UNIVERSITE DE LILLE

Ecole Doctorale SESAM: Sciences Economiques, Sociales, de l'Aménagement et du Management (ED N° 73)

Laboratoire: Lille Economie et Management (LEM-UMR 9221)

A thesis submitted for the degree of Doctor of Philosophy in Economics at the Faculty of Social Sciences and Economics, Université de Lille, France

Cotutorial thesis between the University of Lille and the University of Punjab

Essays on the effects of natural and geo-political shocks on decision-making and preferences

By

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December 12, 2019

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Pour obtenir le diplôme de doctorat
Spécialité : SCIENCES ECONOMIQUES
Préparée au sein de l'Université de Lille, France

Thèse en cotutelle entre l'Université de Lille et l'Université du Penjab

Essais sur les effets des chocs naturels et géopolitiques sur la prise de décision et les preferences

Présentée et soutenue par

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Thèse soutenue publiquement le 12/12/ 2019

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The views expressed in this dissertation are those of the author and do not necessarily represent those of the Université de Lille.

Acknowledgements

This thesis has been made possible by the support and generosity of many people. First, I would like to express deep gratitude to my supervisor Etienne Farvaque and co-supervisor Muhammad Azmat Hayat for wonderful support, continuous assistance and guidance during research work. I enormously appreciate their substantial comments, advices, rapid feedback, encouragement and patience. Etienne Farvaque has been very kind to me, and often going beyond the call of duty, during my stay at University of Lille. I extend appreciation to Laurent Weill for proficient research collaboration.

I would like to thank all the professors at LEM who have been incredibly supportive. I am indebted to participants in internal seminars and conferences for comments and suggestions that substantially improved the manuscript. I offer gratitude to Nicolas Debarsy, Manon Garrouste, Florence Huart, Hubert Jayet and Stephane Vigeant who spared time for meetings and feedback. In addition to faculty members, the administrative staff has been very helpful and deserves appreciation.

I have been very fortunate to have very good and kind PhD fellows at LEM. In particular, I am thankful to Celine, Franck, Hugo, Jamila, Jerome, Mamadou, Mehdi, Nicolas, Raphael, Rasha, Stephanie, Thomas, and Valentine for nice company and humour. Laura has helped me countless times and offered potential solutions to the problems. I would like to say thank to my friends Altaf, Amjad, Azaz, Fawad, Nasir, Sajjad and Younas for moral support.

It is difficult for me to articulate thanks into words to my family members for their support and affection. In particular, I owe to my mother, she has been a source of encouragement and inspiration throughout my life. I am grateful to my caring wife for matchless partnership.

Last but not the least: I gratefully acknowledge financial support from Quaid-i-Azam University, Islamabad Pakistan in preparation of this dissertation.

Dedications

To those who faced, and are experiencing the natural and geo-political shocks across the world. In particular, those who were exposed to British-India partition convulsion and to the destructive earthquake of 2005 in Pakistan.

Résumé

Cette thèse est composée de quatre chapitres analysant différents chocs naturels et géopolitiques et leurs conséquences au niveau individuel dans les pays développés et en développement. Le premier chapitre explore l'effet du tremblement de terre en 2005 au Pakistan sur la religiosité. Nous avons trouvé une relation positive entre l'expérience d'une catastrophe naturelle et la religiosité. Cette analyse corrobore l'hypothèse de refuge dans la religion, c'est-à-dire que les individus sont plus enclins à se tourner vers la pratique religieuse après l'expérience d'une catastrophe naturelle. Le deuxième chapitre analyse l'impact d'une expérience passée d'une catastrophe naturelle pendant l'enfance des banquiers centraux sur la capacité de réaction de ces mêmes banquiers sur une même catastrophe naturelle apparaissant pendant leurs mandats. Les résultats nous montrent que les déterminants standards impactent significativement la dynamique de l'inflation ainsi que l'impact de l'expérience passée d'une catastrophe naturelle. Plus précisément, les banquiers centraux qui ont été exposés durant leur enfance à une catastrophe naturelle tendent à gérer l'inflation différemment, et ce de façon plus conservatrice ; notons que les inondations font exception à cette relation. Le troisième chapitre examine comment le point de vue des individus sur le rôle de l'État à fournir une assurance chômage est influencé par le régime politique socialiste. Nous avons trouvé que les européens de l'Est qui ont suivi leur éducation sous un régime socialiste, comparés aux européens de l'Ouest dont l'éducation s'est déroulée après la chute du communisme ont plus tendance à soutenir le rôle du gouvernement dans l'apport d'une assurance chômage. Le quatrième et dernier chapitre étudie les conséquences éducatives de la partition de l'Inde Britannique sur différents groupes ethniques du Pakistan. Il en résulte que les cohortes nées pendant la partition ont une probabilité plus faible d'avoir une éducation de base comparées à leurs comparses. Ceci nous montre à quel point la partition a été un choc douloureux dans l'histoire au point que trois générations de pakistanais ont été impacté par cette partition.

Abstract

This thesis entails four essays/chapters on different natural and geo political shocks and their outcomes at the individual level, in both developed and developing countries. The first essay explores the effect of the 2005 earthquake in Pakistan on religiosity. The results indicate positive association between exposure to natural disaster and religiosity. The analysis indicates that religiosity foster coping with earthquake outcomes, as individuals are more inclined towards religious activities, following the exposure to a natural disaster. The second essay analyzes the impact of natural disasters that central bankers have faced in their early-life to assess their reaction to present-day similar events. The results reveal that, while the standard determinants significantly impact inflation dynamics, the impact of early-life traumas is also significant. In particular, central bankers who have been exposed to traumas during their early life tend to manage inflation differently, and more conservatively, except for floods. The third essay examines how individuals' point of view towards the role of the state in providing unemployment insurance is shaped by the experience of the socialism. The results indicate that East-Europeans who educated under socialist regime, as compared with individuals from West Europe who educated after fall of communism, are significantly more likely to be associated with supporting role of government in providing unemployment insurance. The fourth and final chapter investigates how the British-India partition impacts educational consequences among different ethnic groups of Pakistan. The analysis reveals that cohorts born during the partition period have a lower probability of being educated as compared with their counterparts. The findings also indicate that scar from partition lasts for long as the third generation is still impacted by the partition episode.

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General Introduction

This section presents the general introduction of the dissertation that consists in four essays. First, it describes the significance and motivation of the study. And, then, it narrates the structure, contribution and results.

Motivation and significance:

Natural and human-made catastrophes lead to various outcomes. The consequences of such events can be extreme and long lasting. The effects of these shocks can be felt today even after many decades. These shocks may have life-changing influence on individuals and households. Many times, the impact arising from shocks can be felt from the individual to the country level. For example, at the individuals' level, these events may result in physical injuries, psychological problems and financial predicaments due to loss of economic resources. Following exposure to such events, individuals may develop different perceptions, which may influence the formation of their preferences and future decision-making.

From the public policy point of view, it is of grave importance to analyze substantial social and economic implications of large-scale natural and geo-political shocks, both in the short and long run. In addition the explanations on underlying mechanisms of the effects, of current and early life shocks, on socioeconomic outcomes can provide a basis for policy formulation related to well-being. To have a better identification and non spurious relationship, it necessitates such shocks, which provide an exogenous source of variation, and it also requires detailed data on contemporary socioeconomic indicators and early life experiences.

Social scientists are exploring a wide range of questions using natural experiments. Natural experiments are historical episodes (for example partition, reunion, fall of communism, rain fall, earthquake, storm, flood and droughts, etc.) which are out of control of researchers and agents. These events provide an opportunity to study and learn about the causal relationship

among some variables of interest. As an alternative to laboratory experiments, these events provide a setting for exogenous variation from the point of view of the impacted agents. In the field of psychology, the investigations of key factors affecting human behaviours have been a basic tenet. However, in the recent past, economists have also explored the influence of natural events on economic decisions. The clear and transparent exogenous events are important to avoid the omitted variable bias. Some studies lack the clarity of exogenous source of variation. It may challenge the "validity" and results may be misleading.

The extant literature emphasizes the impact of civil wars, reunification and natural disasters on a wide range of individual outcomes, while the effects of natural and geo-political shocks on the decision-making and the formation of preferences are often less considered by researchers. Moreover, how individuals' decision-making and preferences are shaped by early life experiences and exposure to disasters during their life time is understudied. To fill this gap, this thesis builds on exceptional shocks and explains their short and long run consequences. The thesis consists in four chapters, and each chapter takes into consideration a different shock, which has impacted individuals in different ways. More precisely, two chapters are based on natural disasters, whereas the other two chapters rely on geo-political shocks (i.e., man-made disasters). Each essay provides insights to policy makers and scholars to understand the preferences and decisions made by different types of agents.

Motivated to know why some people become more religious than others, following a natural disaster, the first chapter draws upon on a destructive natural disaster (the earthquake of 2005 in Pakistan). Experiencing a natural disaster may develop positive or negative association with the religion. It may affect the well-being of surviving individuals, and their families as well. Moreover, at the individual level, what can be the role of religion to cope with these catastrophes?

After dealing with a single natural disaster (earthquake) and short run consequences of a natural disaster in a developing country, the second chapter builds on many natural disasters (earthquakes, floods, storms, droughts, epidemics), from a large panel of both developing and developed countries, which traumatize exposed agents and serve as exogenous shock. There are short run and long run consequences of these disasters. Economists are increasingly showing concerns over short and long run effects of climatic and natural disasters on early childhood. Exposure to these traumas in early life influences the formation of preferences as well. How do the agents such as central bankers react to these disasters when they reach to a top management position? Monetary policy plays a vital role in economy and price stability is primary duty of a central bank. The extant literature suggests that a central bank governor is more important than other committee members regarding policy decision making. If the central bank governor matters then her early life experiences also matter. The reaction of a central banker to a current disaster during her tenure is influenced by traumas faced in early life. So how she manage inflation is important to know from a policy perspective.

This thesis then develops on geo-political shocks. In the last two essays, we emphasize the well-known political events of the past few decades in Europe and South Asia, i.e., the fall of communism (reunification and convergences of socioeconomic environments, following the fall of the Berlin wall) and British-India partition (the physical and economic separation of families who share same ancestor lineage and characterized by biggest migration of human history involving 18 million people) respectively. In the literature it is well established that these prominent events provide an exogenous source of variation.

Economists have found that individuals are shaped by many early life experiences and that these events impact a wide range of outcomes. For economists, the outcomes of evolving interest include the formation of preferences. The third chapter contributes to the existing literature on formation of preferences, following a geo-political shock (the fall of

communism). We attempt to discover the potential source of formation of preferences by disentangling the effects of indoctrination (the role of education-or oblique transmission) and family traits (transmission of traits from parents-or vertical transmission).

After having assessed the lasting impact of reunification, the final chapter contributes to another large body of research related to the effects of lethal human-made catastrophes. Economists have established the association between time of birth (during wars, famine, flood, earthquake, storm and epidemics) and later life outcomes. However, there are no prior rigorous empirical investigations on educational outcomes among socioeconomic groups across Pakistan arising from British-India partition. We document that variations in family background and ethnicities may explain differences in educational attainment in Pakistan. Furthermore, we show that persistent and long term effects do arise from this episode. To the best of our understanding, there is no prior work which investigates the intergenerational transmission of these effects over three generations. To fill this gap, we investigate the impact of partition upheaval on the first and third generation after partition to provide an analysis with a deeper coverage.

The consequences emerging from these events (included in each chapter of the present thesis) motivate the analysis of their impacts. To summarize, the prominent and well established natural and political exogenous shocks from both developed and developing countries and their short and long term consequences on decision-making and formation of the preferences motive this dissertation.

Contributions, results and structure

The main objective of the thesis is to analyze long-lasting effects of natural and geopolitical shocks. To serve the purpose of exploring the effects of natural and geo-political shocks on decision-making and preferences, this thesis consists of four essays. The first two essays focus on lethal natural disasters while the other two essays look at human-made disasters.

The first chapter examines the potential impact of the 2005 massive earthquake in Pakistan on religiosity. Analysis is based on time devoted to religious activities, through survey data. The chapter contributes to the relevant body of literature (e.g., Bentzen, 2019, Bulbulia 2012) by explaining how and to what extent individuals' religiosity levels are influenced by exposure to disasters. To the best of our knowledge, our work is the first which directly measures the effect of a natural disaster on religiosity in a developing country (Pakistan) with a Muslim majority. Also, it uses a very precise measure for exposure to the earthquake (two different variables are constructed, in order to capture the intensity of earthquake) and religiosity (time devoted to religious activities by individuals as compared with binary measures), which provide a better identification of the potential association. Whereas other studies rely on information like the frequency of going to mosque or prayers. Moreover, it controls for many individual and provincial level characteristics and we introduce two different dimensions of religiosity (individual and social religiosity). The novelty of this work focuses on the impact of massive earthquake on social religiosity. The social religiosity buffering the earthquake outcomes is mostly unexplored in economic literature, although it may have implications for economic development. The extant literature is inconclusive and does not render insights related to the role of religiosity in coping with disasters. This study helps to understand the mechanisms. Our key finding is that the exposure to the earthquake is positively associated with religiosity. This provides support for the *religious coping hypothesis* in the sense that individuals enhance religiosity following an extreme event.

Our results reveal that the intensity of devastation brought by earthquake contributes significantly towards religiosity. We find that individuals with completely damaged dwelling have greater religiosity in comparison to individuals with damaged dwelling. We also observe that the strength of the religious coping varies with education and age while there is no difference between men and women for the relation between exposure to the earthquake and religiosity. Finally, we find that being affected by the earthquake fosters both social and individual religiosity.

Natural disasters do not affect religiosity only but the life trajectories are also impacted by these catastrophes. The second chapter aims at exploring how children exposed to traumas (earthquakes, floods, storms, drought and epidemics) in their early life behave when they reach a top management positions, i.e., a central bank governorship. The central bankers' reaction to climatic catastrophe is not clear-cut, as explained by Coeuré (2018)[1]. Different studies have focused on early life experiences and their impact on decision-making (Malmendier and Nagel, 2011; Giuliano and Spilimbergo, 2013; Farvaque et al., 2019). But there is no such work, as per our understanding, that studies the impact early-life environmental disasters make on the reaction of central bankers to the same type of events. This chapter introduces a theoretical model to explain the link between past experiences and actual reactions of central bankers.

After a theoretical appraisal of the link between past experience and actual reactions, we bring the model to the data, using a panel of 75 (developed and developing) countries, for the period 2000Q1 to 2012Q4. In this study, the extensive analysis is based on a novel data gathered through emails and websites of central banks. We examine how the dynamics of inflation is

[1] "Given the current global environment, growth may have slowed for other reasons. All this means that, to the extent that climate change can be expected to amplify the frequency of adverse weather shocks, and evidence to this effect is mounting, it will become increasingly difficult for central banks to disentangle the variation in the data relevant for the assessment of the medium-term inflation outlook".

affected by the (actual) climatic shocks, and how the past experience of central bankers affect the reaction of inflation to these shocks. Moreover, this chapter examines standard determinants of inflation and provides new insights. Our results reveal that, while the standard determinants significantly impact inflation dynamics, the impact of early-life traumas is also significant. In particular, central bankers who have been exposed to traumas during their early life tend to manage inflation differently, and more conservatively, except for floods. These findings are important for the selection of central bankers due to their early life experiences of natural disasters.

This dissertation is not delimited to natural disasters and their long-term consequences. There is a consensus among researchers that human-made shocks have also life-long effects. The third chapter examines novel dimensions of the effects of a human-made political shock. This paper examines how individuals' point of view towards the role of state in providing unemployment insurance is shaped by their past experience of a particular political regime. This chapter contributes to a growing literature on the differences between points of view of Eastern Europeans and Western Europeans, and particularly East versus West Germans. One of the ancillary contribution deals with exploring the factors influencing opinions. The main contribution to the literature by this work comes from exploring the possible underlying mechanism for the striking difference between East and West Europeans' behaviours towards the role of government in providing unemployment insurance. Further, it disentangles the effects of indoctrination (role of education) and family traits (parents transmit preferences to their children) in shaping behaviour.

This study uses individuals' opinions from Eastern and Western European countries, using International Social Survey Program (ISSP) and exploits the exceptional natural experiment of the collapse of communism. We reject the hypothesis that East Europeans, on average, show more pro state behaviour (unemployment care should be the responsibility of

government) than West Europeans. However, it is true for the specific case of Germany, as East Germans significantly show more inclination towards the role of state in providing unemployment insurance than West Germans. Moreover, we explore possible underlying mechanisms, disentangling the effects of indoctrination and family traits in shaping preferences. We find strong evidence in favour of the role of education on attitudes. This may be due to state control over schools in the communist period. East European who were educated under the socialist regime, as compared with individuals from Western Europe who educated after fall of communism, are significantly more likely to be associated with supporting a role for the government in providing unemployment insurance.

Conversely, the final and fourth chapter builds on a partition as a geo-political shock. The fourth chapter exploits the historical episode of British-India partition to analyze the long-lasting impact of partition on different ethnicities across Pakistan. This is the first study that explores education outcomes, impacted by the partition episode at the household level. In particular, if early childhood exposure to shocks influences educational outcomes, how long does the effect last, and does it differ among ethnic groups? Then, it analyzes the data for the grandchildren of partition (i.e., whose grandparents were born during the partition) to know how long the scar from partition lasts.

This study answers these questions by presenting a theoretical model that explains the differentiated impact on the different ethnic groups, and by exploiting the historical experiment of partition, i.e., the splitting of the British Raj into India and Pakistan. We use different rounds of Pakistan social and living standard measurement (PSLM) survey from 2007-08 to 2015-16 and compare, first, the educational outcomes for the cohorts that are born before, during, and after, the partition. We show that the children of partition have a lower probability of being educated than the children of the surrounding cohorts. Moreover, the children of partition who belong to the Sindhi ethnic and cultural group have a significantly

lower probability of being educated, revealing differentiated impacts across ethnic groups. Second, we analyze the data for the grandchildren of partition (whose grandparents are born during the partition). We show that the scar from partition lasts for long, as this generation is also impacted. Yet, people who speak Punjabi language are now the most affected ones, a feature that reveals different strategies of adaptation of ethnic and cultural groups over the long run. Our result suggest that educational outcomes may be improved by public polices focusing on vulnerable segments of the society.

Consequently, this thesis contributes to theoretical and empirical investigations of natural and geo-political shocks. The remainder of the thesis is organized as follow:

The first essay examines influence of an earthquake on religiosity and second essay investigates central bankers' decision-making, following the exposure to natural disasters in early life. The third chapter explores the role of a political shock (communism) in formation of preferences. The last chapter empirically scrutinizes the impact of British-India partition on educational outcomes.

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1 Do Mountains Move Faith?[2]

1.1 Introduction

Experiencing a natural disaster influences the behavior of individuals in many ways. Such adverse life events can affect social preferences (Conzo, 2016), time preferences (Cassar, Healy and Kessler, 2017), and risk-taking behavior (Cameron and Shah, 2016). A natural disaster experience can also exert an influence on religiosity. According to the "religious coping" hypothesis (Pargament, 1997; Pargament et al., 2000), individuals react to natural disasters by fostering their religiosity because they cope with these traumatic events through the comfort found in religious practices. They would look for spiritual support and for meaning after unpredictable and unbearable events.

This hypothesis has found some support in the literature. In a worldwide study, Bentzen (2019) shows that people become more religious when they are hit by earthquakes. Sibley and Bulbulia (2012) investigate the effects of the 2011 earthquake in Christchurch and find that residents of the affected region have become more religious after the event while the religiosity of the rest of the New Zealand population decreased over the period.

The objective of our paper is to investigate the impact of the 2005 earthquake in Pakistan on religiosity. This natural disaster occurred on the 8th of October 2005, 100 kilometers northeast of Islamabad, the capital city of Pakistan. It was severe with a Richter magnitude of 7.6 and is considered as the deadliest earthquake has hit South Asia since 1935 with an official death toll of 87,350. It caused massive destructions in northern Pakistan, with an estimated 4 million people left homeless. The timing of the natural disaster just before the beginning of the winter additionally contributed to exacerbate its detrimental effects. Hence,

[2] This chapter is co authored with Laurent Weill from EM Strasbourg Business School, University of Strasbourg.

this earthquake is an extreme natural disaster in the lifetime of the Pakistani population faced this event. It therefore provides the opportunity to study the influence of natural disasters on religiosity in an extreme case.

