is also important in shaping political preferences.

Giuliano and Spilimbergo (2023b) look at the effect of severe recessions on political preferences and on preferences for redistribution in different life periods⁶. The empirical challenge in detecting the effect of shocks on preferences and beliefs is that a specific cohort could have many shared experiences beyond the shock in question. The authors address this problem by using regional variation in economic conditions based on the place in which a person grew up. They use data from the General Social Survey, which includes both where a participant grew up and where he or she was living at the time of the interview. This strategy allows the authors to control for common cohort experiences, only using regional exposure to recessions while growing up to identify the effects. Linking preferences at the time of interview to past economic conditions helps rule out reverse causality. Overall, the coefficients are identified using between-cohort differences in recession experiences within age groups and years. Finally, linking contemporaneous preferences to the macroeconomic experiences of the region one was living in at age 16 allows the authors to study whether the period of adolescence, before 18, could also matter for belief formation.

Using evidence from the US, they find that people who experienced a recession when young are more likely to vote for a right-leaning party and are less supportive of government redistribution. The evidence supports the idea that preferences are formed during the impressionable years, including some years of

⁵ One panel interviewed a sample of 1,132 adults in 1956, 1958, and 1960; the second interviewed a sample of 1,320 adults in 1972, 1974, and 1976.

⁶ Giuliano and Spilimbergo (2023b) revisit Giuliano and Spilimbergo (2014), retracted from *The Review of Economic Studies* (Giuliano and Spilimbergo, 2023a) because the original results could not be replicated. The new paper extends the coverage in terms of both years and countries and finds, as did Giuliano and Spilimbergo (2014), that the impressionable years are key to the formation of political beliefs, but also documents that preferences move to the political right rather than to the left in response to recessions.

adolescence, and are stable afterwards. The authors' findings are confirmed when they use evidence from the World Value Survey for a large set of countries. Regarding political preferences, the effects are similar in magnitude to the effect of years of education and to that of having annual family income rise from \$1,000–\$2,999 to \$25,000 or more, and they are 50 percent larger than the effect of being unemployed.⁷ The results are similar when the authors look at preferences for redistribution.

Carreri and Teso (2023) employ a similar empirical approach to that of Giuliano and Spilimbergo (2023b), examining the impact of experiencing a recession during the impressionable years for US members of Congress born after 1911. The authors isolate the impact of a recession using variation in macroeconomic conditions of the state in which the member of Congress grew up, finding that experiencing a recession during early adulthood is associated with a more conservative position on redistributive policies relative to other members in the same Congress. Having experienced a recession is associated with an approximately 0.15 standard deviation increase in ideology score.

The authors rule out selection as a mechanism by finding no difference in pre-treatment characteristics of members affected or not affected by a recession. They also find that the change in beliefs was limited to redistributive policies and did not apply to policies unrelated to redistribution. Finally, the magnitude of the effects is also similar when the authors limit their comparison to within-party variation (17 percent of a standard deviation), helping rule out the possibility that the results are driven by selection into the Republican Party during recessions.

Three other papers, in three different settings, find that financial crises and recessions are associated with support for populist or right-wing extremist parties, but they do not examine differential effects during the life-cycle. The best empirical evidence is provided by Algan et al. (2017). The authors use data on European regions before and after the 2009–2010 financial crisis, finding a strong and robust relationship between unemployment and voting for non-mainstream, far-right, and populist parties, mostly driven by Southern European countries. The analysis is based on panel specifications at the regional level that can account for time-invariant regional characteristics and for time-varying country characteristics. Their specification could still capture other time-varying regional variables, a concern addressed with a 2SLS strategy based on the pre-crisis share of construction in regional value added as an instrument for regional unemployment. Overall, a one-percentage-point increase in regional unemployment increases the populist vote by one percentage point. The authors also find that it is the severity of the crisis that drives support for populist parties.

More descriptive in nature, De Bromhead et al. (2013) and Funke et al. (2016) use panel cross-country evidence. The former paper examines voting behavior in 171 elections across 28 countries between 1919 and 1939, focusing on support for right-wing anti-system parties during the Great Depression.⁸ The authors find a strong correlation between right-wing political extremism and deep and prolonged contractions: a one standard deviation decline in growth increases the fascist vote share by 1.75 percent. This result is stronger for countries that were on the losing side of World War I, had only a brief experience of democracy, or already had representation of right-wing extremists in parliament. In countries without a prewar history of democracy and

⁷ The General Social Survey reports total annual family income in 12 income brackets: \$1–\$1,000, \$1,000–\$2,999, \$3,000–\$3,999, \$4,000–\$4,999, \$5,000–\$5,999, \$6,000–\$6,999, \$7,000–\$7,999, \$8,000–\$9,999, \$10,000–\$14,999, \$15,000–\$19,999, \$20,000–\$24,999, and \$25,000 or more.

⁸ “Anti-system parties are defined by G. Sartori (1976) as parties seeking to change not the government but the system of government. They include fascist and secessionist parties on the right and communist parties on the left.” (De Bromhead et al., 2013, p. 378)

with a preexisting fascist party, a one standard deviation increase in growth is associated with a 4.8 percent decline in the extreme right-wing vote share.

In a similar vein, Funke et al. (2016) study the relationship between financial crises and voter behavior in 20 countries over a longer period, from 1870 to 2014, finding a positive association with voting for the extreme right. The authors' interpretation is that voters are attracted to the extreme right's rhetoric, blaming minorities or immigrants. In the five years following the financial crises, the vote shares of far-right parties increased by about 30 percent.

All the papers mentioned so far study free-market economies. Abramitzky et al. (2023) provide fascinating evidence on the impact of financial crises in a socialist context, using data on kibbutzim during the financial crisis of 1989-1996. The authors use Israeli electoral data from 1977 to 2019 and a difference-in-difference methodology, finding that the members of kibbutzim who experienced a more severe crisis moved to the political right in national elections. They also use data on attitudes finding lower support for socialist parties and increased support for liberalized labor markets. Finally, they uncover differential effects by age: while different age groups are affected similarly in the short term, the effects persisted only for younger cohorts, a result broadly consistent with the impressionable-years hypothesis. The authors interpret a shift towards the right in a socialist context as resulting from the crisis prompting individuals to question the socialist economic system, leading their preferences to move away from centralized planning and towards liberalized markets.

In sum, the literature has found consistently that an economic shock moves political preferences to the right. This finding holds both for the US (using as identification strategy regional differences in macroeconomic conditions when growing up) and across countries. The evidence also holds in time, spanning almost a century from the rise of fascism to the present. It also holds under different political regimes, from a market economy like the US, to a socialist setting like a kibbutz. Studies also find that the effect depends crucially on the age of the individual when the shock is experienced, thus supporting the impressionable-years hypothesis.

3.1.2. Prosocial preferences

Several papers have investigated how prosocial preferences, broadly defined, might change during periods of economic hardship. The direction of the shock's effect on social preferences is a priori ambiguous. People could become more altruistic towards the poor and the outgroup, as they observe greater poverty during the recession. Alternatively, a recession could make them more selfish and protective of their own personal needs (as shown in an experimental setting by Fisman et al. (2015), more concerned with the interests of their own group, and less open to outsiders.

The papers studying prosocial preferences identify the effects of aggregate economic shocks following Giuliano and Spilimbergo (2023b). Cotofan et al. (2024) use data from the General Social Survey and regional income while growing up to identify the effects. Bietenbeck et al., (2023) link individual preferences of people in different countries to their recession experience growing up, controlling for country, age and year-of-interview fixed effects.

Cotofan et al. (2024) show that individuals who experienced lower regional income during their impressionable years in the United States tend to be less open to immigrants, whom they perceive as potential competitors for jobs or for welfare. The effect is substantial: a log-point decrease in regional income increases anti-immigrant sentiment by 0.4 points on a five-point scale. This effect is larger than that of a log-point change in household income or of being unemployed. In terms of heterogeneity, the results are more pronounced

among respondents who are less educated or whose fathers are less educated, a result also found in Algan et al. (2017). This suggests that anti-immigrant sentiment could be rooted in labor market competition.

Bietenbeck et al. (2023) study whether recession experiences make individuals more or less prosocial, using individual-level data on prosocial preferences, for approximately 65,000 respondents in 75 countries, from the Global Preference Survey (Falk et al., 2018). Prosocial attitudes are proxied using a principal-component analysis of four measures: trust, altruism, and positive and negative reciprocity. Trust is measured, on a 0–10 scale, as the degree to which respondents assume that people have the best intentions; altruism is the individual’s willingness to incur costs to benefit others without expecting a return; positive reciprocity is the willingness to reward others’ kind behavior; and negative reciprocity is the propensity to punish others’ unkind behavior. The authors find that experiencing a recession during the impressionable years decreases prosocial preferences for the rest of a person’s life.⁹ Although the authors use a principal component analysis to create a measure of prosocial preferences, analyzing the four traits separately also reveals interesting findings. Trust and altruism are not significantly affected by macroeconomic conditions, in line with Algan et al. (2017), and negative reciprocity is not significantly affected by experiencing a recession when young, in line with Cao et al. (2021).¹⁰ The greatest malleability can be found for positive reciprocity. The magnitude of the effect of experiencing a recession on prosocial behavior is similar to that of being a man rather than a woman.

In sum, the empirical literature consistently finds that experiencing a recession decreases prosocial preferences (broadly defined), even though a priori the effect could go both ways.

3.1.3. Generalized trust and trust in institutions

Because generalized trust and trust in institutions are among the variables shown to strongly affect many economic and political outcomes (Algan and Cahuc, 2010, 2013, 2014a, 2014b), it is unsurprising that research has focused on their determinants. We review here only the literature on aggregate shocks and various measures of trust.

The first evidence was descriptive and provided by Stevenson and Wolfers (2011), who looked at the correlation between the business cycle and measures of trust in various institutions: banks, big business, newspapers, and the US Congress and Supreme Court. The authors run time-series regressions for the United States from 1972 to 2010, individual-level regressions for a large set of countries spanning 2006 to 2010 (controlling for a wide range of observable characteristics, country and year fixed effects), and individual-level regressions using variation in state unemployment in the United States from 1972 to 2010, including controls for observable characteristics, state and year fixed effects. While the analysis provides suggestive evidence of the relationship between recessions and trust in institutions, results could be driven by omitted variables or reverse causality in the time series regressions for the United States, and by other time-varying country or state characteristics in the individual cross-country and state-level specifications.

For the US, they find that a 5-percentage point increase in unemployment is correlated with a 13.5 percentage point decline in the share of people expressing confidence in banks, but only a 4.5 percentage

⁹ For the exact wording of the questions, see Falk et al. (2018).

¹⁰ The authors find that negative reciprocity has deep historical roots linked to herding practices in pre-industrial societies that are believed to have generated a value system conducive to revenge-taking and violence.

point decline for trust in Congress, major companies, and business executives. The results for newspapers and the Supreme Court have larger confidence intervals or are not significant. The cross-country analysis broadly confirms the US results: confidence in financial institutions and the national government is very cyclical. However, in contrast to the US findings, the authors find cyclical trust in the judicial system, while trust in the media is not correlated with changes in unemployment. In the cross-country analysis, the results are stronger for OECD countries. For the regressions using variation in state unemployment in the United States, they find that trust in institutions is pro-cyclical, although the results are smaller than those estimated for the US or the cross-country analysis, with smaller confidence intervals only for trust in big business and in major companies, an indication that local economic conditions do not significantly alter trust in national institutions.

Algan et al. (2017) study the relationship between economic crises and both trust in institutions and generalized trust, using data on European regions, before and after the 2009–2010 financial crisis. While their regional panel specification accounts for time-invariant regional characteristics and time-varying country characteristics, it may still capture other time-varying regional variables. This concern is addressed through a 2SLS strategy based on the pre-crisis share of construction in regional value added as an instrument for regional unemployment, thereby improving upon the specification of Stevenson and Wolfers (2011). They find that a one standard deviation increase in unemployment reduces trust in parliament by 3.6 percentage points. A similar decline is observed for trust in politicians, whereas the effect is smaller for trust in the legal system. Trust in the police moves in the opposite direction. The fact that crises decrease confidence in political institutions and EU politicians, but not in the police or the United Nations, suggests that the general public blamed politicians for the severity of the crisis. Distrust in political parties and the legal system is particularly pronounced in Southern Europe and most likely related to dissatisfaction with the democratic system (for which the authors also find an effect). Generalized trust remains unaffected, suggesting that cultural transmission or a deeper mechanism of socialization is necessary to alter it.¹¹

The authors provide additional evidence based on individual-level data to understand sources of heterogeneity and to pinpoint the underlying mechanisms. The results are not driven by gender differences, have smaller confidence intervals for older cohorts, and are stronger for respondents without a college degree, in line with the narrative that economic insecurity and lower wages—often due to competition with low-income countries (Autor et al., 2020)—could help explain the decline in trust and a corresponding increase in populist votes.

Ananyen and Guriev (2019) examine panel evidence on Russian regions during the 2009 financial crisis. Using differences in the industrial structure inherited from the Soviet period as an instrument, the authors find that the crisis reduces generalized trust. The effect is of sizeable magnitude: a 10 percent decrease in income is associated with a 5 percentage point decrease in social trust. This contrasts somewhat with Algan et al. (2017) but it may be driven by a decline in personal income associated with the crisis, a possibility the authors do not rule out, leaving it to future research.

In sum, several studies have shown a consistent negative correlation between negative shocks and trust in institutions. This correlation is found in various countries and contexts. The fact that the effect seems stronger amongst individuals with lower educational level is consistent with the literature on populism.