To address the impact of the 2005 earthquake on religiosity, we use the Pakistan Time Use Survey (PTUS), which contains very detailed information on the time use of individuals in addition to socio-demographic indicators. This dataset allows to measure religiosity through the time devoted to religious activities. We can thus assess precisely religiosity of individuals. We decompose this time for religious activities in two subcomponents: the time used for individual religious practices and meditation, and the time used for participating in religious activities. We have therefore information about individual religiosity and social religiosity.

Our paper contributes to the literature on the impact of natural disasters on religiosity. Bentzen (2019) analyses the effect of earthquake risk on religiosity for a large sample of individuals in 96 countries. Religiosity is measured through six variables which are all dummy variables with one exception on the attendance to religious services. Earthquake risk is measured in the district where the individual lives. In a first part, the paper links the earthquake risk in a specific district to the religiosity of people at the individual level. Recent earthquakes are controlled so that the paper can focus on long-term effects of earthquake risk. She finds that higher earthquake risk in a district leads to higher religiosity. In a second part, the work performs an event study to check if a change in the earthquakes between interview waves has led to a change in religiosity at the district level. She observes a positive impact on religiosity. Hence our work relates to the second part of Bentzen (2019) since we investigate how religiosity has changed following the realization of an earthquake.

However, in comparison with Bentzen (2019), our investigation presents four contributions. First, our focus on the 2005 earthquake in Pakistan informs about the impact of natural disasters in this very populated Muslim country from South Asia. Bentzen (2019)'s work

provides a worldwide analysis and as such her results can vary from one country to another and one religion to other. Our work is therefore the first, to the best of our knowledge, analyzing the effect of natural disasters on religiosity in a developing country with Muslim majority. Second, we run estimations at the individual level and not at the district level. Namely, we investigate whether individuals specifically affected by the earthquake have changed their religiosity. We can therefore provide a better identification of the influence of natural disasters on individuals. Furthermore, we are then able to control for their individual characteristics. Third, we have precise measures for religiosity and exposure to earthquakes which allows a better identification of the relation. Exposure to earthquake is considered through two variables so that we consider the intensity of exposure. Religiosity is measured with the time devoted to religious activities and as such provides a precise information for the individual level of religiosity in comparison to binary measures like information whether people go weekly to the mosque or pray at least once a day. Fourth, we compare the influence of the natural disaster on individual and social religiosity of those who have been exposed to a great earthquake. A natural disaster may affect individual and social religiosity differently. The role of social religiosity is of grave importance in resilience, following the earthquake. However, this dimension has been understudied in the extant literature.

Investigating the impact of natural disasters on religiosity in developing countries has implications for economic development. The literature tends to show an effect of religiosity on economic growth. Barro and McCleary (2003) find that economic growth is negatively associated to religious participation (church attendance) but positively to the extent of religious beliefs (heaven and hell). However Durlauf, Kourtellos and Tan (2012) find no evidence for the influence of religious beliefs but still find support for the influence of religious participation. Furthermore Campante and Yanagizawa-Drott (2013) provide support for the effects of religiosity on economic growth by showing that longer Ramadan fasting

exerts a negative impact on economic growth in Muslim countries. The underlying mechanism focuses on labor supply for negative relationship between longer Ramadan fasting and economic growth. The labor supply is influenced by changes in preference of Muslims related to work and religious practices during Ramadan. However, they find positive association between subjective well-being and religious practices. We therefore contribute to a better understanding of the mechanisms through which natural disasters affect economic growth. In addition to their effects on time, social, and risk preferences, earthquakes can influence religiosity which may affect economic growth.

The paper proceeds as follows. Section 2 presents the data and methodology. Section 3 reports the results. Section 4 concludes.

1.2 Data and methodology

We use data from the Pakistan Time Use Survey (PTUS), a survey of Pakistani households conducted by the Pakistan Bureau of Statistics (PBS) in 2007 across Pakistan. It provides information on different key variables like age, education, marital status and gender of selected individuals along with household location (urban vs. rural area) and income. The salient feature of PTUS is the collection of information, from socio economic perspective, on round the clock activities (24 hours starting from 4.00 a.m. of the previous day to the 4.00 a.m. of the interview day) of the respondents. Using 30 minutes slots, the 24 hours of a day are divided into 48 slots. For each thirty minutes slot a number of activities are encoded. The two respondents are selected for diary information from each of the surveyed households. Each selected individual mentioned time used in performing different activities.

The survey includes two particular questions on religiosity. Keeping in view the objective and scope of the study, we focus on time used for “participating in religious activities” and “individual religious practice and meditation”. Our key variable *Religiosity* measures the level

of religiosity of an individual by the sum of time spent participating in religious activities and individual religious practice and meditation.

The PTUS provides the opportunity to investigate the earthquake episode and gives information on damage caused by the earthquake to the households. In PTUS the individuals were asked "Did this household suffer any damage to its dwelling in the earthquake of October 2005?" and the responses are coded on scale from 1 to 4 for "completely damaged", "partially damaged", "not affected" and "not applicable" respectively. We exclude all the observations with a "not applicable" answer.

We create two dummy variables to measure the intensity of the damage caused by the earthquake. We generate the variable *Completely damaged* and coded it as 1 if the response is "completely damaged", and 0 otherwise. We furthermore create the variable *Damaged* which is equal to 1 if the respondent answers "completely damaged" or "partially damaged", and 0 otherwise.

We include several individual-level control variables. *Age* is defined as the age of the respondent in years. We also consider Age^2 to test a possible nonlinear relation between age and religiosity. *Education* is the highest class that is passed by the individual. Marital situation is measured with a dummy variable equal to one if the respondent is married or living together with a partner (*Married*).

At the household level, we control for the income. It is an ordinal variable ranging from 1 to 10 for different ranges of income. If the income is up to Rs.2000 it is coded as 1, while if income is Rs.10001 or more then indicated by 10. For the location of the household in rural or urban areas with the dummy variable rural area equal to one if the household lives in a rural area and zero otherwise.

We include two province level controls with data from Pakistan Bureau of Statistics. We control for provincial level income, using per capita consumption and Population density is

measured by calculating population growth rate between the two Pakistan populations census, conducted for the years 1998 and 2017. After excluding the observations on which information is not available, we have 19,001 observations on all the variables included in the analysis. Table 1.1 presents the descriptive statistics of all the variables used in different specification and the description of all the variables is given in the Appendix (1.A).

Our objective is to investigate whether religious practices are affected by exposure to an earthquake. The implicit assumption is that there would be no difference among religious practices of individuals in the absence of exposure to an earthquake. In order to compare the religious practices of the individuals from damaged versus undamaged dwellings, we estimate the following baseline regression:

$$Religiosity = \beta_0 + \beta_1 (Exposure\ to\ earthquake) + \beta_2 (Control\ variables) + \varepsilon \quad (1)$$

In equation (1), the variable for exposure to an earthquake is alternatively *Completely damaged* or *Damaged*. Control variables are as described above. We test several sets of control variables in the estimations. The coefficient β_1 measures the impact of an earthquake on religiosity for the individuals whom dwelling was devastated by an earthquake and ε is a random error term. All the specifications include robust standard errors clustered at the household level.

1.3 Results

This section presents our results for the influence of an earthquake on religiosity. We start with the main estimations. We then consider the influence of individual characteristics on the relation. We finally test the possibility of a differentiated impact on individual and social religiosity.

1.3.1 Main estimations

We investigate how the fact to be affected by the earthquake can impact religiosity. We consider alternatively the two indicators assessing whether an individual's dwelling has been damaged. We can thus check how the intensity of the exposure to an earthquake matters for the relation between this exposure and religiosity. Results are reported with *Completely damaged* in Table 1.2 and with *Damaged* in Table 1.3.

We consider five specifications in each table, based on the inclusion of different sets of control variables. We are then able to assess the sensitivity of our results to the set of control variables. In column (1), we include all individual-level variables. We then gradually add *Household income* in column (2), *Population density* in column (3), *Rural area* in column (4), and *Per capita consumption* in column (5) which thus reports the specification with all control variables.

We find that *Completely damaged* and *Damaged* are positively related to religiosity. The estimated coefficient is significant in all tested specifications. Therefore, our main conclusion is that the exposure to an earthquake is positively associated with religiosity of an individual. This finding is in line with the religious coping hypothesis: individuals react to an earthquake by fostering their religiosity in accordance with the view that they cope with this traumatic event through the comfort found in religious practices. It accords with the former results from Sibley and Bulbulia (2012) for New Zealand, as well as those from Bentzen (2019) on a worldwide panel.

Another important result concerns the observation that the intensity of the exposure matters for the change in religiosity. The coefficients are higher with *Completely damaged* than with *Damaged* in all specifications. In the specification with all control variables, we observe that the coefficient is 33.164 for *Completely damaged* and 25.442 for *Damaged*. This finding suggests that the effect of exposure to earthquake is not binary in the sense that this exposure

would affect religiosity whatever its intensity. Hence, more destructive earthquakes foster more religiosity. This result relates to the finding from Bentzen (2019) that greater earthquake risk leads to greater religiosity. However, while this work considers the previous disaster events in a given region, we focus on the explicit exposure affecting the individuals as not only the exposure matters but also the shock realization and its intensity.

We turn to the analysis of control variables. We observe a gender effect for religiosity: *Male* is significantly negative in all estimations, meaning higher religiosity for women than for men. Older people have higher religiosity, as shown by the positive relation between age and religiosity: we obtain a significant and positive coefficient for *Age* while the coefficient for Age^2 is not significant.

Married is negatively related to religiosity showing that married individuals are less religious. The significantly positive coefficient for *Household income* in most estimations means that higher income is associated with higher religiosity. This result is at odds with the secularization hypothesis according to which higher income would lead to lower religiosity. Nonetheless, this hypothesis has been supported at the aggregate level previously, while we observe evidence in favor of the secularization hypothesis at the provincial level with the significantly negative coefficient for *Per capita consumption.*

We find that *Rural area* is positive but not significant in all estimations, suggesting greater religiosity in rural areas. Finally, we observe that *Population density* is negatively linked to religiosity, which can also be related to the result on rural areas since greater population density at the provincial level is associated with greater share of individuals living in urban areas.

1.3.2 The influence of individual characteristics

Our main estimations indicate that earthquake fosters religiosity. The religious coping hypothesis assumes that people enhance their religiosity following a natural disaster because they cope with trauma through the comfort supplied by religious practices. However, even if on average, people react through positive religious coping, we can question whether this effect is either exacerbated or mitigated by individual characteristics.

The strength of the religious coping can differ with gender if men and women have different reactions following natural disasters. Women have been found to use more religious coping than men (Hvidtjorn et al., 2004) and can thus increase more their religiosity after the earthquake. Education can also influence the religious reaction to natural disasters by affecting the way individuals react to religious answers explaining these events (Pargament, 1997). In a related vein, household income and the fact to live in a rural area can influence the social religious environment in which the individual lives and can thus affect how she/he reacts to the earthquake. The benefits of religious coping can notably be associated with a lower level of income when the earthquake results in a dramatic change of life. Finally, age can impact how religiosity evolves following natural disasters. Old people have more chances to have coped on natural disasters in their life before the 2005 earthquake and as such the effect of this event on their beliefs should be diminished.

To design an empirical testing of variations in the impact of the earthquake on religiosity depending on individual characteristics, we include interaction terms between variables for exposure to earthquake and *Male, Household income, Education, Rural area,* and *Age* respectively. We can then study whether the impact of the earthquake on religiosity is influenced by gender, income, education, geographic area, and age. We display results with *Completely damaged* and with *Damaged* respectively in Tables 1.4 and 1.5 so that we can

investigate whether the intensity of the exposure to earthquake matters. Several conclusions emerge.

First, we find no significant interaction variable with *Male* and *Household Income*. It means that the impact of the earthquake on religiosity is neither influenced by gender, nor by income.

Second, we obtain a significant coefficient for the interaction variable with *Education*. Interestingly, it is negative when interacting with *Damaged* but positive with *Completely damaged*. These results suggest that the level of education affects the way people cope with religiosity after an earthquake. Individuals affected by an earthquake have increased their religiosity to a lower degree when they were educated. This can result from the fact that education diminishes the tendency of people to look for supernatural explanations when facing a dramatic event. However, a greater intensity of the damages would reverse this result by making educated people looking more for religious coping after the natural disaster destroys all of their belongings. An interpretation can be the greater importance for educated individuals to find an explanation after a highly dramatic trauma which would lead them to become more religious than the others.

Third, we point out a significantly positive coefficient for the interaction variable of *Rural area* with *Damaged*, while it is not significant with *Completely damaged*. We thus have some support for the fact that being affected by the earthquake would have a stronger impact to foster religiosity in rural areas.

Fourth, we find support for the influence of age on the relation. The interaction term of *Age* is negative in both estimations but significant only with *Damaged*. It is in line with our interpretation that older people are less influenced by the positive impact of the earthquake on religiosity since they have already coped to similar natural disasters in their life.

1.3.3 Individual and social religiosity

Until now, we have considered the broad concept of religiosity, combining individual and social religiosity. However, the impact of an earthquake can affect in different way both forms of religiosity.

The religious coping hypothesis assumes that individuals become more religious when they cope with traumatic events because of the comfort brought by religious practices. The damages caused by the earthquake can then affect differently social religiosity and individual religiosity. Social religiosity is associated with attending religious services and spending time in religious organizations. Individual religiosity is based on the beliefs such as the importance of God or of religion in life.

A traumatic event can influence individuals to foster their social religiosity because of the comfort brought by meeting other people in a religious context. Okulicz-Kozaryn (2010) has shown that social religiosity is associated with greater life satisfaction than individual religiosity because it favors interpersonal contact and generates church-related friends. It can also increase their individual religiosity by helping people to find answers to unexplainable events.

Since the objective of our study is to contribute to a better understanding of how natural disasters affect religiosity, now we aim to check if the earthquake affects both individual and social religiosity but also to know if one form is more affected than the other. Our dataset allows us to provide a precise investigation of this issue. More precisely, social religiosity is measured by the time spent participating in religious activities. Individual religiosity is measured by the time spent for individual religious practice and meditation.

We thus do again the main estimations by using alternatively the two religiosity indicators. The results are reported in Table 1.6. For each religiosity indicator, we test alternatively the impact of *Completely damaged* and *Damaged* on religiosity. So we have four specifications.

We observe that *Damaged* is significantly positive in both estimations while *Completely damaged* is significantly positive when explaining individual religiosity but not when explaining social religiosity. We therefore observe similarities and differences for both forms of religiosity. To be affected by the earthquake contributes to foster individual and social religiosity. However, a higher intensity of the earthquake with being completely damaged only favors individual religiosity. These results suggest that being damaged by an earthquake lead individuals to turn to religiosity, while a high intensity of the damage fosters more individual religiosity than social religiosity. This latter finding can be explained by the fact that a very traumatic event increases the needs for people to find answers to unexplainable events through individual practices while they feel less the need to go to social religious activities to find coping.

The analysis of control variables shows that gender, marital status, and household income are differently linked to individual and social religiosity. *Male* is significantly negative when explaining individual religiosity but positive when explaining social religiosity. These findings are of interest since they show gender differences in the forms of religiosity: women have more individual religiosity than men but less social religiosity. *Married* is significantly negative when explaining individual religiosity but not significant when explaining social religiosity. It therefore shows lower individual religiosity for married individuals only, while social religiosity is not influenced by marital status. *Household income* is not significant in estimations explaining social religiosity while, it is significant positive in one estimation when explaining individual religiosity, suggesting that income would be associated only with this form of religiosity.

For the other control variables, the findings are similar for both religiosity indicators: *Education* and *Population density* are significantly positive while *Per capita consumption* is significantly negative in all estimations. We find that age is positively associated with both

forms of religiosity, even if we obtain different results for *Age* and Age^2 for individual and social religiosity.

1.4 Conclusion

This study investigates the impact of the 2005 earthquake in Pakistan on religiosity. We use detailed information on Pakistani individuals including the time devoted to religious activities to analyze how their religiosity has been affected by the exposure to earthquake.

Our key finding is that the exposure to the earthquake is positively associated with religiosity. We find that individuals with damaged dwelling have greater religiosity whereas religiosity is greater for those with completely damaged dwelling. This finding provides support for the religious coping hypothesis in the sense that individuals enhance religiosity following an extreme event. It supports the previous findings obtained by Sibley and Bulbulia (2012) in New Zealand and Bentzen (2019) worldwide. We also observe that the strength of the religious coping varies with education and age while there is no difference between men and women for the relation between exposure to the earthquake and religiosity. Finally, we find that being affected by the earthquake fosters both social and individual religiosity. This is of importance given the key role of social religiosity in resilience following a natural disaster.

Our work therefore contributes to the analysis of the influence of natural disasters on religiosity with evidence at the individual level in a developing country for the religious coping hypothesis. It opens avenues for new investigations. Further work is needed to consider the influence of the intensity of the earthquakes and to compare the impact of natural disasters on social vs. individual religiosity in a worldwide analysis. It would also be of particular interest to compare the impact of different types of natural disasters on religiosity. We let these questions for further research.

Table 1.1 Descriptive statistics

	Obs	Mean	Std. Dev.	Min	Max
Religiosity	19,651	80.79	80.08	0	300
Individual religiosity	19,651	63.69	72.60	0	300
Social religiosity	19,651	17.11	40.87	0	300
Completely damaged	19,651	0.02	0.12	0	1
Damaged	19,651	0.13	0.33	0	1
Age	19,651	30.87	16.71	10	99
Male	19,651	0.47	0.50	0	1
Education	19,651	2.70	1.84	1	7
Married	19,651	0.55	0.50	0	1
Rural area	19,651	0.60	0.49	0	1
Household income	19,001	6.63	2.79	1	10
Provincial level Controls					
Population density	19,651	356.59	116.28	25.5	433.66
Per capita consumption	19,651	22,396.30	2,174.45	16,513.56	23,910.12

This table provides descriptive statistics for the variables used in the estimations. Definitions of variables are provided in the Appendix (1.A).

Table 1.2 Baseline estimations I

	Dependent variable = Religiosity				
	1	2	3	4	5
Completely damaged	63.046***	63.410***	57.650***	56.072***	33.164***
	(5.217)	(5.250)	(5.239)	(5.250)	(5.316)
Male	-13.611***	-13.263***	-15.396***	-15.525***	-14.475***
	(1.107)	(1.130)	(1.114)	(1.112)	(1.062)
Age	1.041***	1.023***	1.086***	1.106***	1.305***
	(0.193)	(0.196)	(0.193)	(0.193)	(0.186)
Age²	0.001	0.002	0.002	0.002	-0.000
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Education	1.142***	0.766**	2.306***	2.674***	3.295***
	(0.359)	(0.384)	(0.383)	(0.386)	(0.370)
Married	-4.392**	-4.346**	-6.225***	-6.415***	-7.292***
	(1.802)	(1.826)	(1.794)	(1.794)	(1.716)
Household income		1.176***	0.475*	0.596**	0.373
		(0.257)	(0.253)	(0.256)	(0.236)
Population density			-0.119***	-0.117***	1.298***
			(0.006)	(0.006)	(0.073)
Rural area				5.346***	1.969
				(1.436)	(1.325)
Per capita consumption					-0.077***
					(0.004)
Constant	51.693***	45.736***	87.988***	82.266***	1298.243***
	(2.748)	(3.124)	(3.997)	(4.261)	(60.706)
R^2	0.065	0.067	0.095	0.096	0.201
N	19,651	19,001	19,001	19,001	19,001

This table presents the results of OLS regressions examining the impact of earthquake on religious practices. Definitions of variables are provided in the Appendix (1.A). Standard errors (in brackets) are robust to arbitrary heteroskedasticity, clustered at household level. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

Table 1.3 Baseline estimations II

	Dependent variable = Religiosity				
	1	2	3	4	5
Damaged	49.275***	49.405***	45.100***	44.686***	25.442***
	(1.915)	(1.928)	(1.929)	(1.929)	(2.010)
Male	-13.467***	-12.992***	-14.930***	-15.039***	-14.274***
	(1.089)	(1.111)	(1.098)	(1.097)	(1.056)
Age	1.084***	1.064***	1.116***	1.133***	1.306***
	(0.191)	(0.194)	(0.192)	(0.192)	(0.186)
Age²	0.001	0.001	0.002	0.002	-0.000
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Education	1.520***	0.973**	2.337***	2.636***	3.234***
	(0.354)	(0.378)	(0.378)	(0.382)	(0.368)
Married	-3.961**	-3.850**	-5.576***	-5.741***	-6.837***
	(1.779)	(1.801)	(1.776)	(1.775)	(1.709)
Household income		1.495***	0.838***	0.935***	0.576**
		(0.251)	(0.248)	(0.251)	(0.234)
Population density			-0.107***	-0.106***	1.210***
			(0.006)	(0.006)	(0.070)
Rural area				4.355***	1.691
				(1.414)	(1.321)
Per capita consumption					-0.072***
					(0.004)
Constant	44.351***	36.633***	75.353***	70.764***	1209.941***
	(2.734)	(3.109)	(3.963)	(4.207)	(59.390)
R^2	0.097	0.099	0.122	0.123	0.209
N	19,651	19,001	19,001	19,001	19,001

This table presents the results of OLS regressions examining the impact of earthquake on religious practices. Definitions of variables are provided in the Appendix (1.A). Standard errors (in brackets) are robust to arbitrary heteroskedasticity, clustered at household level. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

Table 1.4 Additional estimations I

	Dependent Variable = Total time spent in religious activities				
	1	2	3	4	5
Completely damaged	27.531***	27.788**	19.421**	66.090*	39.975***
	(6.518)	(13.003)	(7.978)	(36.498)	(10.656)
Male	-14.672***	-14.474***	-14.513***	-14.481***	-14.464***
	(1.067)	(1.062)	(1.061)	(1.062)	(1.061)
Age	1.307***	1.307***	1.310***	1.308***	1.299***
	(0.187)	(0.187)	(0.187)	(0.186)	(0.044)
Age²	-0.000	-0.000	-0.000	-0.000	
	(0.002)	(0.002)	(0.002)	(0.002)	
Education	3.289***	3.296***	3.217***	3.297***	3.295***
	(0.370)	(0.370)	(0.371)	(0.370)	(0.364)
Married	-7.312***	-7.307***	-7.305***	-7.288***	-7.240***
	(1.716)	(1.716)	(1.715)	(1.716)	(1.360)
Household income	0.375	0.360	0.376	0.372	0.374
	(0.236)	(0.237)	(0.236)	(0.236)	(0.236)
Population density	1.298***	1.298***	1.298***	1.298***	1.298***
	(0.073)	(0.073)	(0.073)	(0.073)	(0.073)
Rural area	1.962	1.957	1.894	2.021	1.968
	(1.325)	(1.325)	(1.325)	(1.326)	(1.326)
Per capita consumption	-0.077***	-0.077***	-0.077***	-0.077***	-0.077***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Completely damaged × Male	13.000				
	(8.823)				
Completely damaged × Household income		1.000			
		(2.328)			
Completely damaged × Education			6.532**		
			(3.233)		
Completely damaged × Rural area				-33.732	
				(36.861)	
Completely damaged × Age					-0.213
					(0.251)
Constant	1298.171***	1298.351***	1298.097***	1298.099***	1298.247***
	(60.701)	(60.704)	(60.698)	(60.709)	(60.718)
R^2	0.201	0.201	0.201	0.201	0.201
N	19,001	19,001	19,001	19,001	19,001

This table presents the results of OLS regressions examining the impact of earthquake on religious practices. Definitions of variables are provided in the Appendix (1.A). Standard errors (in brackets) are robust to arbitrary heteroskedasticity, clustered at household level. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

Table 1.5 Additional estimations II

	Dependent Variable = Total time spent in religious activities				
	1	2	3	4	5
Damaged	24.071***	24.581***	30.071***	11.963***	34.397***
	(2.432)	(4.259)	(2.959)	(3.551)	(3.542)
Male	-14.658***	-14.278***	-14.210***	-14.194***	-14.282***
	(1.117)	(1.056)	(1.057)	(1.055)	(1.055)
Age	1.307***	1.306***	1.304***	1.306***	1.329***
	(0.186)	(0.186)	(0.186)	(0.186)	(0.047)
Age²	-0.000	-0.000	-0.000	-0.000	
	(0.002)	(0.002)	(0.002)	(0.002)	
Education	3.229***	3.236***	3.449***	3.170***	3.236***
	(0.368)	(0.368)	(0.388)	(0.368)	(0.362)
Married	-6.843***	-6.840***	-6.836***	-6.820***	-6.872***
	(1.709)	(1.709)	(1.709)	(1.705)	(1.355)
Household income	0.575**	0.557**	0.577**	0.591**	0.572**
	(0.234)	(0.251)	(0.234)	(0.234)	(0.234)
Population density	1.210***	1.209***	1.210***	1.209***	1.208***
	(0.070)	(0.070)	(0.070)	(0.070)	(0.070)
Rural area	1.687	1.689	1.764	-0.386	1.700
	(1.321)	(1.321)	(1.321)	(1.397)	(1.321)
Per capita consumption	-0.072***	-0.072***	-0.072***	-0.072***	-0.072***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Damaged × Male	3.028				
	(3.052)				
Damaged × Household income		0.142			
		(0.636)			
Damaged × Education			-1.905*		
			(0.978)		
Damaged × Rural area				18.908***	
				(4.023)	
Damaged × Age					-0.292***
					(0.094)
Constant	1210.284***	1210.030***	1209.728***	1210.380***	1208.284***
	(59.389)	(59.375)	(59.363)	(59.115)	(59.407)
R^2	0.209	0.209	0.209	0.210	0.209
N	19,001	19,001	19,001	19,001	19,001

This table presents the results of OLS regressions examining the impact of earthquake on religious practices. Definitions of variables are provided in the Appendix (1.A). Standard errors (in brackets) are robust to arbitrary heteroskedasticity, clustered at household level. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

Table 1.6 Individual and social religiosity

	Dependent Variable = Individual religiosity		Dependent Variable = Social religiosity	
	1	2	3	4
Completely damaged	29.892***		3.273	
	(4.503)		(2.935)	
Damaged		18.321***		7.121***
		(1.700)		(1.040)
Age	1.313***	1.312***	-0.008	-0.006
	(0.169)	(0.169)	(0.091)	(0.091)
Age²	-0.003	-0.003	0.003***	0.003***
	(0.002)	(0.002)	(0.001)	(0.001)
Male	-45.765***	-45.631***	31.290***	31.356***
	(0.974)	(0.972)	(0.617)	(0.616)
Education	1.833***	1.797***	1.461***	1.437***
	(0.316)	(0.315)	(0.186)	(0.186)
Married	-7.384***	-7.032***	0.092	0.195
	(1.543)	(1.538)	(0.777)	(0.778)
Household income	0.277	0.410**	0.096	0.166
	(0.203)	(0.202)	(0.111)	(0.111)
Population density	0.891***	0.831***	0.408***	0.379***
	(0.051)	(0.050)	(0.026)	(0.026)
Rural area	2.253**	2.170*	-0.284	-0.479
	(1.116)	(1.113)	(0.638)	(0.636)
Per capita consumption	-0.054***	-0.051***	-0.023***	-0.021***
	(0.003)	(0.003)	(0.001)	(0.001)
Constant	936.473***	876.888***	361.770***	333.053***
	(42.958)	(42.173)	(22.318)	(22.065)
R^2	0.230	0.234	0.202	0.205
N	19,001	19,001	19,001	19,001

This table presents the results of OLS regressions examining the impact of earthquake on religious practices. Definitions of variables are provided in the Appendix (1.A). Standard errors (in brackets) are robust to arbitrary heteroskedasticity, clustered at household level. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

1.A Appendix: Definitions of variables

Variable	Definition
Religiosity	Sum of time spent participating in religious activities and individual religious practice and meditation. Source: Pakistan Time Use Survey.
Individual religiosity	Time used for individual religious practices and meditation. Source: Pakistan Time Use Survey.
Social/Collective religiosity	Time used in participating religious activities. Source: Pakistan Time Use Survey.
Completely damaged	Completely damaged is dummy variable and coded as 1 if dwelling is completely damaged by earthquake and 0 otherwise. Source: Pakistan Time Use Survey.
Damaged	Damaged is dummy variable and coded as 1 if dwelling is completely damaged and partially damaged by earthquake and 0 otherwise. Source: own computation.
Age	Age of respondent. Source: Pakistan Time Use Survey.
Age^2	Squared term of the age of respondent. Source: Pakistan Time Use Survey.
Male	Male vs. female. It is a dummy variable coded as 1 if respondent is male and 0 otherwise. Source: Pakistan Time Use Survey.
Education	Highest school class that is passed by respondent. Source: Pakistan Time Use Survey.
Married	Dummy variable coded as 1 if respondent is married and 0 otherwise. Source: Pakistan Time Use Survey.
Household income	An ordinal variable ranging from 1 to 10 for different ranges of income. Source: Pakistan Time Use Survey.
Rural area	Dummy variable code as 1 if household live in a rural area and 0 otherwise. Source: Pakistan Time Use Survey.
Population density	Provincial population density is defined as ratio of number of people and area of province. Source: Pakistan Bureau of Statistics.
Per capita consumption	Per capita consumption. Source: Pakistan Bureau of Statistics.

2 A disaster always rings twice: Early-life experience and central bankers' reactions to natural disasters[3]

2.1 Introduction

A natural disaster is a traumatic event, and it is not surprising that its consequences can be felt over a lifetime, leaving a scar on people, and modifying their preferences and actions. Eckel et al. (2009) show that refugees from Katrina become more risk-loving, which they explain by the endured stress. Hanaoka et al. (2018) analyze the behavior of Japanese people after the 1995 Great Earthquake, reveal that male survivors tend to gamble more. Malmendier and Nagel (2011) look at longer-run impacts, and demonstrate that individuals who have experienced low stock market returns throughout their lives report lower willingness to take financial risk, and are more pessimistic about future stock returns. These "Depression babies", as Malmendier and Nagel (2011) coin them, thus have different risk-taking attitudes. Such an impact of early-life events is confirmed by Giuliano and Spilimbergo (2013), who find that those who experienced a recession when young believe that success in life depends more on luck rather than effort, support more government redistribution, and tend to vote for left-wing parties.

For policymakers, Bernile et al. (2017) show that there is a non monotonic relation between the intensity of CEOs' early-life exposure to fatal disasters and corporate risk-taking (those who experience the extreme downside of disasters behave more conservatively), while

[3] This chapter is co-authored with Etienne Farvaque (University of Lille) and Franck Malan (Central Statistics Office, Ardee Road, Rathmines, Dublin 6, D06 FX52). The authors acknowledge useful feedbacks from participants in the conferences: European Public Choice Society Meeting (EPCS, 2019), 4th European workshop on political macroeconomics (Krakow, 2019) and the Future of Central Banking (Talloires, 2019), and in particular Joseph Bitar, SaschaBützer, Nicolas Debarsy, Jean-Baptiste Desquilbet, Gary Dymski, Remi Generoso, Ilene Grabel, Matheus Grasselli, Florence Huart, Hubert Jayet, Juliet Johnson, and Stéphane Vigeant.

Farvaque et al. (2019) exhibit that central bankers who have experienced recessions (and, in particular, long spells) in their childhood tend to behave in a more dovish way, being more reluctant to increase policy rates than to cut them.

In this paper, we pursue this avenue of research, and look at the impact early-life environmental disasters make on the reaction of central bankers to the same type of events, if they face one while they are at the helm of their country's central bank. The direction of the impact is not obvious, as it has been shown that natural disasters can impact inflation differently, depending upon the type of disaster, and the horizon considered (Parker, 2018). Moreover, the reaction of a central banker will depend upon the scar that such and such type of trauma has left upon her mind and, as the above-cited literature reveals, the impact can not only depend upon the nature of the shock, but also on the intensity of the traumatic event one has faced.

Hence, if a natural disaster forces central bankers to react to keep inflation under control, it will be in contexts where the consequences of their policy decisions will be even more uncertain than in "normal" times. And in such contexts, it may happen that the long-run impact of past (early-life) experience may conflict with what a conventional model would imply as being the necessary short-run response. It is thus important to assess how past and recent "traumas" interact in policy-making. This is the aim of this study.

In particular, this project aims at exploring how children exposed to traumas (earthquakes, floods, drought, storms and epidemics) in their early life behave when they reach a top management positions, i.e., a central banks governorship. In other words, do decisions made by central bank heads in response to actual disasters are influenced by their early life exposure to the same sort of events? If yes, then, what are the possible consequences of this phenomenon on monetary policy making?

That central banks also have to care about climate change is now established, and the importance of climatic vulnerability for price developments is empirically backed (Parker, 2018). However, the way central banks should react to climatic events is not always clear-cut, as acknowledged by, for example, Coeuré (2018).[4] Hence, the stakes are getting higher on measuring the life-long impact of early disasters on monetary policy-makers.

Our sample covers 204 central bankers, 75 countries, over the period 2000Q1 to 2012Q4.The results reveal that past traumatic experiences of central bankers induce a reaction to shocks, in the form of a conservative bias (i.e., a negative impact on inflation). This allows central bankers to control for the price increases implied by shocks. An exception is floods, which, given their potential negative influence on inflation, prompt an accommodative stance from central bankers.

The rest of the paper is organized as follow. We first review the literatures on which our analysis is built. Then, we describe the underlying model and the data sources. Section 5 presents the empirical strategy. Section 6 details the results, while section 7 proposes several robustness checks. Finally, section 8 sums up the results and provides some policy lessons that can be derived from the analysis.

[4]"Central bankers thought the horizon of climate change was extending well beyond the one of monetary policy. But this may change. Indeed, I would argue that the horizon at which climate change impacts the economy has shortened, warranting a discussion on how it affects the conduct of monetary policy. That is, climate change is likely to affect monetary policy one way or the other – whether it is left unchecked or humankind rises to the climate change challenge." (Coeuré, 2018.)

2.2 Literature review

2.2.1 Preferences

In psychology and sociology, the question of why people have different attitudes, beliefs and personality traits has a long tradition (see, e.g., Hoffman, 1977, or Parke and Ahser, 1983). In economics, if the issue has been more recently addressed, there is now a plethora of studies exploring the role of personal experiences in shaping the behavior of individuals, in relation to economic decision and activities.

That traumas have long-run effects on people's behavior(s) and preferences has been shown, for example, by Schneider et al. (2012) who study survivors of a destructive and murderous fire and show that they experienced significant life disruption, including occupational, psychological and quality of life sequelae. Importantly for our argument, they find that quality of life, depression and post-traumatic stress outcomes are related to emotional trauma, and not to physical injury. Psychiatrically, as McFarlane (2010) develops, the development of traumatic memories at the time of stress exposure creates a major vulnerability of the increasing dysregulation of an individual's neurobiology. The trauma has immediate but also delayed effects, and these are the ones on which we will focus our analysis. Moreover, as Dye (2018) shows, when it comes to childhood trauma (the ones on which we will consider afterwards), neurobiological changes that impact human development and cause significant changes in brain function can be observed. And the medical and psychiatric empirical evidence suggests that childhood trauma is associated with physical, mental, and emotional symptoms that can persist into adulthood.

In economics, it has notably been shown that exposure to higher inflation leads to inflation aversion, higher inflation expectations and lower happiness (Lombardelli and Saleheen, 2003, Blanchflower, 2007, Ehrmann and Tzamourani, 2012, and Malmendier and Nagel, 2016).

If risk aversion differences are influenced by characteristics like education, age, gender and income (Eckel and Grossman, 2002,Hryshko et al., 2011), a disaster like the global financial crisis of 2008-2010 has made bankers, firms and households more risk averse (Bekaert and Hoerova, 2014, Bassett et al., 2014,and Guiso et al., 2013). Similarly, Dohmen et al. (2012) explain that even children behaviors are impacted by their parents' beliefs about risk taking, while Kim and Lee (2014) show the long-run impact of the Korean war on risk-aversion of the cohorts that have lived through it.

According to Alesina and Giuliano (2011) and Giuliano and Spilimbergo (2014), the timing of growing up matters significantly in shaping preferences: people who have grown up during recessions believe more in luck than in efforts, and tend to be more inclined towards redistribution policies. This joins Emmenegger et al.'s (2017) results, showing that an early life experience of adverse events scar people. Especially, an unemployment period during youth can cast a long spell on careers and future political affiliations.

Another stimulus for this project comes from the paper by Malmendier and Nagel (2011) which describes that, in addition to the instant reaction of economic agents to recent convulsions, the individuals' willingness to take risk is strongly influenced by their life time experiences: in the U.S, agents' willingness to take financial risk is higher for those who have experienced higher real stocks market return over their life time span. Moreover, the probability is lower to own stocks, for the individuals who faced low market returns.

A relatively close paper (Farvaque et al., 2019) indicates that monetary policymaking by central bankers is influenced by their early experience of growing up in periods of recession. The central bankers who had grown up during such recession episodes are found to be more

willing to cut policy rates. However, the paper does not consider traumatic events other than recession, and only considers a sample of developed economies.[5]

Otherwise, the intuition that leaders background plays a role in macroeconomic developments is well established (see, e.g., Besley et al., 2011, Hayo and Neumeier, 2012). Similarly, using different samples, several studies conclude that central bankers' personal characteristics, in particular occupational and educational backgrounds can be important factors (Dreher et al., 2009, Farvaque et al., 2014, Gohlmann and Vaubel, 2007, Farvaque et al., 2011).

2.2.2 Traumas, disasters and inflation

A number of studies looked at the impact of natural disasters on output across different levels of development and sectors of economy (Noy, 2009, Raddatz, 2009, Loayza et al., 2012, Fomby et al., 2013, Felbermayr and Groschl, 2014). This part of the literature is reviewed in Cavallo and Noy (2011), who also survey the effects of disasters on prices. These authors draw attention to the fact that different types of disasters and their magnitudes could have different effects on inflation, even within countries. Heinen et al. (2019) focus on 15 Caribbean developing economies and exhibit the inflationary impact on prices of extreme weather events.

The mechanism through which disasters hit inflation is that they cause physical destruction and losses which, in turn, lead to a rarefaction of goods and service in the stricken area, resulting into price hikes. Obviously, the situation is even more harmful for people located closer to the affected area, and to the poorest among the population. The only exception, as discussed above, is that floods may have a different impact on inflation dynamics, with different expected impact in the short and medium-run. Hence, if a central banker knows, from experience, that a disaster will impact inflation positively, she should react in a conservative way, to keep control of inflation and avoid the cost of a drift from target

[5]See also Bordo and Istrefi (2017), for a related analysis on FOMC members.

inflation. We thus expect a negative sign of the coefficient attached to the interaction between the present and the past events (between "traumas" and disasters). However, in the case of a flood, there is an ambiguity, as the immediate and future consequences can offset each other. Table 1 summarizes the expected sign of the interaction between the past experiences of the central banker and the presented disasters she has to face.

Table 2.1 Expected impact of the reaction of central bankers

	Present disasters:	
Past disasters ("traumas")	Earthquakes, Storms, Droughts	Floods
Earthquakes, Storms, Droughts, Epidemics	-	-
Floods	Ambiguous	+

2.3 Central banker's reaction to early-life disasters: a framework

Why would a central banker react to a disaster? One reason can be related to the fact that such shocks are specific types of supply shocks, and thus induce a typical monetary policy reaction (Coeuré, 2018). In case of a flood or a drought, for example, food prices will increase, which may disrupt the path of inflation. The central banker will thus react in a conservative way, to reduce the impact on inflation. Even though the move may seem paradoxical (reacting conservatively, for example increasing interest rates, while the population suffers immediate costs), and could induce some bashing from the government or the population, it can be considered as a move dedicated to protect the population from losing more (in short, a monetary policy designed for the poor - see Romer and Romer, 1999).