¹¹ This evidence is also in line with Guiso et al. (2016), who find that differences in trust across Italian regions have deep historical roots.

3.1.4. Risk preferences

Malmendier and Nagel (2011) examine the impact of recessions on risk preferences, basing their empirical analysis on a learning-from-experience model. The authors measure risk preferences with survey questions on the willingness to take risks as well as participation in the stock and bond markets, using repeated cross-section data from the Survey of Consumer Finances spanning 1960 to 2007. They then link risk preferences to households' experienced histories of stock and bond returns, calculated since the birth year of the household head. Their specification is based on a weighting scheme which declines linearly until it reaches zero in the year of birth and allows them to include age and time effects and exploit within-cohort variation. Yet the question remains whether the linear weighting scheme is the most appropriate one, as extreme events may have nonlinear effects and specific age groups may be particularly sensitive to experiencing a recession.

Their estimates indicate that returns experienced during one's lifetime are important predictors of risky behavior, particularly for younger generations, for whom recent experiences make up much of their total experience. The economic magnitudes are sizeable: going from the 10th to the 90th percentile of experienced stock returns implies a 10.3 percentage point higher probability of being in the higher risk-tolerance categories, a 10.2 percentage point increase in the probability of stock-market participation, and a 7.9 percentage point increase in asset allocation to stocks. Regarding the bond market, the same change in experienced bond returns implies an 11.4 percentage point increase in the probability of bond-market participation.

Malmendier and Nagel's paper is one of the few to investigate whether the returns experienced during one's lifetime are associated with a change in beliefs in future returns or with a change in risk preferences. The authors do not have information to test whether recessions alter risk preferences, but they try to rule out the preference story in several ways. First, they disentangle the role of stock and bond returns by analyzing their relative predictive power for the risk measures described above, including both bond and stock returns in the specification. They find that stock market participation correlates with stock market return experience, but not with bond returns, whereas the reverse holds true for participation in the bond market. They consider this evidence more aligned with a belief-based story, as a preference story would not imply a differential effect by type of asset (this evidence also helps rule out a wealth effect). Using the UBS/Gallup survey on stock return expectations, they are also able to link expectations about future stock returns to stock return experiences, allowing them to disentangle the roles of beliefs and preferences. They find that a 1 percentage point increase in experienced return is associated with a 0.5–0.6 percentage point increase in expected return. The authors also run the same specification looking at the expected return on the respondent's own portfolio. While differences in expectations could still reflect differences in risk preferences (a risk-averse investor could choose a lower-risk portfolio, also expecting a low return), the authors conclude that the similarities of the estimates with the overall expected return make it unlikely that risk preferences drive the results. Overall, although they cannot completely rule out the preference story, they can conservatively conclude that the beliefs channel plays a significant role.

3.2. Inflation experiences

D'Acunto et al. (2021a) use a learning-from-experience framework to study the role of inflation experiences in shaping inflation expectations. They combine information from a dataset of almost 100,000 households in the Kilts Nielsen Consumer Panel with new survey data that they gathered on experienced and expected inflation from all Nielsen households in June 2015 and 2016. They find a strong correlation between expected inflation and household Consumer Price Index (CPI) inflation, but especially "frequency CPI"

inflation.¹² In line with an experience story, it is the price changes consumers encounter more frequently that significantly impact the formation of inflation beliefs, with the association for the frequency CPI being 20–50 percent larger than that for household CPI. Households also pay more attention to price increases than to price decreases (that do not matter). Because the authors are observing both realized and expected inflation within consumers over time, they can rule out the possibility that their results are driven by time-invariant individual characteristics.

As a measure of magnitude, the authors use the R^2 explained from past observed price changes on individuals' inflation expectations, which is 10 percent. One concern is that the R^2 may underestimate the explanatory power, due to noise and measurement error in survey data. To address this concern, the authors re-estimate their model including geography, age, and education as additional controls, which substantially increase the R^2 . For example, when the authors split the sample based on age and education, the R^2 increases to 25 percent. The relationship between inflation experiences and inflation expectations also holds for a much longer period, going back to 1953 (Malmendier and Nagel, 2016). In this paper, the authors isolate the beliefs channel by measuring beliefs about future inflation using the Michigan Survey of Consumers.

In a follow-up paper, D'Acunto et al. (2021b) uncover interesting heterogeneity that can shed light on another important puzzle of consumer behavior: gender differences in inflation expectations. Improving on the previous literature, they find that, within a household, women tend to have higher expectations than men due to exposure to grocery prices. The authors cleverly show that it is not being female but being the main grocery shopper that drives inflation expectations. When they control for the variable indicating if the person is the main grocery shopper, the coefficient on this variable is very significant, while the gender coefficient becomes insignificant. Overall, they find that differences in daily experiences generate differences in beliefs, which in turn lead to differences in behavior.

The learning-from-experience model, when applied to participation in the stock and bond markets as well as inflation, seems to point more to a belief-based story than to a full change in preferences stemming from different macroeconomic experiences.

3.3. Trade shocks

Trade has always been credited with spreading new ideas, including preferences and beliefs.¹³ Empirically, the main challenge lies in the fact that trade and, more broadly, economic integration are not exogenous shocks independent of (collective) beliefs. Indeed, the decision to integrate depends on the political system and, ultimately, on preferences and beliefs. Consequently, the literature has paid particular attention to the identification strategy, focusing on two approaches: identifying the effect of trade by exploiting cross-regional variations in endowment and specialization, and exogenous shocks to trade.¹⁴

¹² "Frequency CPI" uses the frequency of purchases as the weight in the household's consumption basket, whereas household CPI uses expenditure shares in the base periods as weights.

¹³ The diffusion of the earliest inventions, including the alphabet, followed trading routes.

¹⁴ A well-known example is Autor, Dorn, and Hanson (2013) on the local labor-market effects of import competition from China in the United States.

3.3.1. Political preferences

Most papers use a strategy based on regional variation in exposure to trade to identify the effect of trade on political preferences such as support for populist parties, for Brexit, and for Donald Trump. A reference paper is Autor et al. (2020), which uses (the shock due to) local exposure to Chinese imports to explain increasing polarization in the US. As a measure of shock, they use the change in imports from China, instrumented with Chinese exports to other developed countries to isolate supply shocks exogenous to the affected region's demand. The authors' main outcome is polarization in political preferences, calculated using several measures of strong-left and strong-right political views. They find that trade shocks increased the market share for the Fox News channel and the probability of electing a Republican candidate to Congress (both indicating a movement toward the right of political preferences). At the same time, the authors observed more ideological polarization in campaign contributions (although, in net, the Republican Party benefits) and a repositioning of majority-White versus majority-non-White regions (trade-exposed counties with an initial White/Black majority were more inclined to elect a conservative/liberal representative at the expense of Moderate Democrats). A 1 percentage point increase in trade exposure led to a 5.2 percentage point increase in Fox News's market share from 2004 to 2012. With respect to the ideological composition of campaign donations, districts with more exposure to trade had a 35 percent increase in both left-leaning and right-leaning donors over the 2002–2010 period.¹⁵ As for the ideology of congressional election winners, districts more exposed to trade had a 13.2 percentage point higher likelihood of electing a conservative Republican over the 2002–2016 period. Moderate politicians experienced the largest decline (the decline for moderate Democrats was 85.9 percent of the gain for conservative Republicans). Exposure to trade (for an interquartile range increase in import penetration) increased the Republican vote share between 2000 and 2008 by one percentage point. The results are persistent and become slightly larger for the period from 2008 to 2016. The authors conclude that “greater trade exposure induces a net shift in favor of candidates on the right”.

Autor et al.'s (2020) approach has been used in several studies in the US and Europe. For instance, Colantone and Stanig (2018c) find that the Chinese import shock led to an increase in votes for nationalist, far-right parties across regions in 15 European countries.¹⁶ Similar results are obtained for Italy (Barone and Kreuter, 2021), France (Malgouyres, 2017), the UK (Steiner and Harms, 2023) and Germany (Dippel et al., 2022).¹⁷ Feigenbaum and Hall (2015) find that US legislators vote in a more protectionist direction on trade bills: “A \$1,000 increase in import competition per worker causes a 0.7 percentage point decrease in the probability that the district's representative casts a ‘right-leaning’ or ‘free-trade’ vote in Congress”. Incumbents do not become more left-leaning overall and the results are more pronounced when the incumbent is worried about reelection. Rodrik (2021) provides a comprehensive review of the literature. None of the above papers analyze whether trade shocks had a differential effect during the individual life cycle.

¹⁵ The authors also consider a longer period, 2002–2016, finding that districts more exposed to trade have 54.8 percent higher campaign contributions from both liberal and right-leaning donors.

¹⁶ Colantone and Stanig (2018a), using data from the British Election Study, find also that Chinese import shocks lead to higher vote share for Brexit.

¹⁷ Dippel et al. (2021) propose a methodology to disentangle the direct effect of shocks on beliefs from the indirect effect through labor market outcomes.

3.3.2. Preferences toward democracy and authoritarian preferences

Tabellini and Magistretti (forthcoming) study if and how more trade and economic integration change attitudes on democracy. The exogenous shocks affecting trade are improvements in air transportation relative to sea transportation.¹⁸ Using these instruments in a sample of 74 countries over the period 1995–2020, the authors find that an (exogenous) shock to trade has an economically and statistically significant effect: “doubling exposure to economic integration with democracies increases an individual’s attitudes towards democracy by .58 points on a 1 to 4 scale. This is similar to the difference in support for democracy between Mexico and Norway or between Philippines and Italy”. They also find strong evidence for the impressionable-years hypothesis, showing that the effect of trade on attitudes crucially depends on the age at exposure—with a peak effect between 20 and 28—and that this effect is persistent. Exposure to trade with autocracies has no effect on individual attitudes.

To pin down the mechanisms, the authors study whether the transmission of democracy is driven by imports or exports. They find that the results are primarily driven by imports, suggesting that the desirability of democracy is the driving factor. Supporting this conclusion, the authors show that the results are driven by higher-quality goods and goods for which bilateral trust between countries is more important. The authors also show that this change in attitudes is reflected in democratic outcomes: an 80 percent increase in economic integration with democracies increases the Polity2 score roughly by four points (equivalent to the difference between Malaysia and Canada in 2010). Trade with democracies enhances democratization particularly when the trade partner does well in terms of economic growth and provision of public goods.

Ballard-Rosa et al. (2021) study the effect of trade exposure to China on the diffusion of authoritarian values in the United Kingdom, defined as “individual preferences for order and conformity and beliefs that these values outcomes should be achieved by force if necessary”.¹⁹ Using an original, newly collected survey of 1,913 UK respondents in 2017 and using Chinese imports to the United States as an instrument for Chinese imports to the United Kingdom, the authors find that a two standard deviation increase in import penetration increases authoritarian preferences by one third of a standard deviation.²⁰ In terms of behavior, the authors also find a four percentage point increase in voting for Brexit.

Colantone and Stanig (2018b)-using data from the European Values Survey over 1988–2008 and Chinese imports to the United States as an instrument for imports to Europe-study the effect of trade on preferences for democracy and liberal democracy (calculated as principal component of the following variables: the importance of equality and equal opportunities, understanding of different people, being free, and following rules) and for authoritarianism (calculated as principal component of four types of values that parents like to transmit to their children, with manners and obedience positively correlated with authoritarianism and with imagination and independence negatively correlated). Import shocks decrease support for democracy and liberal democracy: a one standard deviation increase in income shock decreases preferences for liberal

¹⁸ The authors follow Feyrer (2019) and construct an instrument that exploits the rise in the importance of air transportation, relative to sea, since 1960. Feyrer (2019) used time-varying instruments obtained from gravity equation to estimate the gains from trade, as first done by Frankel and Romer (1999) in a cross-sectional, time-invariant setting.

¹⁹ The authors follow Altemeyer (1981).

²⁰ Authoritarian preferences are measured by an index combining measures of aggression, submission, and conventionalism. The results are driven by the aggression component, which, according to the authors, is related to the sense of frustration associated with the inability to achieve previous economic goals because of trade competition.

democracy/democracy by a .058/0.11 standard deviation. Results are stronger for less educated people. The authors do not find any result for “authoritarian personality” as measured by values transmitted to children. The authors’ interpretation is that import shocks affect political attitudes but do not shift preferences related to authoritarianism. Another interpretation is that the proxy based on values transmitted to children is faulty.

In sum, the large and growing literature on trade shocks and beliefs is based on well-established and neat identification strategies. Most importantly, it investigates key issues, such as the rise of populism. The conclusions are that trade shocks do affect preferences and beliefs. The effect on beliefs depends on the context and on the interplay with identity, so it is not possible to draw the general conclusion that trade shocks always move beliefs in one direction, although the evidence so far finds them generally associated with a movement towards the political right. Most papers also indicate that the effect of trade on preferences and beliefs is mediated by cultural rather than economic concerns. Most papers study the short-term effects of trade exposure and do not look at differences in exposure across the life cycle, the exception being Tabellini and Magistretti (forthcoming), who find strong and permanent effects of trade on preferences for democracy if the shock is experienced during the impressionable years.

3.4. Taking stock: Aggregate economic shocks, lower preferences for redistribution, and the rightward shift in political preferences

While most papers in the literature address the effect of aggregate economic shocks on preferences and beliefs, it is equally important to examine the direction of such adverse shocks and why they are typically associated with a shift toward the political right.