Such reactions would mean that the inflationary process in a typical economy, designated by *j*, which is hit by natural disasters is of the form:

$$\pi_{j,t} = \sum_{D=1}^{n} \left(\mu_{j,D,t} I_{j,D,t}\right) + \alpha_j (CBI; \cdot) + \beta(t) + \theta\left(\lambda_{i,j,t}\right) + X_{j,t} + \varepsilon_{j,t}$$

where $\pi_{j,t}$ indicates inflation in any quarter *t*, *I* signals the incidence of a disaster of type *D*, of which $\mu_{j,D,t}$ is the intensity (marked, for example, by the number of deaths induced by the related disaster). α_j is a country specific indicator variable, which depends, among other institutional variables that can account for the country-specific dynamics of inflation, as the degree of independence of the central bank (*CBI*). $\beta(t)$ is a time-specific function, reflecting the potential impact of any, for example, seasonal influence on inflation, and $\varepsilon_{j,t}$ is the error term. $X_{j,t}$ is a vector of control variables (e.g., for instance, the degree of openness), allowing for the standard determinants of inflation to play a role. Finally, $\theta\left(\lambda_{i,j,t}\right)$ is the central banker specific term, reflecting how each central may affect the inflationary process, given her own degree of conservatism, here indicated by $\lambda_{i,j,t}$.[6]

Such an inflationary process can emerge from the minimization of a loss function by the central bank. Supposing for simplification that the central banker has a single mandate, for controlling price stability, with an inflation target equal to π^*. Assuming also that the central banker has an aversion for any deviation induced on inflation by disasters, for a country *j* at time *t*, the central banker *i*'s loss function writes:

$$L_{i,j,t} = \left(\pi_{j,t} - \pi^*\right)^2 + \lambda_i \left(\pi_{j,t} - \pi_{j,t}^D\right)^2$$

where $\pi_{j,t}^D$ is the specific inflationary impact of a disaster.

The central banker will react more or less strongly to the departure from her inflation target, and to the inflation impulse induced by a disaster, depending upon the trade-off she makes

[6]Such a functional form for inflation is similar to the one used in, e.g., Heinen et al. (2019).

between the "core" inflation, and the disaster-induced gap. By analogy with the analysis of human capital accumulation in childhood by Almond et al. (2018), and building on Heckman (2007), we assume that the preferences of a central banker are built according to a multi-factor Cobb-Douglas function, of the type:

$$\lambda_i = A_i \Lambda_i^{1-\sum_{D=1}^{n} \alpha_D} \sum_{D=1}^{n} \left(1 + \mu_{jD} \ln(1 + I_D)\right)_i^{\alpha_D}$$

where λ is the degree of conservatism of a central banker, designated by *i*, after her childhood experiences. These are formed according to some parental investment (which we assume is embedded in the productivity factor, *A*), and some self-investment (which is denoted by the first term, Λ). However, the experiences that the central banker has faced through her childhood and training years can also influence her degree of conservatism. In particular, we focus here on the different types of disasters that the central banker can face in childhood.

Without loss of generality, let's consider two types of disasters (for example, floods and storms), I_D, with $j = 1, 2$. The impact of each type of disaster on the degree of conservatism is given by, respectively, α_1 and α_2. The parameters α_D are such that $0 < \alpha_D < 1$. The relation between α_1 and α_2 will signal the extent to which different types of disasters will have a differentiated (if $\alpha_1 \gtrless \alpha_2$) or identical impact (in the specific case where $\alpha_1 = \alpha_2$) on the formation of a central banker's preferences. In other words, functionally, the different types of early-life disasters will be substitutes, to different degrees.

Suppose, for the sake of illustration, that type 1 disaster are floods and type 2 are storms. A flood will typically first reduce the crops and disrupt the delivery of goods, having a positive impact on prices, but an opposite effect can be expected afterwards, as floods deliver alluvions on exploited soils, increasing food supply. A storm destroys capital and dwellings, but may have a more localized impact on food prices, though increasing the demand for

capital goods. In this example, we have $\alpha_1 \ll \alpha_2$, and a central banker being confronted to the two types of disasters in her childhood will be more strongly impacted by storms than floods (conditionally to the severity and intensity of each shock (Heinen et al., 2019, Parker, 2018).

In other words, a central banker confronted with shocks with potential medium-run positive effects in her childhood will not necessarily react strongly in the present days, when confronted with one of those shocks. However, if some shocks are felt more deeply than others, then the behavior of the typical central banker will be more affected in the long-run, and the present-day reaction would be to react in a stronger way (in other words, to react more conservatively to insulate inflation from the consequences of the shock). Hence, shocks and more especially those more intensely felt shocks should induce a higher degree of conservatism. This will tend to have a larger negative impact in the short run (i.e., impact more inflation).

Precisely, μ_{j1} and $\mu_{j2}$are indicators of the intensity of the shock. They are indexed by *j* to reflect the fact that they can appear at the country level, by opposition with the *Ijs*, which indicate the individual-level impact of a disaster. In empirical terms, *Ij* will be equal to either 1 or 0, being equal to 1 if there is a disaster of type *j*, 0 otherwise. And each of the μ_{jn} will be an indicator of the intensity of the experiences of disasters a central banker has known (either by importance – for example, measured by the number of induced deaths -, or by repetition – measured by the number of a particular type of disasters-).

2.4 Data sources and description

2.4.1 Central bankers' characteristics

In order to map a central banker's upbringing with adverse events, we need data on his/her date of birth, to relate the adverse events in a country and particular central banker's early life

(being defined as prenatal to 25 years of age[7]). To quantify the influence of disasters on central bankers' early life, we thus gathered data on each central bankers' date of birth from various sources (central banks websites, Wikipedia pages, Who's who, autobiographies, magazines, newspapers, emails and phone calls).

As career perspectives and experience on the job can also modify a policymaker's behavior, we construct a dummy variable that is coded as 1 if the central banker is reappointed and 0 otherwise. Table 2.2 delivers information on the sample of central bankers for whom the data has been compiled. On average, a central banker is 57-year old, but the youngest one has been appointed at 29, while the oldest in our sample is 83. About half of our central bankers have been reappointed.

All in all, 204 central bankers are present in our sample, out of which 78 (50%) have been reappointed.

Table 2.2 Central bankers' characteristics

Variables	Observations	Mean	Std. Dev.	Min.	Max.
Age	3,900	57.11	8.24	29	83
Reappointment	3,900	0.498	0.50	0	1

2.4.2 Natural disasters

Data on natural disaster comes from the EM-DAT database, built by the Centre for Research on the Epidemiology of Disasters (CRED), using different sources (i.e., UN agencies, insurance companies, non-governmental organizations – NGOs -, insurance companies, press agencies and research institutes). This database offers comprehensive information on natural disasters like earthquakes, storms, floods, droughts and others across the world starting from 1900. At least one out of the four following conditions must be fulfilled to qualify the entry

[7] This definition is based on the results by, for example, Almond (2006).

into the database for a disaster: "i) 10 or more people are reported as died, ii) 100 or more people are reported as affected by the incident, (iii) state of emergency is declared due to the event (iv) there is call a for international aid". These criteria lead us towards the construction of our variables of interest.

More precisely, we use the database to record not only the presence of a disastrous event, but also to gauge the intensity of the episodes (measured by the number of deaths induced). For the current period (2000 to 2012), as can be seen in Table 2.3, we create dummy variables for each disaster, coded 1 if any particular central banker faced the typical disaster during her tenure, and 0 otherwise. Then, we record the number of induced deaths by each disaster. This is done, for the current period, for earthquakes, floods, storms and droughts. Note, however, that the droughts are the less present type of disasters (less than 10% of occurrence), and that the number of deaths involved by droughts in the current period is tiny, which will lead us afterwards to discard this variable in the estimates. As can be seen from Table 2.3, although earthquakes are not the more recurrent events (occurring in 16% of the quarters, on average, for the period under review) – compared, for example, to floods (present in 54% of the quarters). However, they are the most disastrous events, by the number of deaths they induce (more than 3,367, on average).

Table 2.3 Disasters, current period (2000Q1-2012Q4)

Variables	Observations	Mean	Std. Dev.	Min.	Max.
Earthquakes (presence)	3,552	0.16	0.36	0	1
Earthquakes (number of deaths)	564	3367.13	17296.21	0	165816
Floods (presence)	3,552	0.54	0.50	0	1
Floods (number of deaths)	1,932	107.21	288.74	0	2129
Storms (presence)	3,552	0.36	0.48	0	1
Storms (number of deaths)	1,288	91.01	354.47	0	4275
Droughts (presence)	3,552	0.095	0.29	0	1
Droughts (number of deaths)	336	3.43	17.33	0	134

For central banker's early-life periods, we proceed in almost the same way, with two differences. First, we add to the presence and the intensity (number of deaths), a measure of recurrence, counting the number of events faced during the early-life period (the number of earthquakes, for example, a central banker has known during her first 26 years). Second, we add epidemics to the series of disasters than can influence the behaviour of a central banker. Even if epidemics are not present enough in the current period, from a statistical point of view, these are obviously experiences that can impress a mind. As Table 2.4 shows, epidemics were not the most present type of disasters (14% of occurrences for the central bankers we cover in the sample period), and they are not among the most killing disasters. Nevertheless, it also to be kept in mind that there are not a lot of epidemic episodes in our sample (as the maximum number of events is equal to 6, and that they have mostly been faced by the same central banker). Note also that droughts were also much more present in the past than in the present period, with large impacts in terms of dead people.[8]

[8]The oft-reported experience of the drought that has influenced Amartya Sen's vocation is a case in point supporting our argument and the need to consider past droughts, even though present ones are, fortunately, much less devastating.

Table 2.4 Early-life traumas faced by central bankers

Variables	Observations	Mean	Std. Dev.	Min.	Max.
Earthquakes (presence)	3,900	.40	.49	0	1
Earthquakes (number of occurrence)	3,900	1.64	3.12	0	16
Earthquakes (number of deaths)	3,900	2742.198	12950.96	0	168231
Floods (presence)	3,900	.54	.50	0	1
Floods (number of occurrence)	3,900	2.46	3.57	0	21
Floods (number of deaths)	3,900	28863.64	240521.7	0	2097377
Storms (presence)	3,900	.47	.50	0	1
Storms (number of occurrence)	3,900	2.45	5.03	0	26
Storms (number of deaths)	3,900	5259.359	37474.79	0	399203
Droughts (presence)	3,900	.23	.42	0	1
Droughts (number of occurrence)	3,900	.41	.94	0	8
Droughts (number of deaths)	3,900	44473.68	328835.4	0	3000000
Epidemics (presence)	3,900	.14	.34	0	1
Epidemics (number of occurrence)	3,900	.21	.64	0	6
Epidemics (number of deaths)	3,900	61.62333	337.6608	0	3073

2.4.3 Economic variables

Macroeconomic data for the 75 countries in the sample for the period 2000Q1-2012Q4 comes from various sources. The KOF index data is borrowed from KOF Swiss Economic institute, Data on population density and urban population growth is taken from World Development Indicators (WDI). Inflation data, in terms of consumer prices, is gathered from the IMF's International Financial Statistics (IFS). The list of sample countries is given in the Appendix (2.B). The sample includes both developed and developing countries. This, and the control variable related to central bank independence (which can be understood in the context of the present study as a control of the degree of a central banker's country degree of conservatism).

Table 2.5 Control variables

Variables	Observations	Mean	Std. Dev.	Min.	Max.
Urban population growth	3,822	1.46	1.61	-2.85	8.58
Population density	3,822	308.40	1062.63	2.49	7524.70
Central bank independence	3,746	0.62	0.20	0.08	0.97
KOF Globalization Index	3,828	69.02	13.09	27.24	89.85

2.5 Empirical strategy

As stated above, the aim is to assess the performance of central bankers, in terms of inflation management, based on their early life traumatic experiences and in relation to present-day disasters. Our empirical strategy thus focuses on matching quarterly macroeconomic data with corresponding natural, for the period 2000Q1 to 2012Q4, subject to the availability of data on the key variables used in the panel analysis.

The model entails continental and Governor fixed effects and time varying variables on disasters and economic variables. In order to understand the behavior of central bankers exposed to traumas in their early life in comparison to their counterparts, the estimation strategy takes into account the interactions between the variables that are representative of the early experience and the current episodes of disasters.

The expected reactions from central banks to disasters is to consider them as adverse supply shocks, either because of the entailed destruction of capital and crops, leading to a decline in productivity (Keen and Pakao, 2007, Coeuré, 2018). Once again, let us signal that floods may have a less obvious impact.

Following the same strand of literature, we estimate the following equation:

$$\pi_{j,q} = \alpha + \beta\lambda_{j,q} + \gamma X_{j,q} + \delta T_{j,q} + \rho D_{j,q} + \varphi\left(T_{j,q} \cdot D_{j,q}\right) + \tau C_j + \varepsilon_{j,q}$$

where $\pi_{j,q}$ represents the dependent variable, i.e., the inflation rate (measured by the consumer price index). $\pi_{j,q}$ is the quarterly log difference in CPI in country *j* in quarter *q*.

In the above equation, $\lambda_{j,q}$ indicates the central bankers characteristics (such as age and reappointment) and $X_{j,q}$ refers to a vector of macroeconomic control variables. $T_{j,q}$ represents a set of variables related to the traumas faced by a central banker in her early life, and $D_{j,q}$ those confronted during her term in office. $\left(T_{j,q} \cdot D_{j,q}\right)$ refers to our variables of interest, i.e.,

the interactions between the early life traumas and the disasters that are faced during a central banker's term. In other words, these variables assess the mechanism through which a central banker manages inflation, based on her early life experience when faced with similar traumas during her term. We also a continental fixed effect, C_j, to account for common factors among large climatic areas. Finally, $\varepsilon_{j,q}$ is the error term.

2.6 Results

Table 2.6 summarizes our results (the full set of tables is provided in a joint appendix 2.A). The first part of the table provides the results for the presence of an event (i.e., at least one past earthquake, and at least one earthquake during a central banker's mandate). The middle part of the table shows the results for the number of past events, related to the number of present events. This is a first appraisal of the relation between the intensities of disasters, which is completed by the bottom part of table, where we provide estimates of the relation between the number of deaths induced by past events and the number of deaths of the present day ones.

As can be seen, in the three parts of the table, most of the significant coefficients attached to the interaction between the past disasters and the present ones are negative, as was expected. The only exception is for floods, and this was also expected, as explained above. In plain words, when a central banker is confronted to a disaster, it reacts in a conservative way, to keep control of inflation, as disasters may induce an increase in prices which would affect the population.

Quite paradoxically, this conservative reaction can be described as a pro-poor response as, among the population hit by a disaster, the poorest are the most affected (for instance, in an earthquake, the less well based dwellings will be more affected than the concrete-built houses). That floods induce a different reaction also lies in conformity with such an appraisal,

as floods can be disruptive and mortal in the short-run, but induce positive effects in the medium-run (in terms of agricultural production, in particular).

The relationship between the number of past events a central banker had to face and the number of present ones (middle part of Table 2.6) is generally not significant, except for past epidemics. As noted above, epidemics are not numerous in our sample, but can be importantly dreadful events. Our results exhibit a positive relation between the number of past epidemics and the dummy variable of current earthquakes. Although the relation is driven by few occurrences, its strength and significance are nevertheless striking. An explanation for this result, which reveals a very accommodative stance towards inflation in presence of earthquakes when a central banker has faced epidemics in the past, is that earthquakes - especially large ones - can be followed by epidemic bursts, affecting strongly the population (in our sample, the correlation between the two types of disasters is equal to 0.40). To release this "double pain", a central banker is thus driven to accommodate the related inflationary spikes.

Finally, as can be seen in the bottom part of Table 2.6, the results show that the intensity of past events matters less than the sheer presence of the disasters. In the terms of the theoretical framework above, this means that the intensity parameter is less influential than the experience of going through a disaster. This result is a rejoinder to the existing literature on how past experiences shape current preferences, although, in a central banking context, Farvaque et al. (2019) show that the length of a recession matters more than the experience itself. However, recessions can be relatively smooth periods, compared to environmental disasters, and it is thus not really surprising that the experience of the latter proves much more traumatic, and influential, compared to their intensity.

Table 2.6 Central bankers' reactions to inflation based on current disasters and early life

(Summary of results)

Variables (past traumas)	Current Disasters						
	Earthquake (dummy)	Earthquake (deaths)	Flood (dummy)	Flood (deaths)	Storm (dummy)	Storm (deaths)	Drought (dummy)
Presence of events							
Earthquake dummy	-0.394* (0.233)	-0.274** (0.131)	0.314* (0.180)	-0.034 (0.091)	-0.258 (0.244)	-0.043 (0.105)	-0.286 (0.446)
Any past trauma dummy	-0.354 (0.270)	-0.274** (0.131)	0.435** (0.170)	-0.102 (0.103)	-0.267 (0.214)	-0.043 (0.197)	0.504 (0.459)
Flood Dummy	-0.043 (0.265)	-0.274** (0.131)	0.400** (0.169)	-0.217** (0.110)	-0.465** (0.199)	-0.335* (0.178)	0.252 (0.423)
Storm dummy	0.308 (0.440)	0.160 (0.303)	0.157 (0.196)	0.080 (0.129)	-0.400* (0.206)	-0.374* (0.197)	-0.604 (0.436)
Drought dummy	-0.666** (0.333)	0.081 (0.117)	0.298 (0.363)	0.025 (0.113)	0.058 (0.321)	0.024 (0.081)	0.395 (0.523)
Epidemic dummy	0.506 (0.338)	-0.036 (0.217)	0.538 (0.442)	0.005 (0.087)	-0.594 (0.410)	-0.109 (0.085)	0.429 (0.747)
Frequency of events							
Number of earthquakes	-0.018 (0.028)	-0.006 (0.028)	0.071 (0.069)	-0.013** (0.006)	-0.086 (0.067)	-0.013 (0.015)	-0.072 (0.061)
Number of floods	0.000 (0.026)	0.032* (0.018)	0.110* (0.058)	-0.009 (0.008)	-0.066** (0.030)	-0.016 (0.011)	-0.008 (0.030)
Number of storms	-0.005 (0.012)	0.003 (0.008)	0.018 (0.013)	0.003 (0.005)	-0.021 (0.014)	-0.007 (0.006)	-0.024 (0.018)
Number of droughts	-0.274 (0.174)	0.007 (0.028)	0.223 (0.180)	0.004 (0.019)	-0.020 (0.103)	0.005 (0.035)	0.085 (0.157)
Number of epidemics	0.238*** (0.089)	-0.153 (0.099)	0.207 (0.289)	0.005 (0.026)	-0.557** (0.252)	-0.035 (0.056)	-0.009 (0.195)
Intensity of events							
Earthquake deaths	-0.020 (0.027)	0.018 (0.024)	0.068 (0.044)	-0.011 (0.010)	-0.051 (0.040)	-0.009 (0.013)	-0.050 (0.053)
Flood Deaths	0.002 (0.030)	0.012 (0.013)	0.099*** (0.038)	-0.018 (0.013)	-0.067** (0.032)	-0.022* (0.012)	-0.001 (0.046)
Storm Deaths	0.034 (0.040)	0.013 (0.036)	0.027 (0.040)	0.007 (0.013)	-0.057** (0.029)	-0.021 (0.014)	-0.079* (0.042)
Drought deaths	0.006 (0.017)	-0.007 (0.008)	0.120*** (0.035)	0.007 (0.006)	-0.127 (0.105)	-0.008* (0.005)	0.074 (0.080)
Epidemic deaths	0.065 (0.620)	-0.007 (0.051)	0.121 (0.148)	-0.010 (0.012)	-0.163* (0.095)	-0.016 (0.020)	0.031 (0.080)
Observations	1637	519	2837	1773	2972	1183	1643

Robust standard errors in parentheses.
Significance levels: * p<0.1, ** p<0.05, *** p<0.01

2.7 Robustness checks

This section deals with the robustness tests for our baseline estimation. In order to boost efficiency of results we introduce more variables i.e., coastline in kilometers, coastline squared and monetary policy committee size, in different specifications. Another potential concern may be the implementation delays of monetary policy decisions. In order to account for policy lags, we re-estimated all the equations by using inflation of subsequent quarters as dependent variable. Our results remain robust to using forward inflation [e.g., $\pi_{j,q+1}$, $\pi_{j,q+2}$][9]. The thrust of our result is not modified and key message remains same, in particular concerning the signs of the variables of interest. Table 2.7 provides summary of estimates by using forward inflation for next quarter [$\pi_{j,q+1}$] and Table 2.8 show the summary of regression estimates on forward inflation [$\pi_{j,q+2}$].

Coastline controls for the fact of being landlocked country or having coastline because of different impact/exposure to disasters. The literature suggests that in many countries (not all of the countries included in our analysis) monetary policy is decided by monetary policy making committee. It may be argued that decision on monetary policy is not made by just governor. To control for the power of the governor we included the voting power of governor (1/committee size) in the specification. We confirm that our results are robust to baseline estimation based on additional variables.

[9] The results remain unchanged, even if we add additional variables or use forward inflation. The results are available on request.

Table 2.7 Central bankers' reactions to inflation based on current disasters and early life (q_1)

(Summary of result based on forward inflation-q_1)

Variables (past traumas)	Current Disasters						
	Earthquake dummy	Earthquake deaths	Flood dummy	Flood deaths	Storm dummy	Storm deaths	Drought dummy
Presence of events							
Earthquake dummy	-0.433* (0.227)	-0.134 (0.128)	0.343* (0.196)	0.078 (0.072)	-0.448** (0.206)	0.091 (0.166)	-0.080 (0.358)
Any past trauma dummy	-0.410 (0.334)	-0.134 (0.128)	0.488** (0.220)	-0.136 (0.087)	-0.293 (0.208)	-0.284 (0.241)	0.177 (0.302)
Flood Dummy	-0.043 (0.268)	-0.134 (0.128)	0.356* (0.190)	-0.233*** (0.084)	-0.392** (0.184)	-0.402*** (0.152)	-0.055 (0.400)
Storm dummy	0.115 (0.340)	0.260 (0.262)	0.250 (0.217)	-0.042 (0.084)	-0.388** (0.189)	-0.480*** (0.164)	-0.597 (0.385)
Drought dummy	-0.320** (0.155)	0.102 (0.100)	0.278 (0.363)	0.004 (0.077)	0.013 (0.293)	-0.112 (0.113)	-0.026 (0.416)
Epidemic dummy	0.176 (0.296)	0.067 (0.175)	0.664* (0.347)	-0.101 (0.082)	-0.401 (0.336)	-0.428* (0.227)	-0.319 (0.458)
Frequency of events							
Number of earthquakes	-0.036* (0.021)	0.000 (0.022)	0.086* (0.046)	0.006 (0.013)	-0.098** (0.038)	-0.001 (0.020)	-0.031 (0.048)
Number of floods	0.006 (0.025)	0.021 (0.016)	0.085 (0.052)	-0.011* (0.006)	0.051** (0.025)	-0.016 (0.011)	0.000 (0.034)
Number of storms	-0.014 (0.010)	0.001 (0.007)	0.013 (0.014)	-0.003 (0.004)	-0.015 (0.015)	-0.007 (0.007)	0.000 (0.015)
Number of droughts	-0.150** (0.066)	0.037 (0.027)	0.199 (0.180)	-0.007 (0.013)	-0.013 (0.095)	-0.030 (0.044)	-0.000 (0.106)
Number of epidemics	0.073 (0.080)	-0.097 (0.087)	0.423** (0.187)	-0.014 (0.031)	-0.466*** (0.155)	-0.141 (0.144)	-0.075 (0.155)
Intensity of events							
Earthquake deaths	-0.038 (0.026)	0.017 (0.021)	0.068* (0.038)	0.005 (0.009)	-0.076** (0.030)	0.006 (0.019)	-0.029 (0.042)
Flood Deaths	-0.011 (0.029)	0.001 (0.012)	0.087** (0.035)	-0.021** (0.011)	--0.042 (0.027)	-0.024** (0.011)	-0.015 (0.038)
Storm Deaths	0.003 (0.032)	0.004 (0.031)	0.039 (0.038)	-0.008 (0.009)	-0.064** (0.029)	-0.021 (0.014)	-0.050 (0.043)
Drought deaths	-0.005 (0.016)	-0.001 (0.007)	0.091*** (0.032)	-0.013 (0.013)	-0.063 (0.077)	-0.018 (0.018)	-0.039 (0.053)
Epidemic deaths	-0.006 (0.050)	0.010 (0.041)	0.172* (0.101)	-0.017 (0.014)	-0.143** (0.061)	-0.046 (0.038)	0.030 (0.080)
Observations	1640	520	2843	1776	2979	1184	1648

Robust standard errors in parentheses.
Significance levels: * p<0.1, ** p<0.05, *** p<0.01

Table 2.8 Central bankers' reactions to inflation based on current disasters and early life (q_2)

(Summary of result based on forward inflation-q_2)

Variables (past traumas)	Current Disasters						
	Earthquake dummy	Earthquake deaths	Flood dummy	Flood deaths	Storm dummy	Storm deaths	Drought dummy
Presence of events							
Earthquake dummy	-0.568** (0.257)	-0.095 (0.123)	0.374* (0.212)	0.127 (0.081)	-0.434** (0.176)	0.046 (0.171)	-0.194 (0.372)
Any past trauma dummy	-0.716* (0.386)	-0.095 (0.123)	0.557** (0.249)	-0.009 (0.080)	-0.384* (0.230)	-0.251 (0.257)	-0.068 (0.283)
Flood Dummy	-0.115 (0.337)	-0.095 (0.123)	0.343 (0.211)	-0.064 (0.097)	-0.358** (0.180)	-0.345** (0.141)	-0.166 (0.376)
Storm dummy	-0.001 (0.354)	0.115 (0.160)	0.274 (0.233)	-0.098 (0.110)	-0.325* (0.180)	-0.409** (0.159	-0.381 (0.424)
Drought dummy	0.044 (0.351)	0.103 (0.113)	0.378 (0.366)	0.089 (0.108)	-0.068 (0.289)	-0.091 (0.120)	-0.327 (0.344)
Epidemic dummy	-0.099 (0.310)	0.095 (0.169)	0.678* (0.387)	-0.170* (0.103)	-0.374 (0.304)	-0.409 (0.253)	-0.052 (0.486)
Frequency of events							
Number of earthquakes	-0.036 (0.033)	0.004 (0.023)	0.094* (0.053)	0.007 (0.012)	-0.068*** (0.018)	-0.002 (0.024)	-0.031 (0.047)
Number of floods	0.008 (0.031)	0.020 (0.015)	0.076 (0.060)	-0.004 (0.007)	-0.034 (0.025)	-0.018* (0.010)	0.001 (0.030)
Number of storms	-0.009 (0.010)	0.001 (0.006)	0.010 (0.015)	-0.006 (0.004)	-0.011 (0.014)	-0.010 (0.008)	0.012 (0.015)
Number of droughts	0.070 (0.144)	0.017 (0.028)	0.216 (0.190)	0.003 (0.023)	-0.049 (0.107)	-0.038 (0.045)	-0.057 (0.110)
Number of epidemics	0.017 (0.153)	-0.077 (0.097)	0.449** (0.203)	-0.047 (0.031)	-0.466*** (0.155)	-0.115 (0.143)	0.032 (0.138)
Intensity of events							
Earthquake deaths	-0.059* (0.032)	0.023 (0.023)	0.068 (0.046)	0.011 (0.011)	-0.070*** (0.026)	0.001 (0.020)	-0.036 (0.049)
Flood Deaths	-0.018 (0.035)	0.002 (0.012)	0.083** (0.040)	-0.008 (0.010)	-0.034 (0.025)	-0.022** (0.010)	-0.011 (0.031)
Storm Deaths	-0.001 (0.029)	-0.001 (0.030)	0.043 (0.039)	-0.013 (0.010)	-0.050 (0.033)	-0.022 (0.014)	-0.023 (0.046)
Drought deaths	0.012 (0.009)	-0.003 (0.007)	0.077*** (0.017)	-0.017 (0.017)	0.051 (0.062)	-0.020 (0.018)	-0.034 (0.054)
Epidemic deaths	-0.032 (0.060)	0.015 (0.040)	0.207* (0.109)	-0.021 (0.014)	-0.087** (0.039)	-0.045 (0.045)	0.067 (0.057)
Observations	1642	521	2845	1777	2981	1184	1650

Robust standard errors in parentheses.
Significance levels: * p<0.1, ** p<0.05, *** p<0.01

2.8 Conclusion

Our results reveal that central bankers who have been exposed when children to traumas (epidemics, earthquakes, droughts, floods and storms) tend to manage inflation differently, compared with those who have not faced such traumas. The reappointment of central banker also plays a significant role related to inflation targeting (IT), while controlling for other variables like economic integration and growth. This study attempts to explain the mechanism of the central bankers' reaction to similar traumas (in early life) and when they faced in their tenure at office. It includes a large geographical sample of countries entailing both developing countries and developed countries, and reveals that past experiences do affect current reactions.

2.A Appendix: Current and early life disaster detailed tables

Table A.1 Current earthquake presence and early life traumas' presence

Variables	(1)	(2)	(3)	(4)	(5)	(6)
Current earthquake (presence) Ref (0=No earthquake)	0.220 (0.153)	0.223 (0.217)	-0.063 (0.169)	-0.320 (0.422)	0.108 (0.105)	-0.197 (0.164)
Early life earthquake (presence) Ref (0=No earthquake)	3.359 (2.079)					
Current earthquake (presence) x Early life earthquake (presence)	-0.394* (0.233)					
Age of central banker	-0.098* (0.050)	-0.097* (0.051)	-0.100* (0.051)	-0.103** (0.052)	-0.096* (0.049)	-0.106** (0.053)
Central banker reappointment Ref (0=No reappointment)	-2.350* (1.361)	-2.362* (1.361)	-2.360* (1.379)	-0.868 (1.500)	-2.563* (1.397)	-2.610* (1.430)
Central bank independence Index(CBI)	-0.216 (0.393)	-0.197 (0.396)	-0.108 (0.354)	-0.141 (0.288)	-0.074 (0.388)	-0.097 (0.318)
Population density	0.003 (0.013)	0.003 (0.013)	0.003 (0.013)	0.003 (0.013)	0.001 (0.012)	0.001 (0.012)
Urban population growth	-0.039 (0.074)	-0.045 (0.073)	-0.051 (0.074)	-0.063 (0.074)	-0.047 (0.070)	-0.075 (0.078)
Globalization Index (KOF)	0.073 (0.047)	0.074 (0.047)	0.075 (0.048)	0.079* (0.047)	0.076 (0.048)	0.081* (0.049)
Any early life trauma (presence) Ref (0=No trauma)		-2.195** (1.059)				
Current earthquake (presence) x Any early life trauma (presence)		-0.354 (0.270)				
Early life flood (presence) Ref (0=No flood)			-2.341** (1.056)			
Current earthquake (presence) x Early life flood (presence)			-0.043 (0.265)			
Early life storm (presence) Ref (0=No storm)				-1.745 (1.358)		
Current earthquake (presence) x Early life storm (presence)				0.308 (0.440)		
Early life drought (presence) Ref (0=No drought)					-0.293 (0.408)	
Current earthquake (presence) x Early life drought (presence)					-0.666** (0.333)	
Early life epidemic (presence) Ref (0=No epidemic)						0.253 (2.168)
Current earthquake (presence) x Early life epidemic (presence)						0.506 (0.338)
Constant	0.346 (2.397)	5.847*** (1.856)	6.035*** (1.874)	3.857*** (1.301)	3.996*** (1.044)	3.933*** (1.317)
Governor F.E Continent F.E	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes
Observations	1637	1637	1637	1637	1637	1637

Robust standard errors in parentheses.
* p<0.1, ** p<0.05, *** p<0.01

Table A.2 Current earthquake presence and early life traumas' frequency

Variables	(1)	(2)	(3)	(4)	(5)
Current earthquake (presence) Ref (0=No earthquake)	-0.017 (0.201)	-0.093 (0.147)	-0.069 (0.207)	0.061 (0.106)	-0.171 (0.155)
Early life earthquake (Numbers)	-0.452*** (0.105)				
Current earthquake (presence) x Early life earthquake (Numbers)	-0.018 (0.028)				
Age of central banker	-0.101** (0.050)	-0.101** (0.051)	-0.101** (0.050)	-0.094* (0.049)	-0.103** (0.051)
Central banker reappointment Ref (0=No reappointment)	-3.433** (1.518)	-2.545* (1.389)	-1.726 (1.283)	-2.270* (1.358)	-2.496* (1.368)
Central bank independence Index(CBI)	-0.135 (0.355)	-0.141 (0.343)	-0.087 (0.345)	-0.089 (0.380)	-0.101 (0.323)
Population density	0.004 (0.014)	0.003 (0.013)	0.003 (0.014)	0.001 (0.012)	0.002 (0.013)
Urban population growth	-0.049 (0.072)	-0.056 (0.073)	-0.047 (0.072)	-0.049 (0.070)	-0.066 (0.075)
Globalization Index (KOF)	0.081* (0.048)	0.081* (0.048)	0.074 (0.047)	0.074 (0.048)	0.078* (0.047)
Early life flood (Numbers)		-0.233*** (0.065)			
Current earthquake (presence) x Early life flood (Numbers)		0.000 (0.026)			
Early life storm (Numbers)			-0.300 (0.271)		
Current earthquake (presence) x Early life storm (Numbers)			-0.005 (0.012)		
Early life drought (Numbers)				-0.197 (0.216)	
Current earthquake (presence) x Early life drought (Numbers)				-0.274 (0.174)	
Early life epidemic (Numbers)					0.145 (2.293)
Current earthquake (presence) x Early life epidemic (Numbers)					0.238*** (0.089)
Constant	5.265*** (0.984)	4.892*** (0.978)	3.670*** (1.238)	4.080*** (1.055)	3.839*** (1.276)
Governor F.E Continent F.E	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes
Observations	1637	1637	1637	1637	1637

Robust standard errors in parentheses.
* p<0.1, ** p<0.05, *** p<0.01

Table A.3 Current earthquake presence and early life traumas' deaths

Variables	(1)	(2)	(3)	(4)	(5)
Current earthquake (presence) Ref (0=No earthquake)	0.016 (0.173)	-0.102 (0.158)	-0.252 (0.282)	-0.103 (0.157)	-0.158 (0.163)
Early life earthquake (deaths)	0.714*** (0.166)				
Current earthquake (presence) x Early life earthquake (deaths)	-0.020 (0.027)				
Age of central banker	-0.100** (0.050)	-0.101** (0.051)	-0.102** (0.051)	-0.101** (0.051)	-0.104** (0.052)
Central banker reappointment Ref (0=No reappointment)	-0.358 (1.278)	-3.210** (1.465)	-1.727 (1.263)	-2.392* (1.356)	-2.506* (1.412)
Central bank independence Index(CBI)	-0.193 (0.358)	-0.139 (0.342)	-0.144 (0.307)	-0.101 (0.337)	-0.098 (0.326)
Population density	0.003 (0.014)	0.003 (0.014)	0.002 (0.013)	0.003 (0.013)	0.002 (0.012)
Urban population growth	-0.049 (0.072)	-0.056 (0.073)	-0.059 (0.075)	-0.052 (0.074)	-0.065 (0.076)
Globalization Index (KOF)	0.080* (0.048)	0.081* (0.048)	0.080* (0.047)	0.076 (0.047)	0.078 (0.048)
Early life flood (deaths)		-0.939*** (0.231)			
Current earthquake (presence) x Early life flood (deaths)		0.002 (0.030)			
Early life storm (deaths)			-0.200 (0.153)		
Current earthquake (presence) x Early life storm (deaths)			0.034 (0.040)		
Early life drought (deaths)				0.009 (0.109)	
Current earthquake (presence) x Early life drought (deaths)				0.006 (0.017)	
Early life epidemic (deaths)					0.064 (0.620)
Current earthquake (presence) x Early life epidemic (deaths)					0.065 (0.064)
Constant	-0.996 (2.167)	9.184*** (0.839)	3.750*** (1.245)	3.683*** (1.230)	3.833*** (1.313)
Governor F.E Continent F.E	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes
Observations	1637	1637	1637	1637	1637

Robust standard errors in parentheses.
* p<0.1, ** p<0.05, *** p<0.01

Table A.4 Current earthquake deaths and early life traumas' presence

Variables	(1)	(2)	(3)	(4)	(5)	(6)
Current earthquake (deaths)	0.282***	0.282***	0.282***	-0.146	-0.043	0.023
	(0.086)	(0.086)	(0.086)	(0.295)	(0.087)	(0.034)
Early life earthquake (presence) Ref (0=No earthquake)	-4.239					
	(3.453)					
Current earthquake (deaths) x Early life earthquake (presence)	-0.274**					
	(0.131)					
Age of central banker	-0.125	-0.125	-0.125	-0.113	-0.110	-0.121
	(0.189)	(0.189)	(0.189)	(0.190)	(0.188)	(0.208)
Central banker reappointment Ref (0=No reappointment)	-2.709	-2.709	-2.709	-3.098	-3.300	-2.794
	(5.453)	(5.453)	(5.453)	(6.355)	(5.690)	(5.641)
Central bank independence Index(CBI)	-2.598**	-2.598**	-2.598**	-2.404**	-2.026*	-2.657*
	(1.192)	(1.192)	(1.192)	(0.975)	(1.184)	(1.495)
Population density	-0.008	-0.008	-0.008	-0.012	0.002	-0.009
	(0.043)	(0.043)	(0.043)	(0.042)	(0.040)	(0.042)
Urban population growth	0.275	0.275	0.275	0.353	0.300	0.353
	(0.511)	(0.511)	(0.511)	(0.558)	(0.521)	(0.496)
Globalization Index (KOF)	0.139	0.139	0.139	0.160	0.170	0.146
	(0.177)	(0.177)	(0.177)	(0.175)	(0.180)	(0.194)
Any early life trauma (presence) Ref (0=No trauma)		-4.239				
		(3.453)				
Current earthquake (deaths) x Any early life trauma (presence)		-0.274**				
		(0.131)				
Early life flood (presence) Ref (0=No flood)			-4.239			
			(3.453)			
Current earthquake (deaths) x Early life flood (presence)			-0.274**			
			(0.131)			
Early life storm (presence) Ref (0=No storm)				-0.475		
				(4.006)		
Current earthquake (deaths) x Early life storm (presence)				0.160		
				(0.303)		
Early life drought (presence) Ref (0=No drought)					-1.406***	
					(0.396)	
Current earthquake (deaths) x Early life drought (presence)					0.081	
					(0.117)	
Early life epidemic (presence) Ref (0=No epidemic)						4.162
						(7.424)
Current earthquake (deaths) x Early life epidemic (presence)						-0.036
						(0.217)
Constant	5.471***	5.471***	5.471***	0.107	-0.177	0.599
	(2.116)	(2.116)	(2.116)	(4.719)	(4.874)	(3.560)
Governor F.E	Yes	Yes	Yes	Yes	Yes	Yes
Continent F.E	Yes	Yes	Yes	Yes	Yes	Yes
Observations	519	519	519	519	519	519

Robust standard errors in parentheses.
* p<0.1, ** p<0.05, *** p<0.01

Table A.5 Current earthquake deaths and early life traumas' frequency

Variables	(1)	(2)	(3)	(4)	(5)
Current earthquake (deaths)	0.055 (0.139)	-0.231 (0.146)	-0.008 (0.103)	0.006 (0.067)	0.084 (0.064)
Early life earthquake (Numbers)	-0.587*** (0.177)				
Current earthquake (deaths) x Early life earthquake (Numbers)	-0.006 (0.028)				
Age of central banker	-0.119 (0.200)	-0.132 (0.192)	-0.122 (0.199)	-0.115 (0.188)	-0.126 (0.167)
Central banker reappointment Ref (0=No reappointment)	-4.879 (5.843)	-3.812 (5.526)	-3.098 (6.003)	-2.985 (5.590)	-2.236 (3.695)
Central bank independence Index(CBI)	-2.384 (1.698)	-3.225*** (1.049)	-2.785* (1.500)	-2.153** (0.977)	-3.959** (1.778)
Population density	-0.009 (0.039)	0.009 (0.041)	-0.011 (0.044)	-0.006 (0.039)	-0.004 (0.036)
Urban population growth	0.327 (0.514)	0.568 (0.568)	0.370 (0.503)	0.323 (0.517)	0.485 (0.496)
Globalization Index (KOF)	0.180 (0.183)	0.187 (0.184)	0.154 (0.203)	0.178 (0.181)	0.126 (0.116)
Early life flood (Numbers)		-0.286** (0.120)			
Current earthquake (deaths) x Early life flood (Numbers)		0.032* (0.018)			
Early life storm (Numbers)			0.015 (0.781)		
Current earthquake (deaths) x Early life storm (Numbers)			0.003 (0.008)		
Early life drought (Numbers)				-0.604*** (0.218)	
Current earthquake (deaths) x Early life drought (Numbers)				0.007 (0.028)	
Early life epidemic (Numbers)					3.573 (6.591)
Current earthquake (deaths) x Early life epidemic (Numbers)					-0.153 (0.099)
Constant	1.460 (5.232)	0.333 (4.440)	0.552 (3.659)	-0.010 (4.517)	1.586 (4.935)
Governor F.E Continent F.E	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes
Observations	519	519	519	519	519