The effect could go a priori in either direction. Even if one looks anecdotally at the “Great Recession” of 2007–2009, it gave rise to Occupy Wall Street and the Tea Party, two movements with very different views on redistribution. The economics literature has found that recessions are associated with permanently lower earnings (Oreopoulos et al., 2012; Von Wachter, 2020): if changes in beliefs could be generated by no more than a change in economic conditions due to a recession, one should expect a movement of beliefs to the political left and not to the right, as lower income is correlated with a stronger desire to redistribute (Meltzer and Richard, 1981) and a more left-leaning political ideology. A movement of beliefs to the right would therefore be unlikely to reflect unfavorable economic conditions experienced by people growing up in a recession.

Why, then, might negative economic shocks be associated with a shift to the political right? One possibility is that early experiences with economic hardship strengthen people’s materialism and desire for security (Inglehart, 1990), whereas growing up during a period of economic prosperity (e.g., the Baby Boomers in the United States) makes individuals more concerned about the quality of life in society rather than economic security or materialism (Inglehart, 1977). Consistent with this story, Cotofan et al. (2020) use evidence from the General Social Survey to study the effect of differences in regional income during the impressionable years on one’s attitudes toward jobs. They find that lower regional income while growing up is associated with a weaker preference for a meaningful job and a stronger preference for a high-income job. Similarly, Fisman et al. (2015) find that exposure to a recession makes individuals more selfish and less concerned with social equality than with economic efficiency. Ex ante, the relationship between recession, redistribution, and aversion to inequality could go in either direction. On the one hand, individuals would like to guarantee a minimum level of income for all. On the other hand, they could value efficiency because leaving money on the table could be unattractive in times of hardship. Because Fisman et al.’s work provides experimental evidence before and after the Great Recession, it is not clear whether the results would hold more generally. At the same time, the finding that their

lab results are consistent with the real-world experience of a recession provides informative evidence on how individuals form preferences for redistribution in difficult economic times.

Shayo (2009), Bonomi et al. (2021), and Grossman and Helpman (2021) identify another reason for the shift to the political right: identity politics. These papers emphasize how negative shocks could reinforce group identity and could be associated with higher support for nationalist economic policies, less support for redistribution, and therefore a higher probability of voting for a right-leaning party. People vote not only based on economic self-interest but also on the group or groups with which they identify; preferences concerning trade policy, for example, may therefore reflect not only one's own material self-interest but also the concerns of one's identity group. Negative economic shocks, such as trade shocks, could increase support for nationalist economic policies at the cost of class identification among the relatively poor. Similarly, Margalit (2012) argues that the effect of trade on political preferences does not depend exclusively on the adverse impact of trade liberalization on earnings, but is also mediated by non-economic concerns. He studies the social and cultural effects of globalization; specifically, he hypothesizes that those who oppose social and cultural openness are more likely to have a negative view about trade. The effect is therefore expected to be stronger among the less educated. He finds that individuals oppose economic integration because they believe it can alter the nation and culture with which they identify.²¹ The evidence that people emphasize their group identity during economic crises is also broadly consistent with the idea that altruism towards the outgroup (or universalism) is a luxury good (Enke, 2022).

Another mechanism by which negative economic shocks might reduce prosocial attitudes and be related to a right-leaning ideology is scapegoating. Blaming minorities or immigrants is often part of the rhetoric of right-wing parties and especially of extreme right-wing parties. During crises, people look for someone to blame (Bauer et al., 2021; Cotofan et al., 2024) and this effect is amplified because social sanctions against anti-minority behavior are lower during economic crises (Bursztyń et al., 2022, 2024). Supporting this view, Ferrara (2023) argues that the political impact of trade described in Autor et al. (2020) is mediated by attitudes toward immigrants and racial/ethnic minorities. Similar results are found in Strain and Veuger (2022).²²

Carreri and Teso (2023) provide a different interpretation of why politicians who experienced a recession while young could be averse to redistribution. Their hypothesis is that highly educated people could see the government response to the recession as wasteful spending because they suffer less from a recession (Thal, 2017). Consistent with this story, the authors find—even among their selected sample—that the effects are stronger for politicians who received a bachelor's degree from an Ivy League college and for those whose

²¹ After documenting that people worried about the social-cultural consequences of trade are indeed more likely to believe that economic integration is harmful, Margalit (2012) conducts an experiment in the United States in which people are randomly assigned to a control group, a "cultural" prime (a treatment on social and cultural issues such as the perception of changes in Americans' traditional way of life), and a "libertarian" prime (a treatment on the optimal role of the government). Respondents exposed to the culture prime had a more negative view about the impact of economic integration than those in the other two groups, with the results being driven by respondents without college education. People exposed to the cultural prime had a 14 percent more negative view of economic integration than those in the control group. There was no treatment effect among respondents exposed to the libertarian treatment.

²² For other studies about the US, see the review in Rodrik (2021).

parents had elite occupations.²³ This interpretation is in line with Algan et al. (2017) and Guiso et al. (2022), who find that people become more averse to government intervention during recessions.

In sum, the fact that adverse economic shocks move preferences to the right is at odds with the negative correlation between income and a stronger desire for redistribution and a more left-leaning political ideology. Against this backdrop, the literature has focused on how shocks affect beliefs, counteracting the standard income channel. Many other factors seem to be at play, including the desire for stability, the rekindling of a sense of (close) community, identity politics, the desire to find scapegoats, and the fear of increasing fiscal burden. All of this underscores the importance of the narrative through which these shocks are collectively elaborated. It highlights the significance of ideology, which provides the lens through which individuals perceive these shocks and change their beliefs.

IV. Non-economic aggregate shocks and the formation of preferences and beliefs

The theoretical literature reviewed in Section 3 was primarily tested using recessions and, to a lesser extent, trade as negative economic shocks. However, other types of shock might also alter preferences and beliefs. In this section, we review the empirical evidence on the effects of non-economic aggregate shocks, including migration, wars, terrorist attacks, pandemics, and natural disasters.

4.1. Migration shocks

The literature on migration shocks, preferences, and beliefs shares conceptual similarities with the literature on trade. The challenge lies in the fact that migration to a specific place is not exogenous. A migration shock is usually identified using spatial differences and/or instrumental variables, but the identification requires different sets of instruments. While comparative advantage and relative endowments provide theoretical underpinnings for identification in trade, push and pull factors serve as good instruments for immigration. In particular, the well-established fact that immigrants tend to go to regions with preexisting communities of the same origin provides a natural instrument used in many papers (Card, 2001).

4.1.1. Preferences for redistribution and political preferences

Two review articles summarize the effects of migration on preferences and beliefs (Rodrik, 2021; Alesina and Tabellini, 2024). We refer the reader to these articles for analyses of individual papers and report here the main conclusions.

Rodrik (2021) analyzes the impact of immigration on support for populist parties. The main message is that most papers focus on the political backlash to immigration, finding it to be higher when the flow of immigrants increases rapidly and when the immigrants are low-skilled, come from countries with different racial, ethnic, and religious background, and are not spatially integrated. He concludes that, in Europe, the arrival of immigrants has been associated with a proliferation of right-wing, anti-immigrant parties, while the evidence for

²³ Giuliano and Spilimbergo (2023b) also find stronger results for individuals with more education or whose fathers were more educated and more affluent when the individual was growing up.

the US is mixed.²⁴ In terms of mechanisms, Rodrik points to an economic backlash—related to labor-market competition or the provision of public goods—and to a cultural backlash, with people reacting negatively to an outgroup but not for economic reasons. He also recognizes that most studies simply look at the correlation between immigration and political preferences without analyzing the mechanisms. An exception is Tabellini (2020), who studies the arrivals of Europeans in American cities during the Age of Mass Migration between 1910 and 1930. At that time, immigration was associated with an increase in the probability of voting for a conservative representative. Since immigration did not have any negative economic effect and since the political reaction to immigration was mostly a reaction to Catholic and Jewish immigrants, Tabellini (2020) concludes that the effects on political preferences were the result of a cultural backlash.

Alesina and Tabellini (2024) analyze a larger literature on the political economy of immigration, examining a large set of political and social outcomes. With reference to preferences and beliefs, they conclude that the “standard finding is that, on average, immigration triggers natives’ backlash, increases support for anti-immigrant and populist parties, and lower preferences for redistribution”. At the same time, the authors recognize how the outcome depends on the characteristics of the immigrants and of the receiving places and on the frequency of contact, finding that immigrants could ultimately reduce the support for anti-immigrant parties and increase preferences for redistribution. As with trade, they use a “cultural interpretation”-group identification and the importance of certain moral values-to explain the support for right-wing parties associated with immigration. We refer the reader to their review for an analysis of the single-country studies on political preferences. For cross-country evidence, Alesina et al. (2021) study how immigrants could influence preferences for redistribution, using regional variation for 16 European countries from 1990 to 2010. They find that the presence of immigrants reduces the desire for redistribution, more so in countries with a more generous welfare state, for voters at the right or center of the political spectrum, and when immigrants come from the Middle East and North Africa. The analysis allows them to rule out that regional time invariant differences drive the results, and further concerns of endogeneity are addressed using a shift-share approach.

All the above-mentioned papers look at the effect of immigration on political preferences in the short run. Giuliano and Tabellini (2023) study the long-term effects by examining one episode of American history—the Age of Mass Migration.²⁵ They find that the historical presence of immigrants increases support for the Democratic Party, welfare spending, and a higher minimum wage; these findings have sizeable magnitudes.²⁶ In explaining why the long-run effects of immigration on natives’ political preferences could differ from the short-run effects, the authors argue that immigrants brought with them their own preferences for the welfare state, which in turn were transmitted to natives. This result is also in line with the so-called “contact hypothesis” (Allport, 1954), according to which natives can change their attitudes towards minorities after prolonged

²⁴ For single-country evidence, see Mayda et al. (2022) on the US, Otto and Steinhardt (2014) on Germany, Mendez et al. (2014) on Spain, Barone et al. (2016) on Italy, Halla et al. (2017) on Austria, and Becker et al. (2017) and Viskanic (2021) on the United Kingdom.

²⁵ The Age of Mass Migration refers to the period between 1850 and 1920, when almost 30 million Europeans moved to the United States.

²⁶ A 5-percentage point increase in the historical immigrant share raises the probability of identifying with the Democratic Party by 5.7 percent and support for welfare spending by 2 percent of the sample mean. These results are comparable to the effects of income and race, among the most important predictors of political ideology and preferences for redistribution in the United States.

interactions, which may gradually eliminate initially negative stereotypes. This mechanism of horizontal cultural transmission can help explain the long-term persistence of the effects.²⁷

The papers above discuss how migration affects preferences and beliefs in the receiving countries. The mirror question concerns the effect on the sending communities. There are two possible positive effects when people leave. First, given that migration usually flows from poorer and less-democratic countries to richer and more-democratic countries, migrants can diffuse democratic values back to their countries of origin. Second, they can send back remittances. The possible negative effect is that the most dynamic individuals leave.²⁸

Pfutze (2012) focuses on how migration from Mexico causes a political change by looking at differences across the municipalities of origin. The authors use data from municipal election for the 2000-2002 electoral cycle, and an instrumental variable strategy based on historical migration and distance to the border in El Paso, Texas. They find that “[A] one percentage point increase in the proportion of migrant households raises the probability that a municipality has had a non-PRI²⁹ government by 1994 or 1997 by at least 1.7% and more than 3.4%, respectively”. The authors discuss two channels that could help explain the observed effect. One is information about democratic institutions passed by the receiving to the sending country through migrant social networks. The other is the possibility that remittances, by increasing voters’ income, reduce clientelist relationships between the government and its constituents (or else, clientelist transfers would have to increase because of higher income).

Barsbai et al. (2017) study how political preferences in Moldova were influenced by the emigration following the Russian crisis of 1998. The authors use vote share for the Communist party in the parliamentary election of July 2009. The explanatory variables are the prevalence of emigration to the West and East in 2004.³⁰ Since there was no emigration from Moldova before the Russian financial crisis of 1998, the variables can be interpreted as changes in migration from 1998 to 2004 (the authors control for each community’s electoral preferences before the onset of migration). They find that the departure of one percent of the community to the West is associated with an approximately 0.7 percentage point decrease in the share of Communist votes in 2009. An opposite—but weaker—effect is found for emigration to the East: a 1 percentage point increase in eastward migration increases the share of Communist votes by about 0.4 percentage points. The authors propose information transmission and cultural diffusion as the primary mechanisms.

In sum, most papers on the effect of migration on natives’ attitudes find that migration shocks increase support for right-leaning parties, at least in the short run. This result is consistent with the idea that “shocks” trigger a sense of community, which often forms the basis for a negative backlash. However, none of these papers study the differential effects of experiencing a migration shock in different life periods. In the long run, the results are more nuanced as immigrants bring new values as they integrate. Methodologically, papers examining how migration affects natives’ preferences share several similarities. They often use regional

²⁷ In line with a mechanism of horizontal transmission, the authors find that the results are stronger when intermarriage and residential integration are more common. Bursztyn et al. (2024) also find that being exposed to immigrants (in their case, Arab-Muslim immigrants) for an extended period can reduce negative stereotypes and increase contact.

²⁸ For a discussion, see Pérez-Armendáriz and Crow (2010).

²⁹ The Institutional Revolutionary Party (PRI) is the old state party.

³⁰ The unit of analysis is a community, which has an average population size of 3,793 inhabitants.

variation and a previous stock of migrants as instrumental variables to address the endogeneity of migrants' destination.

4.2. War

A literature on the effects of exposure to wartime violence on people's preferences and beliefs has recently emerged, thanks to the availability of new individual-level data on conflict and post-conflict societies. The studies cover different countries and different types of war, from civil wars to interstate wars, and are based on both surveys and experiments. The outcomes studied can be categorized as (a) cooperation, collective action, and political participation, (b) generalized and political trust, and (c) in-group versus out-group preferences. Most studies look at the short- or medium-term effects of wars; the few exceptions examining the long-term effects are reviewed at the end of this subsection. There is no systematic study on differential effects of exposure to war during the life cycle.

The most comprehensive reviews of research on war and social cohesion come from Bauer et al. (2016) and Fiedler and Rohles (2021). Both reviews cover different methods, including survey reports, the study of behavior in lab experimental tasks, and observational data. Bauer et al. (2016) review evidence from 16 studies, covering over 40 countries, and do a meta-analysis to quantify the effects. They group the results into six main outcomes: (a) social group participation (including participation in local social clubs, sports teams, and community organization); (b) community leadership and participation (participation in local meetings, volunteering for community work, and being a community leader or organizer); (c) in-group preferences; (d) out-group preferences and prosocial behavior in experimental games; (e) voting in local and national elections; and (f) knowledge of and interest in politics. All the measures are combined in a summary index. The authors find that war can lead to cooperation with an effect of 0.08 standard deviations, concluding that there is a positive but moderate effect of war on preferences and beliefs. For the specific subsets of variables, they find positive and statistically significant effects for participation in social groups (0.11 standard deviations), community leadership and participation (0.16), prosocial behavior in experimental games (0.17), and voting and knowledge of politics (0.02 and 0.06), but zero effect on trust. One interesting aspect of the analysis is that when they split the results by prosocial behavior towards the in- or the out-group, they find that the results are driven by cooperation with the in-group (0.25) but find no significant effect on the out-group. So, while the authors conclude that war is associated with prosocial behavior, it is important to note that the prosocial behavior driving the results is toward the in-group.

Fiedler and Rohles (2021) identified 39 relevant articles and reviewed evidence on generalized and political trust, together with in-group preferences, where the in-group is defined as those belonging to the same family, village, class, or ethnic group. As in Bauer et al. (2016), they find war generally associated with an increase in in-group cooperation. They also find a decline in trust (whereas Bauer et al. (2016) find zero effect) and in political trust, on which Bauer et al. (2016) have almost no evidence.

To explain the effect of war on preferences and beliefs, Bauer et al. (2016) review economic, evolutionary, and psychological theories and categorize the explanations into three groups:

Changes in constraints, economic payoffs, and beliefs. People invest in social capital because other assets are destroyed and investment in physical and human capital has become more difficult. The war experience can change individuals' beliefs, leading to different paths of persistence in the effect of the war. If most people change their beliefs, a new long-run cooperative equilibrium will emerge, but if only a subset of the

population experienced the war, the overall community won't move to a new equilibrium and even the people affected will find their beliefs converging back to the original equilibrium.

Change in parochial norms and preferences. Insights from evolutionary anthropology suggest that intergroup competition—of which war is an extreme form—can favor the appearance of social norms that promote success in intergroup competition and of cultural beliefs that favor in-groups. To the extent that local norms prescribe cooperative behavior, individuals more exposed to war should become more prosocial. For this interpretation, the definition of an in-group is very relevant. Civil wars can reinforce co-ethnic pro-sociality while reducing between-ethnic-group social capital. External wars can reinforce the sense of national identity.

Change in general preferences and other psychological explanations. Wars are linked to depression, which could reduce people's desire to interact with others. At the same time, people could respond to trauma by reconsidering what is important in life, including family and relationships. The literature has not yet produced much systematic evidence. Political scientists have shown how the experience of injustice can increase preferences for collective action.

A reading of the overall literature by Bauer et al. (2016) suggests that war violence influences individual social preferences, with suggestive evidence that these changes can be parochial. Below, we provide a summary organized by preferences and beliefs, using evidence from the original surveys and from subsequent papers.

4.2.1. Cooperation

The broad conclusion from Bauer et al.'s (2016) survey is that exposure to war can foster cooperation and prosocial behavior. Most evidence comes from wars (both civil and interstate) in Sierra Leone, Uganda, Burundi, the Republic of Georgia, Israel, and Nepal. The only study looking at whether war has a stronger effect in specific periods of a person's life is Gneezy and Fessler (2012). Using experiments conducted before, during and after the 2006 Israel-Hezbollah conflict, the authors show that living under an ongoing external threat temporarily increases the willingness of senior citizens to reward cooperation and punish non-cooperators.

4.2.2. In-group preferences and political participation

Most of the evidence on war concerns in-group preferences. Changes due to war violence might lead to favoring one's own group rather than to social and political participation in general. For civil wars, the main idea is that they would strengthen co-ethnic pro-sociality while destroying between-ethnic-group social capital. Conversely, an external war might reinforce the sense of identity, especially for a population that already has it. Most studies use a difference-in-differences approach coupled with an instrumental variable strategy to solve endogeneity concerns.

Among the studies reviewed in Bauer et al. (2016), Bauer et al. (2014)-using evidence from social-choice tasks administered to children and adults differentially affected by the 2008 Georgia conflict with Russia over Ossetia and the 1991-2002 civil war in Sierra Leone-find a developmental window between the ages of 7 and 20 during which individuals form in-group preferences. Rohner et al. (2013) examine the effect of the Lord's Resistance Army insurgency (1986–2006) in Uganda on ethnic identity and in-group ties. The authors address endogeneity concerns in two ways: first, they exploit variation in spatial and ethnic intensity of fighting,

using ethnic and spatial fixed effects.³¹ Second, they exploit an exogenous external political shock, resulting from the US declaration that the rebel groups in Uganda were considered terrorist organizations after September 11, 2001. This political shock differentially affected geographical areas, with stronger effects near the border with Sudan. Using the distance from Sudan as an instrument for the number of fighting events, the authors find that people living in districts experiencing more violence report a strong increase in ethnic identity and in-group ties. Hadzic et al. (2020), published after the Bauer et al.'s (2016) survey, use community-level ethnic voting data and a difference-in-differences identification strategy based on the 1995 Bosnia civil war to study the effect of exposure to violence on ethnic voting. The authors find that war increases ethnic vote share, reduces the willingness to have friends from different ethnic communities, increases trust within the same ethnic group, and fosters the beliefs that ethnic parties are necessary in the political system. Gehring (2022), using a difference-in-differences approach and the Russian invasion of Ukraine in 2014 as an exogenous variation in the military threat to member states of the European Union, find that a stronger external threat from Russia increased European identity and trust in European institutions, with stronger effects for older people who had experienced Russian control during Soviet times. The effects are large: the difference between pre and post treatment for high-threat states is 17 percent of a standard deviation (more than three-quarters of the pre-treatment differences in identity between member states of the European Union). On political participation, De Luca and Verpoorten (2015) study the effect of the Lord's Resistance Army insurgency on civic and political participation (measured by meeting attendance, electoral turnout, and frequency of political discussion). Using a difference-in-differences approach and an instrumental variable strategy based on the distance to Sudan interacted with the year dummy (following Rohner et al., 2013), they find an increase in civic participation in terms of political discussion and meeting attendance but no effect on electoral turnout.

4.2.3. Generalized trust and political trust

Most studies find that wars erode generalized trust. Fiedler and Rohles (2021) refer to Rohner, Thoenig, and Zilibotti (2013) and De Luca and Verpoorten (2015), who use evidence on Uganda, and to Alacevich and Zejcirovic (2020), who use evidence on Bosnia and Herzegovina. Interesting evidence on the medium-term effect after the civil war in Tajikistan (1992–1997) is provided by Cassar et al. (2013). The authors conduct trust games and collect survey measures of (a) political attitudes, (b) preferences for participating in impersonal exchange and for market liberalization and membership in groups, (c) collective action, and (d) political participation, more than a decade after the end of the civil war. The authors find that war-related violence hampers trust within localities, decreases willingness to engage in impersonal exchange, and reinforces kinship-based norms of morality. Gilligan et al. (2014), however, find using lab-in-the-field evidence combined with matching that the Nepalese civil war (1996–2006) was associated with more altruistic giving, public good contributions, investment in trust-based transactions, and willingness to reciprocate trust-based investments.

³¹ The authors use data from the Armed Conflicts Location Event Data (ACLED), which contains information about the location of conflicts and the rebel groups and militias involved in each conflict event, allowing them to control for county and ethnic fixed effects.

Fiedler and Rohles (2021) review the literature on war, noting that only a few studies systematically analyze the effect of conflict on political trust. Most find a negative relationship, but it is hard to generalize their findings because they look at different types of conflict. The negative effects mostly come from interstate conflicts, whereas the positive or null effects come from intrastate conflicts. Additionally, studies vary with respect to the period for which trust is measured, ranging from several days to several years after the conflict, making it hard to draw meaningful conclusions.

4.2.4. Long-term effects of war on preferences and beliefs

Only a handful of studies investigate the long-term effects of war on preferences and beliefs. Using evidence on interstate conflict, Conzo and Salustri (2019) study the effects of World War II on generalized trust in 13 European countries, exploiting regional within-country variation in combat exposure, and finding a decrease in trust among adults exposed to violence in childhood. Exposure to at least one conflict episode during childhood decreased trust by 4-5 percent and decreased the probability of carrying out voluntary/charity work by 6.3 percentage points.

Adhvaryu and Fenske (2023) use a difference-in-differences approach, where the treatment variable is the respondent's exposure to conflict between the age of 0 and 14. They use data from 17 African countries spanning the 1946-2005 period, without distinguishing between conflict types. The authors create 10 indexes: voting, collective action, contact with political figures, refusal to pay bribes, interest in politics, deference to authority, support for democracy, support for equality, support for the rule of law, and trust. They find that, in the case of Africa, being exposed to a war up to age 14 does not influence political engagement or several measures of preferences and beliefs. They suggest two reasons: the importance of resilience in overcoming traumatic events and post-traumatic growth.

Besley and Reynal-Querol (2014) study the long-term effect of war on out-group trust, exploiting variation between and within countries, and using evidence on recorded conflicts for 18 African countries during the precolonial period between 1400 and 1700. They show that countries that experienced historical conflicts between 1400 and 1700 have significantly lower out-group trust, a higher sense of ethnic identity, and less national identity.

Tur-Prats and Valencia Caicedo (2020) look at the long-term effects of the Spanish Civil War (1936–1939) on social capital, voting behavior, and collective memory. They examine the case of Aragon in Spain, where they use a regression discontinuity design along the historical front line. Their findings show that areas formerly occupied by the Republican side vote more for the center-left today, while those where Nationalist troops were stationed vote more for the right. The magnitude is substantial, in the order of 10 percent of the vote share. The authors also find that violence against civilians reduces trust and trust in institutions associated with the Civil War, attributing this decline in trust to reduced political engagement. They argue that collective memory has worked as a reinforcing mechanism of transmission.

Looking at the Italian Civil War and Nazi occupation of Italy in 1943-45, Fontana et al. (2023) study the long-term effects of war on voting for the Communist Party. As an identification strategy, they use a Regression Discontinuity Design along the "Gothic line", the battlefield where the Germans and the Allies remained for over six months, because of exogenous factors, such as weather conditions. The authors find that, north of the line, where the Nazi occupation was longer and harsher, the vote share for the Communist party was higher (about 9 percentage points in the 1946 election). Their hypothesis is that political groups that contributed to victory were strengthened by the war. This result persisted until the late 1980s-early 1990s. To understand the

mechanism behind the persistence of the effects, the authors conducted a survey of 2,500 individuals living in 242 municipalities within 50 km from the Gothic line, finding that the memory of the civil war was stronger north of the line and among left-leaning individuals.

One difficulty in studying the long-term effects of war is disentangling the changes in preferences and beliefs from the effect of economic damage and loss of human capital. Berman et al. (2023) make progress in disentangling the two by considering the 1942 bombardment of Ellwood, California, by a Japanese submarine. This attack produced little economic damage and no casualties, which minimizes the direct channel. The authors use a difference-in-differences approach exploiting the distance from the shelling before and after the attack. By examining newspaper content, the authors find an increase in fear words, especially in articles using Republican rhetoric and in Republican-leaning newspapers. There was also a conservative shift in local political preferences in the presidential and gubernatorial elections. The effect persisted long after the war and was not driven by a change in the composition of the population due to migration or to a change in turnout. The authors' interpretation is that the observed long-term effects are due to a preference shift.

4.2.5. Risk preferences

Experiencing a war can also alter risk preferences. Voors et al. (2012) use evidence from 200 respondents in 35 randomly selected communities during the civil war in Burundi from 1993 until 2003, finding that the war was associated with an increase in risk-seeking preferences, with a standardized beta coefficient of 0.26.³² Using geocoded evidence from Afghanistan from 2002 to 2010, Callen et al. (2014) elicit risk preferences under certainty and uncertainty, finding that risk tolerance is mostly observed under uncertainty. In their view, fear induces individuals to have stronger preferences for certainty, most likely because they feel the need to exert control. The emphasis on control may explain the link between violence and risk preferences.

Overall, most studies of the influence of war on preferences and beliefs focus on the short- and medium-term effects. It is hard to draw conclusions with the existing evidence, since most studies have focused on a single country—typically, a developing country—and the conclusions are usually a function of country-specific economic and ethnic factors. More research is needed to study the long-term effect of war on preferences and beliefs. There is no systematic evidence so far on the differential effects of war on different periods of a person's life.

4.3. Terrorist crises

Terrorism is the use or threat of violence against noncombatants to obtain a political or social objective by intimidating a large audience beyond the immediate victims (Enders and Sandler, 2012). The use (or threat) of violence, the unpredictability of terrorist attacks, and their high visibility are meant to maximize the emotive impact. Terrorism is thus unique among the shocks considered in this survey because it is intended to influence preferences and beliefs.