Robust standard errors in parentheses.
* p<0.1, ** p<0.05, *** p<0.01

Table A.6 Current earthquake deaths and early life traumas' deaths

Variables	(1)	(2)	(3)	(4)	(5)
Current earthquake (deaths)	-0.135 (0.173)	-0.095 (0.141)	-0.081 (0.298)	0.034 (0.068)	0.022 (0.042)
Early life earthquake (deaths)	0.748* (0.407)				
Current earthquake (deaths) x Early life earthquake (deaths)	0.018 (0.024)				
Age of central banker	-0.104 (0.203)	-0.119 (0.191)	-0.124 (0.203)	-0.114 (0.189)	-0.120 (0.204)
Central banker reappointment Ref (0=No reappointment)	-1.144 (5.658)	-4.478 (5.533)	-3.236 (6.239)	-2.610 (5.591)	-2.815 (5.837)
Central bank independence Index(CBI)	-2.242** (0.915)	-2.347** (1.078)	-2.909 (1.778)	-2.783** (1.304)	-2.663* (1.612)
Population density	-0.013 (0.042)	-0.008 (0.042)	-0.009 (0.042)	-0.021 (0.046)	-0.010 (0.042)
Urban population growth	0.349 (0.519)	0.369 (0.522)	0.381 (0.519)	0.345 (0.499)	0.347 (0.494)
Globalization Index (KOF)	0.171 (0.194)	0.182 (0.181)	0.165 (0.227)	0.138 (0.185)	0.147 (0.199)
Early life flood (deaths)		-1.062** (0.468)			
Current earthquake (deaths) x Early life flood (deaths)		0.012 (0.013)			
Early life storm (deaths)			-0.078 (0.562)		
Current earthquake (deaths) x Early life storm (deaths)			0.013 (0.036)		
Early life drought (deaths)				0.395 (0.397)	
Current earthquake (deaths) x Early life drought (deaths)				-0.007 (0.008)	
Early life epidemic (deaths)					1.160 (2.031)
Current earthquake (deaths) x Early life epidemic (deaths)					-0.007 (0.051)
Constant	-5.812 (5.722)	5.428 (4.176)	0.409 (3.678)	1.164 (3.546)	0.584 (3.407)
Governor F.E Continent F.E	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes
Observations	519	519	519	519	519

Robust standard errors in parentheses.
* p<0.1, ** p<0.05, *** p<0.01

Table A.7 Current flood presence and early life traumas' presence

Variables	(1)	(2)	(3)	(4)	(5)	(6)
Current flood (presence) Ref (0=No flood)	-0.109 (0.104)	-0.277** (0.130)	-0.179* (0.108)	-0.055 (0.100)	-0.045 (0.075)	-0.055 (0.080)
Early life earthquake (presence) Ref (0=No earthquake)	3.641** (1.642)					
Current flood (presence) x Early life earthquake (presence)	0.314* (0.180)					
Age of central banker	-0.110*** (0.037)	-0.108*** (0.036)	-0.108*** (0.036)	-0.110*** (0.037)	-0.111*** (0.036)	-0.112*** (0.036)
Central banker reappointment Ref (0=No reappointment)	1.302** (0.537)	1.345** (0.543)	1.294** (0.530)	1.270** (0.531)	1.261** (0.542)	1.269** (0.535)
Central bank independence Index(CBI)	-0.719 (0.695)	-0.689 (0.681)	-0.700 (0.670)	-0.651 (0.696)	-0.687 (0.708)	-0.617 (0.683)
Population density	0.027* (0.016)	0.027* (0.016)	0.027* (0.015)	0.027* (0.016)	0.028* (0.016)	0.028* (0.016)
Urban population growth	-0.050 (0.112)	-0.058 (0.109)	-0.044 (0.109)	-0.043 (0.111)	-0.046 (0.111)	-0.048 (0.111)
Globalization Index (KOF)	0.043 (0.067)	0.044 (0.067)	0.045 (0.067)	0.044 (0.067)	0.047 (0.068)	0.048 (0.067)
Any early life trauma (presence) Ref (0=No trauma)		3.734** (1.654)				
Current earthquake (presence) x Any early life trauma (presence)		0.435** (0.170)				
Early life flood (presence) Ref (0=No flood)			0.517*** (0.146)			
Current flood (presence) x Early life flood (presence)			0.400** (0.169)			
Early life storm (presence) Ref (0=No storm)				-3.295** (1.316)		
Current flood (presence) x Early life storm (presence)				0.157 (0.196)		
Early life drought (presence) Ref (0=No drought)					-1.139** (0.531)	
Current flood (presence) x Early life drought (presence)					0.298 (0.363)	
Early life epidemic (presence) Ref (0=No epidemic)						-4.476* (2.440)
Current flood (presence) x Early life epidemic (presence)						0.538 (0.442)
Constant	0.750 (3.675)	0.606 (3.637)	3.702 (2.314)	4.551* (2.487)	5.339** (2.162)	4.507* (2.498)
Governor F.E Continent F.E	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes
Observations	2837	2837	2837	2837	2837	2837

Robust standard errors in parentheses.
* p<0.1, ** p<0.05, *** p<0.01

Table A.8 Current flood presence and early life traumas' frequency

Variables	(1)	(2)	(3)	(4)	(5)
Current flood (presence) Ref (0=No flood)	-0.083 (0.096)	-0.153 (0.097)	-0.013 (0.090)	-0.043 (0.076)	-0.022 (0.081)
Early life earthquake (Numbers)	-0.494** (0.220)				
Current flood (presence) x Early life earthquake (Numbers)	0.071 (0.069)				
Age of central banker	-0.110*** (0.036)	-0.110*** (0.036)	-0.110*** (0.037)	-0.110*** (0.037)	-0.111*** (0.036)
Central banker reappointment Ref (0=No reappointment)	1.263** (0.543)	1.279** (0.543)	1.255** (0.534)	1.256** (0.542)	1.256** (0.534)
Central bank independence Index(CBI)	-0.715 (0.711)	-0.760 (0.679)	-0.679 (0.707)	-0.695 (0.710)	-0.662 (0.693)
Population density	0.027* (0.016)	0.027* (0.016)	0.027* (0.016)	0.027* (0.016)	0.027* (0.016)
Urban population growth	-0.043 (0.112)	-0.038 (0.112)	-0.038 (0.113)	-0.045 (0.111)	-0.044 (0.112)
Globalization Index (KOF)	0.048 (0.068)	0.048 (0.068)	0.044 (0.067)	0.047 (0.068)	0.046 (0.067)
Early life flood (Numbers)		-0.305** (0.120)			
Current flood (presence) x Early life flood (Numbers)		0.110* (0.058)			
Early life storm (Numbers)			-0.645** (0.258)		
Current flood (presence) x Early life storm (Numbers)			0.018 (0.013)		
Early life drought (Numbers)				-0.644** (0.272)	
Current flood (presence) x Early life drought (Numbers)				0.223 (0.180)	
Early life epidemic (Numbers)					-4.074* (2.415)
Current flood (presence) x Early life epidemic (Numbers)					0.207 (0.289)
Constant	6.204*** (1.807)	5.761*** (1.985)	4.522* (2.493)	5.325** (2.163)	4.502* (2.496)
Governor F.E	Yes	Yes	Yes	Yes	Yes
Continent F.E	Yes	Yes	Yes	Yes	Yes
Observations	2837	2837	2837	2837	2837

Robust standard errors in parentheses.
* p<0.1, ** p<0.05, *** p<0.01

Table A.9 Current flood presence and early life traumas' deaths

Variables	(1)	(2)	(3)	(4)	(5)
Current flood (presence) Ref (0=No flood)	-0.116 (0.100)	-0.206** (0.098)	-0.030 (0.086)	-0.014 (0.086)	-0.033 (0.076)
Early life earthquake (deaths)	0.573* (0.297)				
Current flood (presence) x Early life earthquake (deaths)	0.068 (0.044)				
Age of central banker	-0.109*** (0.036)	-0.107*** (0.036)	-0.109*** (0.037)	-0.110*** (0.037)	-0.113*** (0.036)
Central banker reappointment Ref (0=No reappointment)	1.274** (0.544)	1.284** (0.527)	1.258** (0.533)	1.244** (0.537)	1.259** (0.535)
Central bank independence Index(CBI)	-0.845 (0.701)	-0.791 (0.676)	-0.665 (0.700)	-0.700 (0.709)	-0.639 (0.686)
Population density	0.027* (0.016)	0.026* (0.015)	0.027* (0.016)	0.027* (0.016)	0.028* (0.016)
Urban population growth	-0.041 (0.113)	-0.029 (0.108)	-0.039 (0.113)	-0.039 (0.112)	-0.043 (0.112)
Globalization Index (KOF)	0.047 (0.068)	0.045 (0.067)	0.044 (0.067)	0.046 (0.067)	0.048 (0.067)
Early life flood (deaths)		-0.060 (0.237)			
Current flood (presence) x Early life flood (deaths)		0.099*** (0.038)			
Early life storm (deaths)			-0.383** (0.151)		
Current flood (presence) x Early life storm (deaths)			0.027 (0.040)		
Early life drought (deaths)				-0.217 (0.137)	
Current flood (presence) x Early life drought (deaths)				0.120*** (0.035)	
Early life epidemic (deaths)					-1.206* (0.687)
Current flood (presence) x Early life epidemic (deaths)					0.121 (0.148)
Constant	0.566 (4.368)	4.385* (2.415)	4.515* (2.493)	4.473* (2.501)	4.489* (2.500)
Governor F.E Continent F.E	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes
Observations	2837	2837	2837	2837	2837

Robust standard errors in parentheses.
* p<0.1, ** p<0.05, *** p<0.01

Table A.10 Current flood deaths and early life traumas' presence

Variables	(1)	(2)	(3)	(4)	(5)	(6)
Current flood (deaths)	0.026 (0.046)	0.091 (0.083)	0.163* (0.088)	-0.045 (0.122)	-0.004 (0.034)	0.004 (0.060)
Early life earthquake (presence) Ref (0=No earthquake)	4.534* (2.592)					
Current flood (deaths) x Early life earthquake (presence)	-0.034 (0.091)					
Age of central banker	-0.125** (0.050)	-0.126** (0.050)	-0.127** (0.050)	-0.122** (0.050)	-0.124** (0.050)	-0.124** (0.050)
Central banker reappointment Ref (0=No reappointment)	2.608*** (0.593)	2.657*** (0.620)	2.701*** (0.604)	2.533*** (0.608)	2.563*** (0.622)	2.588*** (0.603)
Central bank independence Index(CBI)	-1.573 (1.140)	-1.591 (1.148)	-1.644 (1.153)	-1.548 (1.132)	-1.612 (1.150)	-1.572 (1.143)
Population density	0.033 (0.027)	0.034 (0.027)	0.035 (0.026)	0.033 (0.027)	0.033 (0.027)	0.034 (0.027)
Urban population growth	-0.090 (0.116)	-0.094 (0.116)	-0.105 (0.110)	-0.081 (0.117)	-0.087 (0.116)	-0.087 (0.117)
Globalization Index (KOF)	0.020 (0.100)	0.021 (0.100)	0.024 (0.100)	0.021 (0.100)	0.023 (0.103)	0.020 (0.100)
Any early life trauma (presence) Ref (0=No trauma)		4.638* (2.559)				
Current flood (deaths) x Any early life trauma (presence)		-0.102 (0.103)				
Early life flood (presence) Ref (0=No flood)			4.998* (2.674)			
Current flood (deaths) x Early life flood (presence)			-0.217** (0.110)			
Early life storm (presence) Ref (0=No storm)				-3.517 (2.322)		
Current flood (deaths) x Early life storm (presence)				0.080 (0.129)		
Early life drought (presence) Ref (0=No drought)					-0.771 (0.862)	
Current flood (deaths) x Early life drought (presence)					0.025 (0.113)	
Early life epidemic (presence) Ref (0=No epidemic)						-4.744 (4.344)
Current flood (deaths) x Early life epidemic (presence)						0.005 (0.087)
Constant	2.108 (5.460)	2.036 (5.407)	1.771 (5.406)	6.576** (3.288)	7.164** (2.835)	6.545** (3.301)
Governor F.E Continent F.E	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes
Observations	1773	1773	1773	1773	1773	1773

Robust standard errors in parentheses.
* p<0.1, ** p<0.05, *** p<0.01

Table A.11 Current flood deaths and early life traumas' frequency

Variables	(1)	(2)	(3)	(4)	(5)
Current flood (deaths)	0.036 (0.044)	0.041 (0.053)	-0.007 (0.065)	0.002 (0.040)	0.003 (0.054)
Early life earthquake (Numbers)	-0.253 (0.270)				
Current flood (deaths) x Early life earthquake (Numbers)	-0.013** (0.006)				
Age of central banker	-0.124** (0.050)	-0.126** (0.050)	-0.123** (0.051)	-0.124** (0.050)	-0.124** (0.050)
Central banker reappointment Ref (0=No reappointment)	2.608*** (0.618)	2.614*** (0.616)	2.571*** (0.608)	2.571*** (0.618)	2.587*** (0.602)
Central bank independence Index(CBI)	-1.541 (1.133)	-1.590 (1.155)	-1.580 (1.136)	-1.607 (1.147)	-1.575 (1.140)
Population density	0.034 (0.027)	0.034 (0.027)	0.033 (0.027)	0.034 (0.027)	0.034 (0.027)
Urban population growth	-0.096 (0.117)	-0.098 (0.116)	-0.085 (0.117)	-0.089 (0.115)	-0.087 (0.117)
Globalization Index (KOF)	0.021 (0.102)	0.023 (0.103)	0.020 (0.100)	0.023 (0.103)	0.021 (0.100)
Early life flood (Numbers)		-0.116 (0.130)			
Current flood (deaths) x Early life flood (Numbers)		-0.009 (0.008)			
Early life storm (Numbers)			-0.640 (0.499)		
Current flood (deaths) x Early life storm (Numbers)			0.003 (0.005)		
Early life drought (Numbers)				-0.342 (0.288)	
Current flood (deaths) x Early life drought (Numbers)				0.004 (0.019)	
Early life epidemic (Numbers)					-4.747 (4.385)
Current flood (deaths) x Early life epidemic (Numbers)					0.005 (0.026)
Constant	7.588*** (2.373)	7.293*** (2.642)	6.552** (3.301)	7.121** (2.861)	6.548** (3.300)
Governor F.E Continent F.E	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes
Observations	1773	1773	1773	1773	1773

Robust standard errors in parentheses.
* p<0.1, ** p<0.05, *** p<0.01

Table A.12 Current flood deaths and early life traumas' deaths

Variables	(1)	(2)	(3)	(4)	(5)
Current flood (deaths)	0.044 (0.040)	0.090 (0.071)	-0.022 (0.094)	-0.002 (0.051)	0.016 (0.056)
Early life earthquake (deaths)	0.542 (0.431)				
Current flood (deaths) x Early life earthquake (deaths)	-0.011 (0.010)				
Age of central banker	-0.124** (0.050)	-0.127** (0.051)	-0.122** (0.051)	-0.123** (0.050)	-0.123** (0.050)
Central banker reappointment Ref (0=No reappointment)	2.606*** (0.613)	2.653*** (0.623)	2.555*** (0.609)	2.574*** (0.605)	2.600*** (0.604)
Central bank independence Index(CBI)	-1.606 (1.140)	-1.582 (1.153)	-1.557 (1.138)	-1.592 (1.142)	-1.557 (1.135)
Population density	0.033 (0.027)	0.035 (0.027)	0.033 (0.028)	0.033 (0.027)	0.034 (0.027)
Urban population growth	-0.096 (0.115)	-0.109 (0.113)	-0.082 (0.118)	-0.079 (0.119)	-0.086 (0.117)
Globalization Index (KOF)	0.022 (0.103)	0.025 (0.102)	0.020 (0.100)	0.020 (0.100)	0.019 (0.100)
Early life flood (deaths)		-0.570 (0.540)			
Current flood (deaths) x Early life flood (deaths)		-0.018 (0.013)			
Early life storm (deaths)			-0.389 (0.268)		
Current flood (deaths) x Early life storm (deaths)			0.007 (0.013)		
Early life drought (deaths)				-0.093 (0.229)	
Current flood (deaths) x Early life drought (deaths)				0.007 (0.006)	
Early life epidemic (deaths)					-1.236 (1.206)
Current flood (deaths) x Early life epidemic (deaths)					-0.010 (0.012)
Constant	3.185 (6.021)	10.055*** (0.981)	6.560** (3.296)	6.531** (3.299)	6.519** (3.301)
Governor F.E Continent F.E	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes
Observations	1773	1773	1773	1773	1773

Robust standard errors in parentheses.
* p<0.1, ** p<0.05, *** p<0.01

Table A.13 Current storm presence and early life traumas' presence

Variables	(1)	(2)	(3)	(4)	(5)	(6)
Current storm (presence) Ref (0=No earthquake)	0.122 (0.124)	0.220 (0.173)	0.309* (0.161)	0.217* (0.129)	0.005 (0.101)	0.123 (0.089)
Early life earthquake (presence) Ref (0=No earthquake)	3.128* (1.638)					
Current storm (presence) x Early life earthquake (presence)	-0.258 (0.244)					
Age of central banker	-0.080*** (0.027)	-0.079*** (0.027)	-0.078*** (0.026)	-0.079*** (0.027)	-0.079*** (0.027)	-0.075*** (0.025)
Central banker reappointment Ref (0=No reappointment)	1.067** (0.473)	1.078** (0.470)	1.090** (0.466)	1.068** (0.464)	1.021** (0.475)	1.043** (0.462)
Central bank independence Index(CBI)	-0.533 (0.492)	-0.552 (0.503)	-0.615 (0.503)	-0.488 (0.538)	-0.517 (0.501)	-0.530 (0.522)
Population density	0.021 (0.014)	0.021 (0.014)	0.021 (0.014)	0.021 (0.014)	0.021 (0.014)	0.021 (0.014)
Urban population growth	0.038 (0.072)	0.040 (0.071)	0.039 (0.071)	0.039 (0.071)	0.037 (0.070)	0.040 (0.070)
Globalization Index (KOF)	0.035 (0.062)	0.035 (0.062)	0.034 (0.062)	0.036 (0.062)	0.038 (0.064)	0.033 (0.062)
Any early life trauma (presence) Ref (0=No trauma)		3.118* (1.654)				
Current storm (presence) x Any early life trauma (presence)		-0.267 (0.214)				
Early life flood (presence) Ref (0=No flood)			0.681*** (0.147)			
Current storm (presence) x Early life flood (presence)			-0.465** (0.199)			
Early life storm (presence) Ref (0=No storm)				-2.519** (1.191)		
Current storm (presence) x Early life storm (presence)				-0.400* (0.206)		
Early life drought (presence) Ref (0=No drought)					-0.909** (0.392)	
Current storm (presence) x Early life drought (presence)					0.058 (0.321)	
Early life epidemic (presence) Ref (0=No epidemic)						-2.892 (2.070)
Current storm (presence) x Early life epidemic (presence)						-0.594 (0.410)
Constant	0.260 (3.582)	0.206 (3.561)	2.671 (2.015)	3.149 (2.098)	4.068** (1.805)	3.122 (2.104)
Governor F.E Continent F.E	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes
Observations	2972	2972	2972	2972	2972	2972