Chronic terrorism and occasional terrorism have very different effects on preferences and beliefs. Spilerman and Steklov (2009) argue that the adaptation effects are very different in places such as Israel and Northern Ireland, that have experienced long spells of terrorist attacks than in places where terrorism is more

³² The standardized beta coefficient indicates how one standard deviation increase in war exposure translates into a standard deviation change in risk preferences.

occasional, as in Western Europe and the United States. In the former case, the effect of an additional terrorist attack on preferences and beliefs is attenuated by psychological adaptation. In the latter case, the psychological effect is larger, similar in some respects to the effect of a large natural disaster. We review country studies for both types of country.

Political preferences and trust in government are the preferences that received most attention in the literature. Methodologically, the discrete and unexpected nature of terrorist attacks lends itself to the application of regression discontinuity design, which several studies use.

4.3.1. Political preferences

Given their much-lower frequency, the effects of terrorist attacks have been less systematically studied in a cross-country setting; most papers look only at specific cases. One exception is Akay et al. (2020), who consider all terrorist events in Germany, the UK, and Switzerland between 1994 and 2013. The authors use individual level data (person x interview) on political preferences merged with information on the terror events that occurred the previous day in the world, taken from the Global Terrorist Database.³³ The estimation uses daily fluctuations in terror intensity and voting intention, after controlling for individual characteristics, individual fixed effects, and year, month and country-specific region of residence fixed effects. The identification strategy relies on the absence of non-random attrition in interviews and the absence of seasonality in party preferences or a type of seasonality uncorrelated with a potential seasonality in word terror intensity (for which the authors find no evidence in their data). They find that terrorist attacks increase support for conservative parties because those parties usually promise more homeland security and take a tougher position on terrorism. Using the mean values for terror incidents or fatalities to quantify the effects, the authors find that terrorism leads to an approximately 0.19–0.35 percentage point increase in conservative vote shares, a 0.7–1.3 percent increase over the average. This increase is stronger among older, richer, and more risk-averse people and those living in densely populated areas with a high share of migrants from high-terror countries.

Many studies use a standard difference-in-differences approach based on variations in terrorist attacks across time and space. One of the most representative studies is by Berrebi and Klor (2008) for the case of Israel. They find that “a terror fatality within three months of the elections is associated with a 0.45 percentage point increase in the locality’s relative electoral support for the right bloc of political parties.” The authors also study the effects of the attacks on polarization. To address this question, they differentiate between local terror fatalities and fatalities occurring outside the voters’ localities. For local fatalities, they find that terrorism is associated with support for the right-leaning bloc in places with right-leaning preferences but also in places with left-leaning preferences. After excluding the possibility that the results are driven by selection into voting (there is no effect on turnout), the authors find that the effect holds independently of the incumbent prime minister’s party. The authors view this result as supporting the policy-voting hypothesis, according to which support should go to a right-leaning party after a terrorist attack because this party is associated with greater emphasis on deterring terrorism.

When examining fatalities occurring outside the voters’ localities, the authors find different effects. In right-leaning localities, fatalities occurring outside voters’ localities increase support for the right-leaning party.

³³ The Global Terrorism Database records daily information on all terrorist acts defined as “the threatened or actual use of illegal force and violence by a non-state actor to attain a political, economic, religious or social goal through fear, coercion or intimidation”. During the 1994–2013 period, there were around 70,000 terror events.

However, in left-leaning localities, these fatalities reduce the support for the right-leaning party. The overall result is therefore ambiguous for left leaning localities since the local and non-local fatalities have opposite effects on the electorate's preferences. Overall, the authors find that "terrorism increases the support for the right bloc among all localities whose population leans toward the right, and it decreases the support for the right bloc among the vast majority of localities whose population leans toward the left bloc", concluding that terrorism causes the ideological polarization of the electorate.

Gould and Klor (2010) confirm Berrebi and Klor's (2008) analysis regarding party affiliation but go further by examining the willingness to grant territorial concessions to Palestinians. Using repeated cross-sectional individual-level data on the political attitudes of Jewish Israelis from 1988 to 2006 and a standard difference-in-differences approach based on variation in terrorist attacks across time and sub-districts, they find that local terror attacks increase the willingness to grant territorial concessions, with stronger results for individuals who are traditionally right-wing (although this effect is nonlinear, with the position becoming less accommodating beyond a certain threshold). Overall, they conclude that terrorism moves political preferences to the right, but this is because right-leaning parties move to the left in response to terrorism, indicating that terrorism has shifted the political landscape toward a more accommodating position.

For the case of Israel, Getmansky and Zeitzoff (2014) find that the mere threat of a terrorist attack can also lead to a change in preferences and beliefs. Using exogenous variation across time and space in the range of rockets from the Gaza Strip since 2001, they find that the right-wing vote share is two to six percentage points higher in localities within rocket range.

Kibris (2011) studies the effect of terrorism on voting patterns in Turkey during the 1991 and 1995 general elections. The empirical strategy uses as a district level source of variation the number of casualties of Turkish soldiers and police officers who died in the fight against the terrorist organization Kurdistan Workers' Party (PKK). The results indicate that Turkish voters are highly sensitive to terrorism and blame the government for casualties and losses. Exposure to terrorism leads to an increase in the vote share of right-wing parties: "Each additional casualty per hundred thousand voters in the two years before the election costs the governing party/parties 0.5 percentage points. This is a very considerable loss considering that the average number of casualties per hundred thousand voters in the two years before the 1995 election was close to seven, which means in the 1995 election, the losses that the security forces suffered as a result of Kurdistan Workers' Party (PKK) terrorism cost the government on the average 3.5 percent of votes at the district level."

Several studies use repeated cross-sections and rely on the timing of interviews - conducted either before (the control group) or after the attack (the treatment group) - as a source of identification. The underlying idea is that there is no reason to believe that those interviewed right before the attack should systematically differ from those interviewed just after the attack. Echebarria-Echabe and Fernández-Guede (2006) studied the effects on ideological orientation of the March 2004 terrorist bombing in Madrid. The authors collected data in February 2004 (before the Islamic terrorist attack in Madrid on March 11 2004) as part of a questionnaire designed to study Basque people's attitudes toward different social topics and particularly anti-Arab prejudice. The data collection was then continued after the attack, using a sample balanced in terms of age, gender and social status. The authors found that the attack provoked changes in a reactionary and conservative direction, along with an increase in racial prejudice not only against Muslims but also against Jews, who were not involved in the attack. However, using the difference between voters living abroad who cast their votes before the terrorist attack (the control group) and voters in Spain who cast their votes after the attack (the treatment group), Montalvo (2011) finds that the bombing had a significant and decisive effect on the congressional

elections in Spain, lowering consensus for the incumbent (conservative) party: “[T]he estimated counterfactual percentage of votes for the conservative party ranges, depending on the sustained assumption on the joint percentage of votes for the two largest parties, between 42.7 and 44.4 percent. These findings are substantive since the actual percentage of votes for the conservative party was 37.4 percent.”

Brouard et al. (2018) use nine cross-sectional surveys collected between June 2014 and September 2016 to study the effects of terrorist attacks in Paris (2015) and Nice (2016) and compare three hypotheses on how people may change their ideological position after a terrorist attack: the Reactive Liberals Hypothesis, the Terror Management Theory, and the Bayesian Updating Theory. The Reactive Liberals Hypothesis is based on the observation that right-leaning people tend to support social controls, because they experience higher levels of threat, while a terrorist attack—or the threat of one—induces individuals who were not right-wing to switch to the right. The Terror Management Theory posits that while people will try to insulate themselves from fear, independent of their ideology, they will also reinforce their connection to their reference group, which in turn increases polarization. The Bayesian Updating Theory considers the terrorist attacks as a new piece of information on the state of risk in the world. Individuals will update their beliefs according to how much the new information deviates from those beliefs. This theory stresses rationality and voters are expected to shift to the right only on issues related to terrorism.³⁴ Brouard et al. (2018) find that terrorist attacks do move political attitudes to the right; in particular, left-wing sympathizers move to the right (more than right-wing sympathizers moving even more to the right). This shift to the right is concentrated on issues of security. The authors interpret their results as a confirmation of the Reactive Liberals Hypothesis and the Bayesian Updating Theory.

While a large-scale terrorist attack at home is more likely to have an impact on public opinion, large-scale attacks that occur far away can also generate the fear of terror at home. Finseraas and Listhaug (2013) study the effects of the 2008 terror attack in Mumbai, India, on European countries, using evidence from the European Social Survey and comparing individuals interviewed before and after the attack as a control/treatment group. They find that the attack led to a conservative swing of between -0.01 and 0.43 on the left-right scale, with a coefficient estimate similar to that of the gender gap in the left-right scale. However, this effect is not long-lasting. Schüller (2015) uses individual-level data from Germany to study the effect of 9/11 on political preferences. The author finds that left-wing supporters react by reducing the strength of their support, whereas right-wing supporters react by increasing the strength of their support. The author concludes that the evidence is in favor of the “defensive conservative” hypothesis—namely, that people become more conservative because they value authority, stability, and order—rather than the “worldview defense” hypothesis—namely, that the salience of an attack increases polarization, pushing liberals and conservatives toward the extremes of their own ideology.

4.3.2. Trust in institutions

Perrin and Smolek (2009) look at the effect of 9/11 on trust in government. They attempt to validate the theory of the “rally round the flag effect,” first proposed by Mueller (1973), according to which public support for government officials will increase in the presence of an international event involving the United States that is “specific, dramatic and sharply focused” (Mueller, 1973: p. 209). They use a sample of young adults, observed before and after the attack (15,127 observations), to show that terrorist attacks are associated with a change in

³⁴ As a good example, Franchino (2014) uses a Bayesian update approach to assess how attitudes on nuclear energy changed after the 1986 Chernobyl accident.

trust in government. However, these findings mask important race/gender heterogeneity effects, with African Americans, women, and people with less education less inclined to rally than white Americans.

Overall, several studies have analyzed the effects of terrorist acts on beliefs and preferences. In most cases, the fear generated by terrorism shifts political preferences to the right, but with little evidence of a long-lasting effect. Various hypotheses are consistent with this shift of preferences to the right, but the literature has not settled on any hypothesis in particular. None of the papers look at the effect of experiencing a terrorist attack in different life periods.

4.4 Pandemics

The COVID-19 pandemic has stimulated research-although still limited compared to that on other shocks-on the effect of epidemics on beliefs and preferences; specifically, on various aspects of generalized trust, trust in institutions, trust in science, and political preferences.

4.4.1. Generalized trust, trust in institutions, and trust in science

Evidence on previous pandemics offers some insights into the conditions and factors that determine their effect on trust. Aassve et al. (2021) find that the Spanish Flu had permanent negative consequences for individuals' generalized trust. The authors use data from the General Social Survey on the descendants of those who experienced that pandemic and identify the effect of the pandemic using a difference-in-differences approach comparing levels of generalized trust before and after it. A 1 death per thousand increase in influenza mortality is associated with a 1.4 percentage point decrease in trust. To investigate a possible mechanism, the authors compare the effect between countries that were involved in World War I and countries that were neutral. A lower salience of the war in neutral countries might have led their citizens to internalize more the severity of the epidemic, thus affecting attitudes more strongly. In fact, a 1 death per thousand increase in influenza mortality in neutral countries resulted in a 2.2 percentage point decrease in trust.

Aksoy et al. (2024) and Aksoy et al. (2021) have looked at the persistent effect of experiencing a pandemic during the impressionable years on confidence in various types of institutions and on trust in science and scientists, finding that pandemics experienced during the impressionable years erode trust. Using the empirical strategy of Giuliano and Spilimbergo (2023b), they link individual preferences of people in different countries to their pandemic experiences growing up, controlling for country, age and year of interview fixed effects. The effect on trust in government is driven mostly by democracies (as there is no expectation of responsiveness in autocracies) and is stronger for weak governments, aligning with the notion that governments less capable of combating the pandemic tend to experience a greater decline in trust. The negative consequences of epidemics on political trust are reflected in differences in political behavior, reducing the likelihood of voting in national elections, and increasing participation in demonstrations. An individual with the highest exposure to a pandemic has, on average, 5.1 percentage points less confidence in the national government than those with no exposure and the effect is long-term. Since exposure to epidemics during the impressionable years is associated with less future employment and lower future income, the results suggest a potential mediating effect through worse economic outcomes. As for the effect of past pandemics on trust in science and scientists, the authors find that whereas one's view on science does not change, trust in scientists themselves and the benefit of their work is lower. An individual with the highest exposure to epidemics is, on average, 11 percentage points less likely than those with no exposure to trust scientists, with results driven by people with little or no science education. The change in beliefs has consequences, being associated with negative views toward vaccines and thus lower rates of child vaccination.

The results on more recent pandemics are more nuanced and depend on the perceived government response. Fluckiger et al. (2019) study the effect of exposure to the Ebola epidemic in West Africa on trust in institutions. The empirical strategy relies on a difference-in-differences estimation based on pre- and post-epidemic Afrobarometer surveys, addressing endogeneity with a 2SLS approach in which observed Ebola prevalence is instrumented with simulated prevalence. The authors find that exposure to the Ebola epidemic in West Africa enhanced trust in government institutions, including parliament, the president, and the police, particularly when the government responded robustly. The effect size is large: an increase in average Ebola prevalence of one case per 100,000 people raises post-epidemic trust in all three government entities by around 0.15 standard deviations compared to the pre-epidemic era. Given the recency of the epidemic, the estimates are only calculated in the short-run and it is not yet known if there will be a permanent effect.

Bol et al. (2021) surveyed citizens of 15 European countries right before and right after the lockdown during the COVID-19 pandemic. They found that COVID-19–related lockdowns were associated with a three percent increase in trust in government in the short term. This effect was not related to political preferences. The lockdown increased satisfaction with democracy and trust in government by about three percent and support for the party of the prime minister/president by about four percent. The authors' interpretation is a retrospective performance evaluation, according to which citizens understood that strict social confinement measures were necessary and increased their support for those responsible for this policy.

4.4.2. Political preferences and preferences for redistribution

There is less evidence on the effect of pandemics on political preferences and preferences for redistribution. Most papers rely on the use of instrumental variables as a source of identification. Campante et al. (2024) examine the impact of pandemic threats on political preferences and voter turnout by using the Ebola scare as a natural experiment in the United States during 2014. Ebola concerns are measured by web searches and Twitter activity, and the authors use the timing and geographical variation of diagnosed cases in the US in Dallas (Texas), Akron (Ohio) and New York City as a source of identification.³⁵ A one standard deviation increase in Ebola concerns decreased the Democratic vote share by four percentage points in the House elections and by three and four percentage points in the Senate and gubernatorial elections. A one standard deviation increase in Ebola searches decreased voter turnout by about 1.4 percentage points. In terms of attitudes reported by voters, the authors find more negative views about immigrants.

Baccini et al. (2021) study the effect of the COVID-19 pandemic on the change in county-level voting for Trump between 2016 and 2020. To address endogeneity or omitted variables, the authors include many COVID-19 related controls as well as demographic and socioeconomic variables. Additionally, they employ the share of workers in meat-processing factories as an instrument. The rationale behind the instrument is that meat-processing plants became pandemic hotbeds due to high humidity and the difficulty of maintaining physical distancing in the workplace environment. They find that COVID-19 cases negatively affected Trump's vote shares in 2020, particularly in urban counties, in states without stay-at-home orders, in swing states, and in states that Trump won in 2016. Their counterfactual analysis suggests that, if cases of COVID had been lower than five percent, Trump would have likely won reelection. There was also an effect on mobilization that helped Biden. A county with 100 more COVID cases per 10,000 people reduced its Trump vote share from 2016 to 2020 by an additional 0.12 percentage points on average.

³⁵ The authors show that distance to these places was a strong predictor of Ebola concerns.

Only one paper (Rees-Jones et al., 2022) looks at the effect of Covid-19 on support for unemployment insurance and government-provided healthcare in the United States. The authors use data on attitudes toward safety nets from 2,516 respondents interviewed in June 2020 as part of the Understanding American Study (UAS), an online panel of America households. Experience with COVID-19 is measured using the impact of COVID-19 in the counties of residence together with subjective answers about the pandemic, collected in April 2020. The authors can also control for pre-pandemic political ideology, attitudes toward safety nets, and demographic controls. To study the persistence of the effects, they re-posed questions eliciting support for long-term safety-nets. Respondents living in a county with a one standard deviation higher number of COVID-19 deaths are 8.4 percentage points more likely to support long-term unemployment insurance expansion and 9.2 percentage points more likely to support long-term expansions to government-provided healthcare.

Overall, the heterogeneity of results across different contexts can be explained by the idea that the trajectory a society takes after a major disease outbreak appears to depend on the prevailing social and economic context as well as on the government's response to the crisis. Furthermore, the difference between studies based on current versus past pandemics could be seen as an indication that the short-term and long-term effects may differ. Additionally, only a few studies have looked at whether the effects vary by the life period of exposure.

4.5. Natural disasters

Natural disasters such as earthquakes, tsunamis, floods, hurricanes, monsoons, droughts, and heat waves killed over 30 thousand people, affected 185 million people, and caused over \$220 billion of damage in 2022; the death toll in 2022 was about twice the yearly average for the previous 20 years.³⁶ The literature on the effects of natural disasters on preferences and beliefs is still in its infancy but growing, for several reasons. First, natural shocks are exogenous and precisely dated, attenuating endogeneity concerns. Second, the availability of new databases allows for greater accuracy in identifying who was affected; for instance, it is possible to track the path of a cyclone in a very detailed way. Third, the range of questions that can be studied is very broad, including estimating political preferences, trust in institutions, cooperation, and risk aversion.

4.5.1. Trust in institutions and political preferences

There is no consensus on the effects of natural disasters on trust in institutions and political preferences. The results usually depend on the government's response to the disaster. On one hand, exposure to natural disasters can decrease support for the government, as people tend to blame it and thus develop negative attitudes toward it. On the other hand, such exposure can increase support for authorities due to the aid they provide. The literature has found evidence for both channels. Achen and Bartels (2017) use historical examples from the US to argue that voters penalize the government for natural disasters, including droughts, floods, and even shark attacks. They use state-level voting data from 27 presidential elections (spanning 1896 through 2000) and study the effect of drought on the incumbent party vote, controlling for the incumbent party's previous vote share in the same state, the percentage of the population living in rural areas, and a dummy variable for southern states.

Lazarev et al. (2014) study the effect of the 2010 forest fires on support for the government in Russia. They use a survey of nearly 800 respondents across 70 randomly selected villages. They find higher support

³⁶ These numbers refer to the 387 natural hazards and disasters worldwide recorded in "2022 Disasters in Numbers" (reliefweb.int).

for the government in villages that suffered from the fires, which the authors attribute to the government's aid efforts. Healy and Malhotra (2009), using data on voting behavior in presidential elections, disaster damage, and federal spending for over 300 counties in the US between 1988 and 2004, find that voters reward the incumbent presidential party for delivering disaster relief (a 1 percent increase in relief spending increases the incumbent party vote share by 0.0045 percentage points), whereas disaster preparedness spending does not have a similar effect.

Albrecht (2017) uses a quasi-experimental quantitative design, where respondents are divided into a treatment and control group based on the time of the interview, to examine 10 cases of natural disasters in Europe. The author finds that individuals' political attitudes and trust in institutions were largely unaffected.

4.5.2. Cooperation and risk attitudes

Other studies have looked at the effect of natural disasters on cooperation and risk attitudes. Using an experimental approach, Whitt and Wilson (2007) focus on predominantly African American evacuees from New Orleans who were relocated to Houston-area shelters in the weeks immediately after Hurricane Katrina. 352 evacuees participated on adaptations of dictator and public goods experiments in small groups across six different Houston evacuation shelters. They find strong evidence of group cooperation. Cassar et al. (2017) conduct a series of experiments in rural Thailand and find that the 2004 tsunami led to long-lasting increases in risk aversion (20 percent more), in prosocial behavior (18 percent more trusting), and in impatience (20 percent more). More generally, studies usually find an increase in risk aversion after a disaster. Cameron and Shah (2015) show that people previously exposed to floods and earthquakes in Indonesia exhibit greater risk aversion, which is driven by a change in beliefs about the likelihood that these shocks can occur and how severe they can be. Said et al. (2015) match surveys and behavioral field experiments and find that people who experienced flooding in Pakistani villages in 2010 do exhibit higher risk aversion but with significant individual variation, with personal experience of a flood generating a mitigating effect. Chantarat et al. (2019) study the impacts of the 2011 mega-flood on preferences, subjective expectations, and behavior among rice-farming households in Cambodia, finding an increase in risk aversion and altruism, but also less impatience and greater trust in friends and local government. The disaster also affected subjective expectations of future floods.

Not all studies find that the experience of a natural disaster increases risk aversion. Eckel et al. (2009) investigate risk preferences amongst hurricane Katrina evacuees in an experimental setting, simulating gambling. They find that individuals (especially women) increased risk-seeking behavior immediately after Hurricane Katrina, possibly because of mental stress. Brown et al. (2018) study the effect of the 2012 Cyclone Evan on Fijian households' risk attitudes and subjective expectations about the likelihood and severity of natural disasters. They use the path of the cyclone to identify treated and non-treated individuals. They find that the effect of the cyclone shock is mediated by ethnicity. After being struck by Cyclone Evan, Indian-Fijian respondents increased future expectations of losses but iTaukei respondents did not change their expectations about future disaster risk nor their risk attitudes.³⁷ The authors explain this difference by pointing out the "collectivist" nature of the iTaukei social structure with its consequent high level of risk sharing.

Broadly speaking, the literature on natural disasters is similar to that on pandemics in that the effects usually depend on social and individual characteristics and on how successfully the government addresses the

³⁷ iTaukei estimate that they will incur \$4,381 in losses and damages to natural disasters in each of the next 20 years, on average; for Indo-Fijians, this figure is \$15,044" (Brown et al., 2018).

disaster itself. This calls for more analysis of the psychological mechanisms by which a natural disaster affects preferences and beliefs. Most of the studies have been limited to the short-term effects and do not study whether the specific period of life in which the disaster is experienced matters.

Conclusions

The literature on shocks and beliefs is large and growing, due to a combination of theoretical and empirical advances in the last 30 years. On the theoretical side, the increasing recognition that beliefs and attitudes are key determinants of micro- and macroeconomic outcomes has fueled demand for understanding their determinants. On the empirical side, the growing availability of surveys covering many countries for a long time has made it possible to study the evolution of beliefs; in particular, the effects of shocks on beliefs. Moreover, the attention to identification with the attendant econometric techniques has sharpened the analysis, moving it away from association towards more causal interpretation. Finally, collaboration with other disciplines, including social psychology and sociology, has brought new insights.

Because the topic of attitude and belief formation is so large, we have focused this review according to certain criteria. Following the literature, we focus mostly (but not exclusively) on different forms of trust, political preferences and preferences for redistribution, and risk preferences. These preferences have been extensively studied because they have been found to have deep implications for a variety of outcomes. We review the evidence of the effect of aggregate shocks on preferences and beliefs, outlining (a) insights from other disciplines, (b) theoretical reasons why aggregate shocks could have a permanent effect on preferences and beliefs, (c) whether the period of life in which the shock is experienced matters, and (d) how long the effects last. Table 1 summarizes the main results.

A few conclusions from this literature are clear and consistent across the papers reviewed. First, all evidence points consistently to the fact that shocks do indeed affect beliefs and preferences. This was not a foregone conclusion; economists had long assumed that beliefs and preferences are deeply rooted and not affected by shocks.

Second, the timing of the shock matters. Individuals evolve over time and, consistent with psychology, there is evidence of a “life cycle” of the effect of shocks on beliefs. Social psychology had already studied the importance of a critical age, but its relevance for economic beliefs has now also been confirmed and clarified. Several theories are consistent with this finding and further work will clarify further. The fact that some generations are “marked” by a collective shock is known by sociologists, historians, and marketing specialists, but its implications are less studied in economics.

Third, the effects of shocks on beliefs are long-lasting. This, too, was not a foregone conclusion but is confirmed across many studies. Several historical papers have shown that past events—even very old ones—have had permanent effects on individuals or entire populations. This “long-term scarring” increases the costs of deep recessions, beyond the pure economic costs.

Fourth, negative aggregate economic shocks generally move attitudes and beliefs to the right in the political spectrum. This finding is perhaps surprising because, a priori, a negative shock could elicit demands for protection, redistribution, and a bigger role of the state—typically left-wing policies. But the opposite happens. We review the potential reasons, including an increase in materialism; increased insecurity of one’s life making people more individualistic (Inglehart, 1990); scapegoating, as blaming minorities or immigrants is

often part of the rhetoric of right-wing parties, especially extreme ones (Bursztyn et al., 2022, 2023); and identity politics, with negative shocks reinforcing group identity at the cost of class identification and thus resulting in higher support for nationalist economic policies and for reducing redistribution, resulting in turn in higher support for a right-leaning party (Shayo, 2009; Bonomi et al., 2021; Grossman and Helpman, 2021).

Fifth, adverse non-economic aggregate shocks lead to a movement toward the political right, although there is heterogeneity of results across different contexts, depending on the government response to the crisis. This is particularly the case for natural disasters, where the framing of communication and the interaction with previous beliefs shape the disaster's own effects on shocks on beliefs. There is less systematic evidence concerning the time of life in which a non-economic aggregate shock is experienced, with the exception of pandemics, which have the strongest effect if experienced when young.

Sixth, a big question about the effects of experiences on preferences and beliefs is not only their size but also whether they translate into actual behavior. Current literature indicates that this is usually the case. Experiencing a recession, especially when young, is associated with a lower probability of voting for a Democratic president in the United States. A one standard deviation increase in the measure of shock is associated with a 0.017 standard deviation decline in voting for a Democratic president. The effect size is similar to that of years of education (for which the standardized beta is 0.011) and of being unemployed (for which the standardized beta is 0.019) (Giuliano and Spilimbergo, 2023b). Similar results hold across countries (the standardized beta coefficient is 0.021, double the effect of being unemployed (-0.012) and similar to the effect of being a woman (0.029) or of being married (0.024)).³⁸

Economic shocks affect financial behavior (see Malmendier (2021a, 2021b) for reviews): people who lived through periods of high stock or bond market returns are more likely to participate in those markets. A 5 percentage point increase in experienced real stock returns is associated with an approximately 10 percentage point increase in the probability of stock market participation and, for stock market participants, an approximately 7 percentage point increase in the percentage of assets allocated to stocks (Malmendier and Nagel, 2011). Macroeconomic experiences also have an impact on managers: CEOs who grew up during the Great Depression rely less on external financing (Malmendier and Tate, 2005) or choose a more conservative capital structure with less leverage (Graham and Narasimhan, 2004).