Robust standard errors in parentheses.
* p<0.1, ** p<0.05, *** p<0.01

Table A.14 Current storm presence and early life traumas' frequency

Variables	(1)	(2)	(3)	(4)	(5)
Current storm (presence) Ref (0=No earthquake)	0.144 (0.115)	0.177 (0.111)	0.057 (0.111)	0.027 (0.102)	0.162* (0.094)
Early life earthquake (Numbers)	-0.454** (0.185)				
Current storm (presence) x Early life earthquake (Numbers)	-0.086 (0.067)				
Age of central banker	-0.077*** (0.025)	-0.078*** (0.027)	-0.079*** (0.027)	-0.079*** (0.027)	-0.072*** (0.024)
Central banker reappointment Ref (0=No reappointment)	1.058** (0.471)	1.059** (0.472)	1.040** (0.465)	1.026** (0.473)	1.048** (0.461)
Central bank independence Index(CBI)	-0.529 (0.513)	-0.586 (0.501)	-0.500 (0.511)	-0.516 (0.504)	-0.546 (0.530)
Population density	0.021 (0.014)	0.021 (0.014)	0.021 (0.014)	0.021 (0.014)	0.021 (0.014)
Urban population growth	0.037 (0.071)	0.029 (0.073)	0.035 (0.072)	0.037 (0.070)	0.036 (0.070)
Globalization Index (KOF)	0.033 (0.063)	0.037 (0.063)	0.037 (0.062)	0.038 (0.063)	0.032 (0.062)
Early life flood (Numbers)		-0.207** (0.095)			
Current storm (presence) x Early life flood (Numbers)		-0.066** (0.030)			
Early life storm (Numbers)			-0.537** (0.236)		
Current storm (presence) x Early life storm (Numbers)			-0.021 (0.014)		
Early life drought (Numbers)				-0.448** (0.191)	
Current storm (presence) x Early life drought (Numbers)				-0.020 (0.103)	
Early life epidemic (Numbers)					-2.914 (2.069)
Current storm (presence) x Early life epidemic (Numbers)					-0.557** (0.252)
Constant	5.117*** (1.468)	4.536*** (1.634)	3.209 (2.125)	4.077** (1.801)	3.080 (2.100)
Governor F.E Continent F.E	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes
Observations	2972	2972	2972	2972	2972

Robust standard errors in parentheses.
* p<0.1, ** p<0.05, *** p<0.01

Table A.15 Current storm presence and early life traumas' deaths

Variables	(1)	(2)	(3)	(4)	(5)
Current storm (presence) Ref (0=No earthquake)	0.130 (0.114)	0.231* (0.134)	0.147 (0.118)	0.075 (0.097)	0.118 (0.088)
Early life earthquake (deaths)	0.791*** (0.269)				
Current storm (presence) x Early life earthquake (deaths)	-0.051 (0.040)				
Age of central banker	-0.078*** (0.026)	-0.078*** (0.027)	-0.080*** (0.027)	-0.083*** (0.027)	-0.076*** (0.025)
Central banker reappointment Ref (0=No reappointment)	1.051** (0.473)	1.079** (0.469)	1.053** (0.464)	1.046** (0.465)	1.051** (0.463)
Central bank independence Index(CBI)	-0.613 (0.469)	-0.597 (0.491)	-0.478 (0.522)	-0.503 (0.513)	-0.511 (0.520)
Population density	0.021 (0.014)	0.021 (0.014)	0.021 (0.014)	0.022 (0.014)	0.021 (0.014)
Urban population growth	0.037 (0.071)	0.033 (0.073)	0.034 (0.072)	0.030 (0.073)	0.037 (0.071)
Globalization Index (KOF)	0.036 (0.063)	0.034 (0.062)	0.038 (0.062)	0.041 (0.062)	0.034 (0.062)
Early life flood (deaths)		-0.037 (0.255)			
Current storm (presence) x Early life flood (deaths)		-0.067** (0.032)			
Early life storm (deaths)			-0.274** (0.134)		
Current storm (presence) x Early life storm (deaths)			-0.057** (0.029)		
Early life drought (deaths)				-0.082 (0.114)	
Current storm (presence) x Early life drought (deaths)				-0.127 (0.105)	
Early life epidemic (deaths)					-0.788 (0.569)
Current storm (presence) x Early life epidemic (deaths)					-0.163* (0.095)
Constant	-1.683 (3.770)	3.583 (2.254)	3.158 (2.114)	3.190 (2.126)	3.175 (2.108)
Governor F.E Continent F.E	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes
Observations	2972	2972	2972	2972	2972

Robust standard errors in parentheses.
* p<0.1, ** p<0.05, *** p<0.01

Table A.16 Current storm deaths and early life traumas' presence

Variables	(1)	(2)	(3)	(4)	(5)	(6)
Current storm (deaths)	0.164*	0.128	0.432**	0.460**	0.124**	0.158***
	(0.094)	(0.179)	(0.188)	(0.201)	(0.058)	(0.060)
Early life earthquake (presence) Ref (0=No earthquake)	-2.926					
	(4.681)					
Current storm (deaths) x Early life earthquake (presence)	-0.043					
	(0.105)					
Age of central banker	-0.027	-0.028	-0.021	-0.022	-0.027	-0.028
	(0.038)	(0.037)	(0.035)	(0.034)	(0.037)	(0.036)
Central banker reappointment Ref (0=No reappointment)	-2.104**	-2.183***	-1.395	-1.495	-2.183***	-2.117**
	(0.875)	(0.699)	(0.969)	(0.928)	(0.823)	(0.832)
Central bank independence Index(CBI)	-5.350	-5.417	-4.922	-4.598	-5.429	-5.344
	(6.053)	(6.194)	(6.094)	(5.843)	(6.113)	(6.088)
Population density	0.016	0.016	0.013	0.010	0.016	0.016
	(0.024)	(0.024)	(0.021)	(0.020)	(0.024)	(0.024)
Urban population growth	0.133	0.136	0.149	0.122	0.136	0.138
	(0.125)	(0.128)	(0.131)	(0.111)	(0.129)	(0.127)
Globalization Index (KOF)	-0.008	-0.008	-0.027	-0.001	-0.011	-0.008
	(0.133)	(0.135)	(0.133)	(0.119)	(0.136)	(0.133)
Any early life trauma (presence) Ref (0=No trauma)		-3.139				
		(5.209)				
Current storm (deaths) x Any early life trauma (presence)		0.009				
		(0.197)				
Early life flood (presence) Ref (0=No flood)			-2.615			
			(4.661)			
Current storm (deaths) x Early life flood (presence)			-0.335*			
			(0.178)			
Early life storm (presence) Ref (0=No storm)				-1.048		
				(2.209)		
Current storm (deaths) x Early life storm (presence)				-0.374*		
				(0.197)		
Early life drought (presence) Ref (0=No drought)					-3.258	
					(4.911)	
Current storm (deaths) x Early life drought (presence)					0.024	
					(0.081)	
Early life epidemic (presence) Ref (0=No epidemic)						4.516***
						(1.380)
Current storm (deaths) x Early life epidemic (presence)						-0.109
						(0.085)
Constant	8.089	8.361	8.071	3.425	8.503	5.087
	(10.697)	(11.404)	(10.718)	(5.856)	(11.025)	(6.369)
Governor F.E	Yes	Yes	Yes	Yes	Yes	Yes
Continent F.E	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1183	1183	1183	1183	1183	1183

Robust standard errors in parentheses.
* p<0.1, ** p<0.05, *** p<0.01

Table A.17 Current storm deaths and early life traumas' frequency

Variables	(1)	(2)	(3)	(4)	(5)
Current storm (deaths)	0.175**	0.229**	0.201**	0.131**	0.146**
	(0.075)	(0.102)	(0.094)	(0.064)	(0.057)
Early life earthquake (Numbers)	-0.753				
	(1.178)				
Current storm (deaths) x Early life earthquake (Numbers)	-0.013				
	(0.015)				
Age of central banker	-0.025	-0.025	-0.022	-0.028	-0.028
	(0.037)	(0.036)	(0.037)	(0.037)	(0.037)
Central banker reappointment Ref (0=No reappointment)	-2.072**	-1.967**	-2.022**	-2.171***	-2.141**
	(0.860)	(0.861)	(0.874)	(0.825)	(0.834)
Central bank independence Index(CBI)	-5.327	-5.200	-5.251	-5.418	-5.376
	(6.035)	(6.030)	(5.972)	(6.120)	(6.098)
Population density	0.016	0.014	0.015	0.016	0.016
	(0.023)	(0.023)	(0.023)	(0.024)	(0.024)
Urban population growth	0.138	0.137	0.136	0.136	0.137
	(0.126)	(0.123)	(0.124)	(0.129)	(0.128)
Globalization Index (KOF)	-0.011	-0.009	-0.013	-0.009	-0.008
	(0.133)	(0.130)	(0.132)	(0.136)	(0.134)
Early life flood (Numbers)		-0.472			
		(0.775)			
Current storm (deaths) x Early life flood (Numbers)		-0.016			
		(0.011)			
Early life storm (Numbers)			-0.504		
			(0.462)		
Current storm (deaths) x Early life storm (Numbers)			-0.007		
			(0.006)		
Early life drought (Numbers)				-1.584	
				(2.465)	
Current storm (deaths) x Early life drought (Numbers)				0.005	
				(0.035)	
Early life epidemic (Numbers)					2.195***
					(0.699)
Current storm (deaths) x Early life epidemic (Numbers)					-0.035
					(0.056)
Constant	8.191	7.857	4.841	8.394	5.164
	(10.724)	(10.612)	(6.179)	(11.036)	(6.395)
Governor F.E	Yes	Yes	Yes	Yes	Yes
Continent F.E	Yes	Yes	Yes	Yes	Yes
Observations	1183	1183	1183	1183	1183

Robust standard errors in parentheses.
* p<0.1, ** p<0.05, *** p<0.01

Table A.18 Current storm deaths and early life traumas' deaths

Variables	(1)	(2)	(3)	(4)	(5)
Current storm (deaths)	0.175**	0.268**	0.276**	0.161***	0.149**
	(0.085)	(0.107)	(0.127)	(0.060)	(0.058)
Early life earthquake (deaths)	-0.458				
	(0.741)				
Current storm (deaths) x Early life earthquake (deaths)	-0.009				
	(0.013)				
Age of central banker	-0.027	-0.028	-0.023	-0.028	-0.027
	(0.037)	(0.036)	(0.036)	(0.036)	(0.037)
Central banker reappointment Ref (0=No reappointment)	-2.080**	-1.827**	-1.865**	-2.116**	-2.136**
	(0.868)	(0.882)	(0.900)	(0.827)	(0.833)
Central bank independence Index(CBI)	-5.331	-5.190	-5.070	-5.339	-5.374
	(6.048)	(6.115)	(5.926)	(6.098)	(6.091)
Population density	0.016	0.015	0.014	0.016	0.016
	(0.024)	(0.023)	(0.022)	(0.023)	(0.024)
Urban population growth	0.136	0.149	0.136	0.136	0.138
	(0.125)	(0.126)	(0.119)	(0.127)	(0.127)
Globalization Index (KOF)	-0.008	-0.013	-0.009	-0.007	-0.009
	(0.132)	(0.132)	(0.127)	(0.133)	(0.134)
Early life flood (deaths)		-0.468			
		(0.778)			
Current storm (deaths) x Early life flood (deaths)		-0.022*			
		(0.012)			
Early life storm (deaths)			-0.215		
			(0.243)		
Current storm (deaths) x Early life storm (deaths)			-0.021		
			(0.014)		
Early life drought (deaths)				0.253	
				(0.665)	
Current storm (deaths) x Early life drought (deaths)				-0.008*	
				(0.005)	
Early life epidemic (deaths)					0.785***
					(0.246)
Current storm (deaths) x Early life epidemic (deaths)					-0.016
					(0.020)
Constant	8.051	8.082	4.437	5.045	5.133
	(10.697)	(10.747)	(6.054)	(6.392)	(6.380)
Governor F.E	Yes	Yes	Yes	Yes	Yes
Continent F.E	Yes	Yes	Yes	Yes	Yes
Observations	1183	1183	1183	1183	1183

Robust standard errors in parentheses.
* p<0.1, ** p<0.05, *** p<0.01

Table A.19 Current drought presence and early life traumas' presence

Variables	(1)	(2)	(3)	(4)	(5)	(6)
Current drought (presence) Ref (0=No earthquake	0.500 (0.385)	-0.101 (0.389)	0.165 (0.315)	0.687** (0.337)	0.162 (0.235)	0.267 (0.187)
Early life earthquake (presence) Ref (0=No earthquake)	4.619** (1.963)					
Current drought (presence) x Early life earthquake (presence)	-0.286 (0.446)					
Age of central banker	-0.108*** (0.031)	-0.109*** (0.030)	-0.109*** (0.030)	-0.107*** (0.030)	-0.108*** (0.031)	-0.108*** (0.031)
Central banker reappointment Ref (0=No reappointment)	1.331** (0.649)	1.334** (0.654)	1.341** (0.654)	1.336** (0.647)	1.334** (0.670)	1.344** (0.659)
Central bank independence Index(CBI)	-1.202 (0.884)	-1.232 (0.889)	-1.263 (0.897)	-1.099 (0.849)	-1.203 (0.922)	-1.207 (0.907)
Population density	0.027 (0.022)	0.028 (0.022)	0.028 (0.022)	0.026 (0.021)	0.028 (0.022)	0.028 (0.022)
Urban population growth	-0.225* (0.129)	-0.212 (0.131)	-0.219* (0.127)	-0.236* (0.134)	-0.229* (0.125)	-0.212 (0.133)
Globalization Index (KOF)	0.048 (0.087)	0.048 (0.089)	0.047 (0.088)	0.046 (0.087)	0.048 (0.092)	0.045 (0.089)
Any early life trauma (presence) Ref (0=No trauma)		4.437** (2.074)				
Current drought (presence) x Any early life trauma (presence)		0.504 (0.459)				
Early life flood (presence) Ref (0=No flood			0.536*** (0.139)			
Current drought (presence) x Early life flood (presence)			0.252 (0.423)			
Early life storm (presence) Ref (0=No storm)				-2.898* (1.729)		
Current drought (presence) x Early life storm (presence)				-0.604 (0.436)		
Early life drought (presence) Ref (0=No drought)					-0.866* (0.518)	
Current drought (presence) x Early life drought (presence)					0.395 (0.523)	
Early life epidemic (presence) Ref (0=No epidemic)						-5.479** (2.566)
Current drought (presence) x Early life epidemic (presence)						0.429 (0.747)
Constant	0.608 (4.696)	0.682 (4.806)	4.653 (2.897)	5.002* (2.916)	5.872** (2.699)	5.206* (3.056)
Governor F.E	Yes	Yes	Yes	Yes	Yes	Yes
Continent F.E	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1643	1643	1643	1643	1643	1643

Robust standard errors in parentheses.
* p<0.1, ** p<0.05, *** p<0.01

Table A.20 Current drought presence and early life traumas' frequency

Variables	(1)	(2)	(3)	(4)	(5)
Current drought (presence) Ref (0=No earthquake)	0.495* (0.289)	0.368 (0.239)	0.455* (0.250)	0.266 (0.192)	0.340* (0.194)
Early life earthquake (Numbers)	-0.411* (0.244)				
Current drought (presence) x Early life earthquake (Numbers)	-0.072 (0.061)				
Age of central banker	-0.108*** (0.031)	-0.107*** (0.030)	-0.107*** (0.031)	-0.108*** (0.031)	-0.108*** (0.030)
Central banker reappointment Ref (0=No reappointment)	1.313** (0.663)	1.323** (0.666)	1.327** (0.653)	1.329** (0.670)	1.341** (0.657)
Central bank independence Index(CBI)	-1.338 (0.887)	-1.300 (0.899)	-1.314 (0.896)	-1.251 (0.906)	-1.250 (0.898)
Population density	0.027 (0.022)	0.027 (0.022)	0.026 (0.022)	0.028 (0.022)	0.027 (0.022)
Urban population growth	-0.225* (0.128)	-0.226* (0.130)	-0.227* (0.130)	-0.223* (0.129)	-0.224* (0.129)
Globalization Index (KOF)	0.051 (0.089)	0.049 (0.090)	0.048 (0.088)	0.048 (0.091)	0.046 (0.089)
Early life flood (Numbers)		-0.190 (0.122)			
Current drought (presence) x Early life flood (Numbers)		-0.008 (0.030)			
Early life storm (Numbers)			-0.652* (0.343)		
Current drought (presence) x Early life storm (Numbers)			-0.024 (0.018)		
Early life drought (Numbers)				-0.418* (0.250)	
Current drought (presence) x Early life drought (Numbers)				0.085 (0.157)	
Early life epidemic (Numbers)					-1.772** (0.847)
Current drought (presence) x Early life epidemic (Numbers)					-0.009 (0.195)
Constant	6.879*** (2.217)	6.299*** (2.426)	5.186* (3.033)	5.917** (2.672)	5.219* (3.035)
Governor F.E Continent F.E	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes
Observations	1643	1643	1643	1643	1643

Robust standard errors in parentheses.
* p<0.1, ** p<0.05, *** p<0.01

Table A.21 Current drought presence and early life traumas' deaths

Variables	(1)	(2)	(3)	(4)	(5)
Current drought (presence) Ref (0=No earthquake)	0.504 (0.330)	0.342 (0.253)	0.659** (0.308)	0.233 (0.184)	0.316* (0.190)
Early life earthquake (deaths)	0.672* (0.346)				
Current drought (presence) x Early life earthquake (deaths)	-0.050 (0.053)				
Age of central banker	-0.109*** (0.030)	-0.108*** (0.030)	-0.107*** (0.030)	-0.109*** (0.030)	-0.108*** (0.030)
Central banker reappointment Ref (0=No reappointment)	1.315** (0.663)	1.340** (0.662)	1.329** (0.647)	1.341** (0.661)	1.344** (0.657)
Central bank independence Index(CBI)	-1.230 (0.884)	-1.252 (0.893)	-1.144 (0.863)	-1.234 (0.920)	-1.232 (0.899)
Population density	0.027 (0.022)	0.027 (0.022)	0.026 (0.021)	0.029 (0.022)	0.028 (0.022)
Urban population growth	-0.226* (0.128)	-0.224* (0.127)	-0.231* (0.131)	-0.215* (0.129)	-0.220* (0.129)
Globalization Index (KOF)	0.051 (0.089)	0.046 (0.089)	0.047 (0.087)	0.047 (0.090)	0.046 (0.089)
Early life flood (deaths)		-0.027 (0.218)			
Current drought (presence) x Early life flood (deaths)		-0.001 (0.046)			
Early life storm (deaths)			-0.325* (0.195)		
Current drought (presence) x Early life storm (deaths)			-0.079* (0.042)		
Early life drought (deaths)				-0.109 (0.169)	
Current drought (presence) x Early life drought (deaths)				0.074 (0.080)	
Early life epidemic (deaths)					-0.960** (0.453)
Current drought (presence) x Early life epidemic (deaths)					0.031 (0.080)
Constant	0.920 (5.242)	5.383** (2.725)	5.014* (2.947)	5.178* (3.061)	5.217* (3.044)
Governor F.E Continent F.E	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes
Observations	1643	1643	1643	1643	1643

Robust standard errors in parentheses.
* p<0.1, ** p<0.05, *** p<0.01

2.B Appendix

Table B.1 List of countries in the sample

Serial No.	Countries Name	Serial No.	Countries Name
1	Afghanistan	39	Latvia
2	Albania	40	Lebanon
3	Argentina	41	Lithuania
4	Armenia	42	Luxembourg
5	Australia	43	Malaysia
6	Bangladesh	44	Mauritius
7	Belgium	45	Mexico
8	Bosnia and Herzegovina	46	Morocco
9	Brazil	47	Mozambique
10	Bulgaria	48	Netherlands
11	Canada	49	New Zealand
12	Chile	50	Nigeria
13	China	51	Norway
14	Colombia	52	Oman
15	Croatia	53	Pakistan
16	Cyprus	54	Peru
17	Czech Republic	55	Philippines
18	Denmark	56	Poland
19	Estonia	57	Portugal
20	Finland	58	Romania
21	France	59	Russian Federation
22	Georgia	60	Singapore
23	Germany	61	Slovenia
24	Greece	62	South Africa
25	Hong Kong, China	63	Spain
26	Hungary	64	Sri Lanka
27	Iceland	65	Suriname
28	India	66	Sweden
29	Indonesia	67	Switzerland
30	Iran, Islamic Rep.	68	Thailand
31	Ireland	69	Turkey
32	Israel	70	Uganda
33	Italy	71	Ukraine
34	Jamaica	72	United Kingdom
35	Japan	73	United States
36	Jordan	74	Venezuela, RB
37	Kazakhstan	75	Zimbabwe
38	Kuwait		

3 Unemployment Insurance for all ? The Experience of Communism and Support for Unemployment Insurance

3.1 Introduction

There is a growing body of literature which discusses how past events and historical shocks affect attitudes, decision-making and socioeconomic outcomes. The potential explanations emphasise the role of history in shaping and generating changes in beliefs, attitudes and opinion building through culture, institutions and geography over the time (e.g., Giuliano & Spilimbergo, 2014; Nunn, 2009).