Experiencing high inflation is correlated with fixed-rate mortgage positions, as real estate investments can better protect against inflation: a 1 percentage point increase in experienced inflation increases a borrower's willingness to pay for a fixed-rate mortgage, with a loss of \$8,000–\$16,000, for the year 2000 (Malmendier and Nagel, 2016; Botsch and Malmendier, 2020).³⁹ Experienced inflation turns out to affect also the behavior of experts who should largely base their decisions on hard information. Malmendier et al. (2021) study the behavior of the members of the Federal Open Market Committee (FOMC) in the United States since

³⁸ Cross-country evidence also associates recessions with voting for right-wing anti-system parties among European countries during the Great Depression (De Bromhead et al., 2013) and during the 2009–2010 financial crisis (Algan et al., 2017). In the first case, a one standard deviation decline in growth increases the fascist vote share by 1.75 percent. For European countries, a one-percentage-point increase in unemployment is associated with a one-percentage-point increase in populist vote.

³⁹ This evidence also holds outside the US, as people living in countries that experienced episodes of high inflation indicate that one of the main reasons to buy a house is to protect against inflation. Even immigrants in the United States, all facing the common US housing market, have different levels of homeownership because of their inflation histories in their countries of origin (Malmendier and Steiny, 2020).

1951 and find that a personal experience of high inflation matters for their inflation forecasts, their votes during FOMC meetings, and the tone of their statements. A one standard deviation increase in the experienced-based inflation forecast implies a hawkish dissent of about one-third and lowers the probability of a dovish dissent by about one-third.

The growing evidence gathered so far and reviewed in this survey represents a first step in a very promising research agenda. First, a life-cycle theory of belief formation should develop which encompasses the various mechanisms the literature has highlighted. This framework could then be used in a systematic way in macro and political economy models. Political economy models could incorporate heterogeneous generations into standard models of voting and decisions. Large political swings in public opinion, including party realignments, could also be linked to generational effects. While economic theory provides good frameworks on how different life periods could be more relevant for the formation of preferences and beliefs, we still lack a theoretical framework for explaining when we should expect to see one type of response versus another. A broad framework that could consider the ranges of possible responses to a shock and the conditions under which certain types of response can be expected would help to create a roadmap synthesizing the different findings and conjectures.

A life cycle of belief formation calls for stricter collaboration with other disciplines, including social psychology and neuroscience. Using other research methodologies, including experiments, to understand the precise mechanisms would also strengthen the conclusions.

Another interesting research topic is how shocks could alter policies via their effects on beliefs. Interesting evidence in this regard is provided by Mian et al. (2014), who look at the effect of economic crises on political polarization and fractionalization. The authors argue that by altering beliefs and making a country more politically polarized, the shock's effects may last longer due to its impact on the type of macro-responses that a country implements after a crisis. For example, higher post-shock levels of polarization and fractionalization could make it harder to implement the major financial reforms that could help the country recover from the shock.

Finally, the literature has focused on aggregate shocks because they are easier to study than individual-specific shocks. Aggregate shocks can mitigate issues of endogeneity related to the relationship between shocks and preferences and beliefs. Because suffering from a personal economic shock is not random, looking at the relationship between shocks and preferences and beliefs at the individual level could mask issues of omitted variables-unobservable characteristics correlated to both the shock and the preferences and beliefs-and reverse causality. However, looking at the effects of individual-level shocks could produce valuable evidence about the effects of aggregate shocks. For example, knowing how quasi-random shocks to earnings or wealth affect beliefs and preferences would be at least suggestive about the effects of aggregate shocks such as recessions. Similarly, individual-level shocks could help us better understand the mechanisms behind changes in beliefs, especially when there is longitudinal evidence.

Margalit (2019) provides relevant evidence and reviews the literature on how individuals' political preferences change in response to changes in personal circumstances associated with a shock and whether the effect could persist. He concludes that a shock can alter political preferences in two ways. First, it can change individual economic circumstances, which in turn can change political preferences (Meltzer and Richard, 1981). If the shock's effect on an individual's economic condition is only temporary, political

preferences should not change in the short run. But if the effect is long-lasting,⁴⁰ the change in preferences and beliefs might be permanent. Second, a learning process, which induces people to update their beliefs, could permanently alter one's political positions. Deeply rooted preferences, however, should not change as a result of changes in economic circumstances.

The effect of a negative shock on political preferences could go in both directions. It is possible that the need for redistribution will induce people to vote for left-leaning parties (Hibbs, 1977; Korpi, 1983), but it is also possible that people will embrace anti-establishment and more far-right parties (Golder, 2016; Hobolt and Tilley, 2016), often associated with a resurrection of traditional values or with prejudices against groups, such as immigrants, considered responsible for the economic crisis (see Guriev and Papaioannou (2022) for a review). In terms of political participation, voters could become less interested in politics (Schlozman and Verba, 1979) or simply vote against the incumbent, independently of their ideology (Anderson 2007).⁴¹

We refer the reader to Margalit's (2019) comprehensive review for single studies, emphasizing here only the main conclusions: experiencing personal negative shocks (mostly job losses) increases support for redistribution and reduces trust in the political system in the short term. In terms of voting behavior, voters can move either left or right; little is known about the conditions under which one response or the other could prevail and about the long-term effects of individual shocks on political preferences. The effects of income shocks other than job losses are mixed.⁴²

On consumption decisions, Malmendier and Shen (2020) study how personal, local, or national experiences of unemployment could influence long-term consumption, a phenomenon they call "scarred consumption." Using data from the Panel Study of Income Dynamics, they find that consumption spending is significantly and permanently lower for people who have experienced their own or someone else's unemployment, with the largest effect coming from a personal experience.

In conclusion, the literature on shocks and beliefs is relatively young but has already delivered clear (and sometimes unexpected) results. Understanding the effect of crises and historical experiences on political and economic beliefs is crucial to understand belief formation, but also to inform policy debates on the effects of and best responses to different types of crises.

⁴⁰ See von Wachter (2020) for a review.

⁴¹ Voters tend to punish or reward the incumbent when affected by a shock. For different case studies, see Margalit (2019). In terms of turnout, there are two conflicting effects. On the one hand, people experiencing a negative shock may lose interest in politics. At the same time, participation could increase because people decide to support parties that represent them better or could increase because people decide to vote against the incumbent. The review of the literature in Margalit (2019) indicates that the former effect dominates: adverse economic shocks decrease turnout, while the response to positive economic shocks appears to depend on the source. Income shocks resulting from eligibility for new governmental transfers increase voter mobilization, while those resulting from exogenous factors depress turnout (see Margalit (2019) for references).

⁴² Although most of the evidence concerns the effects of negative shocks, a few papers study the effect of positive shocks, mostly related to winning a lottery as a type of random shock. Most of these studies find that lottery winners experienced a shift in preferences in favor of more conservative parties (see Margalit (2019)).

Table 1: Overview of papers on shocks and preferences and beliefs

	Authors	Shock	Preferences/beliefs	Main finding	Setting	Life period	Persistent/ contemporaneous effect
1.	Giuliano and Spilimbergo (2023b)	Recessions	Political preferences and preferences for redistribution	Political preferences to the right, lower preferences for redistribution	General Social Survey 1972-2020, International Values Survey 1980-2020, 105 countries	Impressionable years	Persistent
2.	Carreri and Teso (2023)	Recessions	Preferences for redistribution	Lower preferences for redistribution	House and Senate roll call data for Congresses 76-113	Impressionable years	Persistent
3.	Algan et al. (2017)	Unemployment during 2000-2017, focus on 2009-2010 financial crisis	Voting for far-right and populist parties, trust in national, European political institutions, politicians, legal system and generalized trust	Increase in voting for far-right populist, decline in trust in parliament, politicians and the legal system. No effect on generalized trust	European Social Survey 2000-2014, 183 NUTS-2 regions, 24 countries	No different life-time periods studied	Contemporaneous
4.	De Bromhead et al. (2013)	Great Depression	Voting for right-wing anti-system parties	Increase in right-wing political extremism	171 elections in 28 countries between 1919-1939	No different life-time periods studied	Contemporaneous
5.	Funke et al. (2016)	Financial crises 1870-2014	Voting for extreme right-wing parties	Increase in right-wing political extremism	180 elections in 20 countries, 1870-2014	No different life-time periods studied	Contemporaneous
6.	Abramitzky et al. (2023)	Israel financial crisis: 1989-1996	Voting for the political right, support for liberalized labor markets	Move to the political right	Israeli electoral data from 1977-2019	Impressionable-years	Contemporaneous, persistent for younger cohorts

	Authors	Shock	Preferences/beliefs	Main finding	Setting	Life period	Persistent/ contemporaneous effect
7.	Cotofan et al. (2024)	Regional income	In-group/outgroup preferences	Lower openness to immigrants	General Social Survey 1972-2018	Impressionable years	Persistent effect
8.	Bietenbeck et al. (2023)	Recession	Pro-social preferences	Lower pro-social preferences (altruism, trust, positive and negative reciprocity)	Global Preference survey 2012, 75 countries	Impressionable years	Persistent effect
9.	Stevenson and Wolfers (2011)	Unemployment rates	Confidence in banks, Congress, major companies, big business, the judicial system	US time series: decline in confidence in banks, Congress, major companies and business executives; US state level unemployment: decline in trust in big business and major companies; cross-country: decline in confidence in financial institutions, the national government and the judicial system	Gallup trust in institutions data 1972-2010, Gallup Trust and Honesty data 1976-2010, General Social Survey: 1972-2008, Gallup World Poll 2006-2010, 155 countries	No different life-time periods studied	Contemporaneous
10.	Algan et al. (2017)	2009-2010 financial crisis	Trust in institutions and generalized trust	Decrease in trust in institutions, no	European Social Survey 2000-2014; parliamentary and	No life-time period studied	Contemporaneous

	Authors	Shock	Preferences/beliefs	Main finding	Setting	Life period	Persistent/ contemporaneous effect
				effect on generalized trust	presidential elections 2000-2017		
11.	Ananyev and Guriev (2019)	2009-2010 Russian financial crisis	Generalized trust	Decline in generalized trust	Public Opinion Foundation Survey in 2008-2009 for 66 Russian regions	No different life-time periods studied	Contemporaneous
12.	Malmendier and Nagel (2011)	Recessions	Risk-preferences	Increase in risk preferences: i) the willingness to take risks; ii) stock market participation, iii) bond market participation and iv) proportion of liquid assets invested in stocks.	Survey of Consumer Finances, 1960-2007	Learning from experience	Persistent effect, recent returns stronger effects especially for younger generations
13.	D'Acunto et al. (2021a)	Inflation experiences	Beliefs about inflation	Formation of inflation beliefs are a function of frequency CPI	Kilts Nielsen Consumer Panel, 2015-2016	Learning from experience	Contemporaneous
14.	Malmendier and Nagel (2016)	Inflation experiences	Beliefs about inflation	Beliefs about inflation are a function of inflation experiences	Michigan Survey of Consumers, 1953-2009	Learning from experience	Persistent effect, stronger effects for younger generations
15.	D'Acunto et al. (2021b)	Inflation experiences	Beliefs about inflation	Gender differences in beliefs about inflation are a function of	Kilts-Nielsen Consumer Panel and Chicago Booth Expectations and Attitudes Survey,	Learning from experience	Contemporaneous

	Authors	Shock	Preferences/beliefs	Main finding	Setting	Life period	Persistent/ contemporaneous effect
				inflation experiences	2015-2016, New York Fed Survey of Consumer Expectations, 2013-2018		
16.	Autor et al. (2020)	Chinese import penetration	Polarized media, ideology of campaign contributors, GOP in Congress, presidential vote share	Import shocks from China associated with a right shift in media-viewing, greater polarization in ideological orientation of campaign contributors, increased probability of electing a Republican to Congress, increase in Republican vote share between 2000-2016	Community zones and congressional district data, 2000-2016. Nielsen Local TV View, 2004-2016. Database on Ideology, Money in Politics, and Elections, 2002-2016	No different life-time periods studied	Variation at the community zone level in import penetration
17.	Colantone and Stanig (2018c)	Trade shocks	Voting for nationalist far-right parties	Increase in voting for nationalist, far-right parties	District level data for 15 Western European countries 1985-2006, European Social Survey 2002-2008	No different life-time periods studied	Contemporaneous

	Authors	Shock	Preferences/beliefs	Main finding	Setting	Life period	Persistent/ contemporaneous effect
18.	Feigenbaum and Hall (2015)	Chinese import competition	Voting for the right, protectionism or foreign trade bills	Incumbents vote more to the left, toward more protectionism on foreign trade bills.	Roll-call behavior and electoral outcomes in the US House, 1990-2010	No different life-time periods studied	Contemporaneous
19.	Rodrik (2021)	Trade shocks	Voting for nationalist far-right parties in various	Increase in voting for right-wing parties	Review articles from different countries	No different life-time periods studied	Contemporaneous
20.	Tabellini and Magistretti (forthcoming)	Trade shocks	Preferences toward democracy	Economic integration with democracies increases preferences for democracy	International Values Survey, 1990-2020, 74 countries	Impressionable years	Persistent effect
21.	Ballard- Rosa et al. (2021)	Chinese import penetration	Authoritarian preferences	Import shocks from China implies stronger authoritarian preferences	Newly collected survey on 1,193 UK respondents in 2017	No different life-time periods studied	Contemporaneous
22.	Colantone and Stanig (2018b)	Chinese import penetration	Preferences for democracy, a liberal democracy authoritarian values	Import shocks from China implies lower support for democracy and a liberal democracy but have no effects on authoritarian preferences	European Values Survey 1998-2008	No different life-time periods studied	Contemporaneous
23.	Rodrik (2021)	Migration shocks	Voting for nationalist far-right parties in various	Increase in voting for right-wing parties	Review articles from different countries	No different life-time periods studied	Contemporaneous

	Authors	Shock	Preferences/beliefs	Main finding	Setting	Life period	Persistent/ contemporaneous effect
24.	Tabellini (2020)	Age of Mass Migration 1910-1930	Voting for conservative representative	Increase in voting for conservative representative	Increase in conservative voting for 1910-1930	No different life-time periods studied	Contemporaneous
25.	Alesina and Tabellini (2024)	Migration shocks	Natives backlash, support for anti-immigrant and populist parties, preferences for redistribution	Immigration triggers natives backlash, increases support for anti-immigrant and populist parties, and lower preferences for redistribution	Review articles	No different life-time periods studied	Contemporaneous and long-term effects
26.	Alesina et al. (2021)	Migration shocks	Preferences for redistribution	Immigration lower preferences for redistribution	16 European countries from 1990-2010.	No different life-time periods studied	Contemporaneous effect
27.	Giuliano and Tabellini (2023)	Age of Mass Migration	Preferences for redistribution and political preferences	Immigration increases preferences for redistribution and voting for the democratic parties	Political ideology and preferences for redistribution, 2006-2020	No different life-time periods studied	Long-term effect
28.	Pfütze (2012)	International migration	Probability of a party in opposition to the former state party PRI in Mexico	Increase in the probability of an opposition party victory	Municipal election for the 2000-2002 electoral cycle	No life-time periods studied	Contemporaneous-effect
29.	Barsbai et al. (2017)	Migration after the 1998 Russian crisis	Political support for democratic and liberal parties	Decline in Communist vote in the elections of 2009	Change in the share of Communist votes in the parliamentary election between 1998 and 2009	No life-time periods studied	Contemporaneous-effect

	Authors	Shock	Preferences/beliefs	Main finding	Setting	Life period	Persistent/ contemporaneous effect
30.	Bauer et al. (2016)	War	Social cooperation, 16 studies	Conflicts in different countries	War leads to cooperation and pro-social behavior	No life-time periods studied, with few exceptions	Contemporaneous or medium term effect
31.	Fiedler and Rohles (2021)	War	Generalized and political trust, in-group preferences	Conflict in different countries	Decline in trust and political trust, increase in in-group cooperation	No life-time periods studied	Contemporaneous effect or medium term effect
32.	Gneezy and Fessler (2012)	War	Cooperation	2006 Israel-Hezbollah conflict	Living under an external threat increases the willingness to reward cooperation and punish non-cooperators	Stronger effects on senior citizens	Contemporaneous effect
33.	Bauer et al. (2014)	War	In-group preferences	2008 Georgia conflict with Russia over Ossetia, 1991-2002 civil war in Sierra Leone	War promotes in-group preferences	Effects stronger between the age of 7 and 20	Contemporaneous effect
34.	Rohner et al. (2013)	War	In-group ties	Lord's Resistance Army insurgency (1986–2006) in Uganda	War promotes in-group ties	No life-time periods studied	Contemporaneous effect
35.	Hadzic et al. (2020)	War	Ethnic voting	1995 Bosnia	War increases ethnic vote share, increase in-group trust	No life-time periods studied	Contemporaneous effect
36.	Gehring (2022)	War	European identity and trust in institutions	Russian invasion of Ukraine	War increases European identity	Results stronger for older people	Contemporaneous effect

	Authors	Shock	Preferences/beliefs	Main finding	Setting	Life period	Persistent/ contemporaneous effect
					and trust in European institutions		
37.	De Luca and Verpoorten (2015)	War	Civic and political participation	Lord's Resistance Army insurgency (1986–2006) in Uganda	Increase in civic participation but no effect on electoral turnout	No life-time periods studied	Contemporaneous effect
38.	Cassar et al. (2013)	War	Political attitudes, Membership in groups, willingness to engage in impersonal exchange, collective action and political participation	Civil war in Tajikistan (1992-1997)	War hampers trust within localities, decreases willingness to engage in impersonal exchange, reinforces kinship-based norms of morality	No life-time periods studied	Effect more than a decade after the end of the civil war
39.	Gilligan et al. (2014)	War	Altruistic giving, public good contributions, investment in trust-based transactions, and willingness to reciprocate trust-based investment	Nepalese civil war (1996-2006)	Increase in altruistic giving, public good contributions, investment in trust-based transactions, and willingness to reciprocate trust-based investment	No life-time periods studied	Short-term effects
40.	Conzo and Salustri (2019)	War	Generalized trust	Exposure to World War II during childhood	Decline in generalized trust in 13 European countries	Early childhood	Long term effects

	Authors	Shock	Preferences/beliefs	Main finding	Setting	Life period	Persistent/ contemporaneous effect
41.	Adhvaryu and Fenske (2023)	War	Political preferences	17 African countries with conflict between 1946 and 2005	No effect on political engagement, Afrobarometer 2005	Age 0-14	Long-term effects
42.	Besley and Reynal-Querol (2014)	War	Outgroup trust	18 African countries with conflict between 1400 and 1700	Lower outgroup trust	No lifetime period studied	Long-term effects
43.	Tur-Prats and Valencia Caicedo (2020)	War	Trust and voting behavior	Spanish Sociological research center 1998-2015, voting data from 1977-2016	Lower trust and trust in institutions associated with the Civil War if a person was exposed to the Spanish Civil War	No life-time periods studied	Long-term effects
44.	Fontana et al. (2023)	War	Voting behavior	Italian Civil War and Nazi occupation of Italy, 1943-45	In places where Nazi occupation was higher, the vote share for the Communist party was higher	No life-time periods studied	Long-term effects
45.	Berman et al. (2023)	War	Political preferences	Gubernatorial elections 1934, 1938, 1942, presidential election 1928-1972	Conservative shift in presidential and gubernatorial elections as a result of Ellwood bombardment in California by a Japanese submarine in 1942.	No life-time period studied	Long-term effects
46.	Voors et al. (2012)	War	Risk preferences	Civil war in Burundi, 1993-2003	Increase in risk seeking	No life-time period studied	Medium-term effects

	Authors	Shock	Preferences/beliefs	Main finding	Setting	Life period	Persistent/ contemporaneous effect
47.	Callen et al. (2014)	War	Risk preferences	Afghanistan	Increase in risk seeking	No life-time period studied	Short-term effects
48.	Akay et al. (2020)	Terrorist attacks	Political preferences	Data on political preferences for Germany, the UK and Switzerland, 1994-2013. 70,000 terrorist events from the Global Terrorist Database	More support for conservative parties	No life-time period studied	Short-term effects
49.	Berrebi and Klor (2008)	Terrorist attacks	Political preferences	Polling station data on vote share for different political parties and terror attacks in Israel between 1984 and 2004	Increase in support for right-wing parties	No life-time periods studied	Short-term effects
50.	Gould and Klor (2010)	Terrorist attacks	Political preferences	Israel National Election Studies, 1988-2006	Increase in support for the right wing block	No life-time periods studied	Short-term effects
51.	Getmansky and Zeitzoff (2014)	Terrorist attacks	Political preferences	Right-wing bloc vote-share in Israel, 1999-2009	Increase in support for the right-wing block	No life-time periods studied	Short-term effects
52.	Kibris (2011)	Terrorist attacks	Political preferences	Electoral district level data, 1987-1995	Increase in support for the right-wing parties	No life-time periods studied	Short-term effects
53.	<u>Echebarria-Echabe and Fernández-Guede (2006)</u>	Terrorist attacks	Political preferences	Survey data before and after the March 2004 terrorist bombing in Madrid	Increase in support for right-wing parties and increase in racial prejudice	No life-time periods studied	Short-term effects

	Authors	Shock	Preferences/beliefs	Main finding	Setting	Life period	Persistent/ contemporaneous effect
					against Muslims but also Jews		
54.	Montalvo (2011)	Terrorist attacks	Political preferences	Terrorist bombing in Madrid before and after March 2004. Voting behavior of people living abroad, casting their votes before the terrorist attack and voters in Spain, casting their votes after the attack	Lower consensus for the incumbent conservative party	No life-time periods studied	Short-term effects
55.	Brouard et al. (2018)	Terrorist attacks	Political preferences	Survey from the “Policy Priority Barometer” and “Local Elections” projects, 2014- 2016	Terrorist attacks in Paris (2015) and Nice (2016) moved political preferences to the right	No life-time period studied	Short-term effects
56.	Finseraas and Listhaug (2013)	Terrorist attacks	Political preferences	European Social Survey 2008	Shift in conservative direction on the left- ring wing scale, but not precisely estimated	Not life-time period studied	Short-term effects
57.	Schüller (2015)	Terrorist attacks	Political preferences	German Socio- Economic Panel, 1999-2003	Weaker support intensity among left- wing, higher strength of support among the right wing	No life-time period studied	Short-term effects

	Authors	Shock	Preferences/beliefs	Main finding	Setting	Life period	Persistent/ contemporaneous effect
58.	Perrin and Smolek (2009)	Terrorist attacks	Trust in government	Wave III of the National Longitudinal Survey of Adolescent Health	Trust in all level of government increases after 9/11/2001	Sample of young adults	Short-term effects
59.	Aasve et al. (2021)	Pandemics	Generalized trust	General Social Survey, 1978-2018	Exposure to the Spanish Flu reduces generalized trust	No life-time periods studied	Long-term effects
60.	Aksoy et al. (2024)	Pandemics	Confidence in institutions	Gallup World Polls, 2006-2018, EM-DAT International Disasters Database.	Lower trust in institutions	Impressionable years	Long-term effects
61.	Aksoy et al. (2021)	Pandemics	Confidence in scientists	2018 Welcome Global Monitor, EM-DAT International Disasters Database.	Lower trust in science	Impressionable years	Long-term effects
62.	Fluckiger et al. (2019)	Pandemics	Trust in government	Afrobarometer, 2012-2015	Increase in trust in government	No life-time period studied	Short-term effects
63.	Bol et al. (2021)	Pandemics	Trust in government, satisfaction with democracy, vote for the party of the current Prime Minister/President	Web based survey for 15 European countries between March2-April 3 2020	Increased vote intentions for the party of the Prime Minister/President, increased trust and satisfaction with democracy	No life-time periods studied	Short-term effects

	Authors	Shock	Preferences/beliefs	Main finding	Setting	Life period	Persistent/ contemporaneous effect
64.	Campante et al. (2024)	Pandemics	Voting in congressional and gubernatorial elections	US, county level electoral data, 2002-2014	Lower vote share for Democrats	No life-time period studied	Short-term effects
65.	Baccini et al. (2021)	Pandemics	Voting for Trump between 2016-2020	Country level data on electoral outcomes	Covid19 negatively affect Trump's vote share	No life-time periods studied	Short-term effects
66.	Rees-Jones et al. (2022)	Pandemics	Support for unemployment insurance and government provided healthcare	Individual panel level data, June 2020, January-February 2021	Increased support for unemployment insurance and government provided healthcare	No life-time periods studied	Short-term, medium-term effects
67.	Achen and Bartels (2017)	Natural disasters	Voting for the incumbent	State level data for the US on droughts and floods, 1896-2000	Voters punished incumbent parties	No life-time period studied	Short-term effects
68.	Lazarev et al. (2014)	Natural disasters	Support for authorities	Survey questions collected by the authors	Exposure to the disaster increased support to the United Russia Party, the village head, the governor, Putin and Medvedev.	No life-time periods studied	Short-term effects
69.	Healy and Malhotra (2009)	Natural disasters	Voting for the incumbent	US county level electoral data, 1988-2004	Voters reward the incumbent presidential party for delivering disaster relief spending, but not for investing in disaster	No life-time period studied	Short-term effects

	Authors	Shock	Preferences/beliefs	Main finding	Setting	Life period	Persistent/ contemporaneous effect
					preparedness spending		
70.	Albrecht (2017)	Natural disasters	Political trust and satisfaction with the government	European Social Survey, 2001-2017	Political trust and satisfaction with the government are largely not affected	No life-time period studied	Short-term effects
71.	Whitt and Wilson (2007)	Natural disasters	Cooperation in a public goods game	Evacuees from New Orleans relocated to Houston-area shelters	Increase in good cooperation	No life-time periods studied	Short-term effects
72.	Cassar et al. (2017)	Natural disasters	Risk aversion, pro-social behavior and patience	Experiments in rural Thailand after the 2004 tsunami	Increase in risk aversion, pro-social behavior, trust and impatience	No life-time periods studied	Four years after the disaster
73.	Cameron and Shah (2015)	Natural disasters	Risk aversion	1,550 individuals from 120 rural villages in East Java, 2008	Individuals who experienced a flood or earthquake exhibit more risk aversion	No life-time periods studied	Short-term effects
74.	Said et al. (2015)	Natural disasters	Risk aversion	Experiment and survey data	Individuals who live in areas affected by the 2010 flood in Pakistan are more risk averse, but personal experience of a flood mitigate the effects.	No life-time periods studied	Short-term effects
75.	Chantarat et al. (2019)	Natural disasters	Risk aversion, altruism, impatience, trust of friend and local government	Survey conducted in 2014	Greater risk aversion and altruism, lower impatience and trust	No life-time periods studied	Short-term effects

	Authors	Shock	Preferences/beliefs	Main finding	Setting	Life period	Persistent/ contemporaneous effect
					of friends and local government		
76.	Eckel et al. (2009)	Natural disasters	Risk aversion	Survey of Katrina's evacuees, 2005, 2006	Women increase risk seeking behavior	No life-time periods studied	Short-term effects
77.	Brown et al. (2018)	Natural disasters	Risk aversion	259 Fijian households from 14 rural villages	Increased future expectations of losses, but results mediated by ethnicity	No life-time periods studied	Short-term effects

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PUBLICATIONS

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