Due to the cultural, historical and political context, Eastern-Europe and Western-Europe have been studied over the years. For example, Hjerm & Schnabel (2010) explain that two kinds of nationalism prevail in Europe, i.e., East and West. East Germans as well as residents of Eastern European countries, who have lived under a statist socialist regime, faced substantial government interventions from 1945 to 1989. Here arises a question: do specific political regimes influence individuals' preferences, opinions and attitudes? If the socio political regimes had no impact on the attitudes, there would have been no difference between the opinions of Eastern and Western Europeans. However, through the lens of history and existing literature, it is well established that communism has had an impact on people due to strong state interventions. It may lead to the perception that role of state is inevitable for welfare ((Bisin & Verdier, 2000, Farvaque et al., 2019) Other related studies have drawn attention towards a deterioration in resentment between East and West Europe in post communism era (Haller & Ressler, 2006).

According to Bisin & Verdier (2000), parents transmit preferences to their offspring and children's behaviours are influenced by their parents' attitude (Dohmen, Falk, Huffman, &

Sunde, 2012). Similarly, early life experiences contributes significantly to the formation of preferences (Alesina, Giuliano, Bisin, & Benhabib, 2011; Farvaque, Malan, & Stanek, 2019; Giuliano & Spilimbergo, 2014; Malmendier & Nagel, 2011). Among these early life experiences, an unemployment spell can have several consequences. Unemployment leads to financial predicaments and loss of happiness. In particular, going through an unemployment period in the youth can impact future decisions (Emmenegger, Marx, & Schraff, 2016). The unemployment repercussions may vary from country to country based on state intervention related to provision of unemployment care. Europe provides an opportunity to investigate unemployment care due to different socioeconomic environments, political systems and past experiences. Albeit, three decades have been passed since the fall of the Berlin wall yet, in-general, unemployment is still an important issue in European countries. In-particular, people from countries exposed to communism in the past may consider unemployment insurance as one of the major issues needed to be addressed by government. As we know, according to communist ideology, if one thinks that society is responsible for unemployment, poverty and sickness then he/she would be much inclined towards state intervention (Alesina & Fuchs-Schündeln, 2007).

More specifically, the question we tackle is, are Eastern European more inclined to support state intervention than Western European and what are the factors influencing attitudes? We strive to know if communism, as an exogenous historical shock, still influences individuals' opinions towards unemployment care (insurance) as a responsibility of government. If yes, then what are the mechanisms and explanations for such differences? In order to empirically estimate the effects of communism, we thus exploit the natural experiment of the collapse of the Berlin wall as it was unanticipated, abrupt, quick and exogenous political episode for Germany and Europe. And it provides exogenous variation to establish causal relationship in

estimation (Alesina & Fuchs-Schündeln, 2007; Frijters, Haisken-DeNew, & Shields, 2004; Fuchs-Schündeln & Schündeln, 2005).

The aim of this paper is to contribute to growing literature on unemployment insurance as a way to look at long term shaping of preference and the explanations.

A number of studies have investigated difference over many dimensions between East and West Germany, mostly by using the German Socioeconomic Panel (GSOEP) surveys. The extant literature suggests that there are striking difference between the attitudes of people who had lived in East-Germany and those who lived in West-Germany before reunification (Campa & Serafinelli, 2018).

Although a vast literature exists on the specific case of Germany (for details see, e.g., Alesina & Fuchs-Schündeln, 2007; Bönke & Neidhöfer, 2018; Campa & Serafinelli, 2018; Chevalier & Marie, 2017; Haller & Ressler, 2006; Peichl & Ungerer, 2017), there are few studies on the opinions of Eastern and Western Europe about socio economic factors and, in particular, about the responsibility of government towards problems faced by the different agents. In other words, from where do preferences come? We may have a better understanding about the origins of preference by disentangling the difference between the role of education (cohorts who got education under communism) and the beliefs acquired through the intergenerational transmission mechanism (the place of parents). To fill the lacuna, this study attempts to provide a potential explanation for the striking difference among Eastern and Western Europeans' opinions by considering socio political regime of communism as macroeconomic shock. Moreover, it focuses on the case of Germany to better understand the role of communism and other factors in shaping attitudes.

The comparison of individuals' opinions in considered periods i.e., before the fall of the communism and after the fall of the communism allows us to analyze people's preferences under the particular political regime of communism. There can be two potential explanations

for favouring the active role of state to provide unemployment insurance. First, the individuals getting a benefit from the state (or those who are more likely to be in a situation to get an unemployment allowance in foreseeable future) would demand and support the role of government in providing unemployment insurance. Second, one may favour the role of government about unemployment care due to living under a particular socio economic regime and being educated at state controlled schools (Alesina & Fuchs-Schündeln, 2007). Teachers also transmit beliefs and produce a bias towards true understanding of market economy for population (Saint-Paul, 2010). Given the importance of political regimes, schooling and family background in shaping behaviours, this study is closely related to Corneo (2001) and Alesina & Fuchs-Schündeln (2007) and contributes to relevant strand of economics and historical literature as follow. First, what are the individualistic characteristics which lead to support a strong role for government in providing unemployment insurance? Second, this study provides a comparative analysis of Eastern and Western Europeans' opinions concerning the government's responsibility to provide unemployment care. Do Eastern Europeans attitudes differ from Western Europeans? Third, it investigates the potential explanation for the difference in attitudes of Eastern European i.e., is it due to their exposure to communism (imposition of government polices like state control over the school)? Or is it due to intergenerational transmission phenomena (e.g., attitudes are acquired from parents within families).

The findings of this paper provide new evidence and a deeper understanding of the mechanisms behind the differences among preferences. By controlling for other factors, the results indicate that historical shock of communism, namely the state control over schools, has shaped the opinions about the role of government to provide unemployment care. We explore the possible mechanisms and explanations. Following the literature, preferences can be transmitted from parents or indoctrination (schooling). We find that Eastern Europeans

who were educated before the collapse of communism are significantly more likely to favour the role of state as compared with Western Europeans who were educated after the fall of the Berlin wall. We then focus on the specific case of Germany and show that East Germans' attitudes might have been influenced by unique experience of socialism and are more likely to favour unemployment insurance as government's responsibility. Irrespective of fact that they are too close but still attitudes of residents of East Germany may be different from West Germany due to past experience of socialist state.

The remainder of this paper is structured as follow. Section 2 provides details on data. Section 3 describes the empirical framework and strategy. Section 4 presents baseline estimation results while section 5 delve into East and West divide and provides additional results. Section 6 introduces some robustness checks. Section 6 concludes.

3.2 Data

Data for this study comes from the International Social Survey Program (ISSP) conducted by the Inter-University Consortium for Political and Social Research. It gathers national-level representative data on diverse topics over the years by using the same methodology and provides an opportunity to compare data across different countries. The analysis here is confined to 11 Eastern and Western Europeans countries (see the list of countries in Appendix 3.A). We employ three waves (1996, 2006 and 2016) of the "Role of Government" survey. This part of survey collects individual-level data following the responses to questionnaires on key indicators related to the role of government in society. Interestingly, the East Europeans, particularly East Germans have not airbrushed their "Marxist Past" even after the 30 years of the fall of the Berlin wall. And unemployment care has been a basic tenet of Marxist economic and political system as compared with market economies because the state was suppose to provide a "job for all". It provides a framework to understand perception formation mechanism influenced by particular socio political regimes. So, in order to measure the individuals' expectation from government about unemployment allowance we rely on the following question.

Q: "Do you think it should or should not be the government's responsibility to provide living standard for unemployed?"

For the first two waves (1996 and 2006), four categories of answers were proposed to the respondents: 'definitely should be', 'probably should be', 'probably should not be' and 'definitely should not be'. Whereas, for the third wave (2016), six categories of answers proposed to the respondents are: 'definitely should be', 'probably should be', 'probably should not be', 'definitely should not be', 'can't choose' and 'no answer'. To harmonize the scale of responses across the survey waves, we deleted the responses entailing the 'can't choose' and 'no answer' options. The responses are coded as 1 (definitely should not be), 2

(probably should not be), 3 (probably should be), 4 (definitely should be). Data on country level macro variables like GDP, civil liberty and political rights is gathered from Eurostat and Freedom House. The KOF Globalisation Index is taken from the KOF Swiss Economic Institute.

Figure 1, indicates that the highest numbers of people who respond that "unemployment care definitely should be the responsibility of government" are from Spain. Whereas, the lowest number of people responding "definitely should be", are from Switzerland. Interestingly, building on earlier papers (Alesina & Fuchs-Schündeln, 2007; Campa & Serafinelli, 2018; Rainer & Siedler, 2009), Figure 1 reveals that a high proportion of East-Germans, as compared with Western-Germans, favour unemployment insurance (definitely should be the responsibility of government). This preliminary intuition leads towards uncovering the black box of differences in points of view.

Figure 1

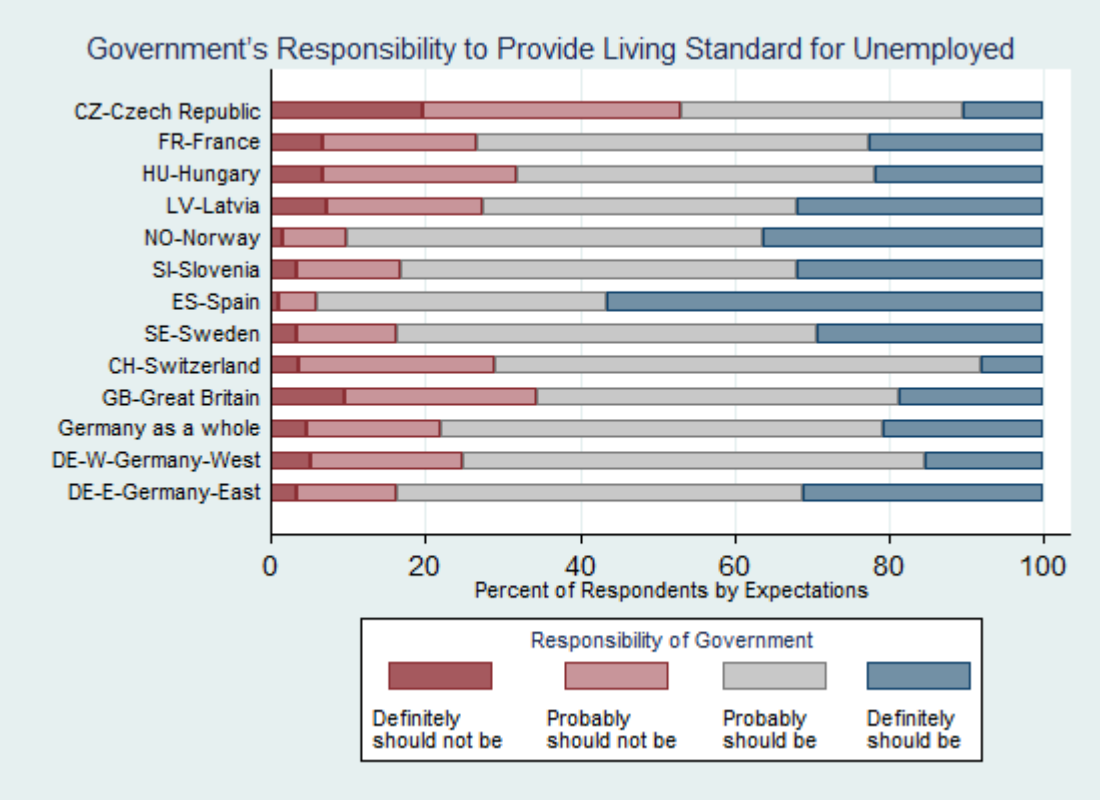

Table 3.1 Descriptive statistics

	Obs	Mean	Std. Dev.	Min	Max
Religious Affiliation	39,316	.70470	.4562	0	1
Gender	39,314	1.5122	.4999	1	2
Marital Status	39,316	.5704	.4950	0	1
Educational Level	39,186	3.6134	1.6608	0	7
Household Size	39,316	2.7306	1.3677	0	18
Occupation	39,316	1.1717	.9222	0	3
Employment Sector	39,316	.2811	.4495	0	1
Trust in MPs	38,054	2.4814	1.0477	1	5
Interest in Politics	39,036	2.9860	1.1170	1	5
Before fall of Wall	39,316	.6042	.4890	0	1
Eastern Europe	39,316	.3622	.4806	0	1
Country level Controls					
Ln GDP	39,316	4.5181	.1944	4.0073	4.7991
KOF Globalisation Index	39,316	82.0104	7.6060	57.5823	91.1680
Political Rights	39,316	1.0790	.3433	1	3
Civil Liberty	39,316	1.3207	.4668	1	2

Table 3.1 provides information on the descriptive statistics of the variables used in the analysis. Religious affiliation is dummy variable and is coded as 1 if the respondent follows any religion, and 0 otherwise. Gender is dichotomous variable and 1 corresponds to male gender. Marital status is binary variable and coded as 1 for married, and 0 for unmarried individual. Educational level indicates different level of education from none to university complete. Eastern Europe is dummy variable and coded as 1 if individual is from East Europe, and 0 otherwise. Household size indicates the number of people living in the house. Occupation is categorical variables having four categories i.e., employed, unemployed, retired and others. Employment sector informs whether the respondent is a civil servant or not. It is a dummy variable and coded as 1 if the respondent is a civil servant, and 0 otherwise. It is of grave importance due to the exposure of respondents to the state socialist regime (state was

suppose to provide job to all the people). Trust in representatives (politician keep promises) is an ordinal variable and indicates respondents' views related to trust in politicians. Similarly, interest in politics is an ordinal variable ranging from 1 to 5 and indicates the level of interest of the respondents. Before the fall of wall is also a dummy variable and corresponds to 1 if the individual got educated before the fall of the wall. More precisely, an individual has spent first 25 years of life, before the fall of wall. Eastern Europe is a dummy variable and coded as 1 if the respondent is from Eastern European country and 0 otherwise. The country level controls include, GDP, KOF Globalisation Index, political rights and civil liberty.

3.3 Framework and empirical strategy

We focus on opinions surveys of post-reunification period (1996-2016) to obverse the potential impact of the collapse of the Soviet Union and of East Germany i.e., the fall of communism, which resulted in reunification, by exploring people's views about the role of government in providing unemployment insurance. One of the ancillary goals of the paper is to explore the micro-determinants of support for unemployment insurance using pseudo panel of respondents from Eastern and Western Europeans countries. Following the related body of work, we include socioeconomic characteristics like: religion, gender, marital status, education, household size, occupation and employment sectors in regression specification. The baseline regression takes the following form:

$$Y_{i,c,t} = \beta_0 + \beta_1(Religious\ affiliation\ ) + \beta_2(Gender) + \beta_3(Marital\ status) + \beta_4(Education) + \beta_5(Household\ size) + \varepsilon_{i,c,t} \quad (1)$$

In equation 1 the dependent variable is a categorical variable indicating the individual *i* opinion about the role of state in providing unemployment insurance for survey made at time *t* in a country *c*. The responses are coded on a scale from 1 to 4 corresponding to 'definitely should be', 'probably should be', 'probably should not be' and 'definitely should not be',

respectively. The role of religion is well accepted in the literature related to the formation of preferences and it is determined with the help of coefficient (β_1). The difference between males and females is captured by the coefficient (β_2). The coefficient (β_3) estimates the difference between married and unmarried respondents while, the role of education is captured by the coefficient (β_4). Household size represents the number of persons living in the house and its impact is estimated by coefficient (β_5). This equation takes into account the whole sample of respondents. We re-estimated equation (1) by introducing more variables on self interest variable like occupation and employment sector (i.e., being a civil servant or not).

In addition, we again estimated equation (1) by adding more variables like trust in government representatives (MPs) and interest in politics to have a more holistic view. And, finally, we add some country level controls (GDP, globalisation, political rights and civil liberty) and include vector of survey years as well to control for variations related to specific survey year (we have taken data from three different waves i.e., 1996, 2006 and 2016).

The ISSP survey also gathers information about the respondents' place of residence during the interview. In equation (2), we introduce a variable "East". It is a binary variable and coded as "1" if the respondent belongs to Eastern Europe and "0" otherwise. This conjecture is in line with, for example Alesina & Fuchs-Schündeln (2007) or Campa & Serafinelli (2018) or Rainer & Siedler (2009).

$$Y_{i,c,t} = \beta_0 + \beta_1(East\ ) + \beta_2(Pre-unification) + \beta_3(East * Pre-unification) + \beta_4(X) + \varepsilon_{i,c,t} \quad (2)$$

Equation (2) includes important variables. The *"pre-unification"* variable is a dummy variable, coded "1" for all the individuals who got education before the fall of the Berlin wall (first twenty five years of life spent in pre-reunification period and it is considered that in first

25 years respondents would have acquired influence of regime). The main variable of interest is the interaction term *"East*Pre-unification"*. The coefficient (β_3) captures the differences between the respondent from European countries who were educated before the fall of communism versus respondents from Western European countries that were educated after the fall of communism. The *X* vector includes a set of controls, as previously defined.

The main objective of the study is to explore the source of preference formation. In the

$$Y_{i,c,t} = \beta_0 + \beta_1(Pre - unification) + \beta_2(Education) + \beta_3(Pre - unification * Education) + \beta_4(Fmaily\ traits) + \beta_5(Pre - unification * Family\ traits) + \beta_6(X) + \beta_7(Z) + \varepsilon_{i,c,t} \quad (3)$$

equation (3) we focus on the origins of preferences. After having assessed the East Europe and support for unemployment insurance relationship, then what is in fact shaping those attitudes? Or, from where do preferences come? Is it due to education or family traits? The data provides information on the place of father and mother, however it available only for the last wave of survey (2016). So, due to data limitation, our analysis based on equation (3) is confined to respondents from East Europe and 2016 survey wave. The *X* includes individual level characteristics while Z corresponds to county level controls in equation (3).

3.4 Baseline estimation results

This section present results on how preferences for unemployment insurance are impacted by the exposure to communism. Baseline estimation results are reported first and then we introduce individual, household and country level characteristics.

3.4.1 Primary incentives affecting individuals' preferences

Table 3.2 presents the estimation results for equation (1), estimated using ordered logistic regression. It reports the marginal effects and the robust standard errors. We focus on interpretation the results on the last column, as it provides estimates on the marginal effects for the "definitely should be" option. The last column indicates that a person who follows any religion, as opposed to a non-believer, is associated with a 3.1 percent higher likelihood of supporting government role in providing unemployment insurance. This result seems reasonable as religiosity (religious attendance) support persons to cope with unemployment (Lechner & Leopold, 2015) and religious people more favour public social policy. Similarly, a female individual, as compared with male, is associated with being 2.7 percent more likely to favour "definitely should be" the role of state. It is probably due to reason that females are dependent upon their spouses and so may favour role of state in providing unemployment care. Married individuals are less likely to favour role of government as compared with unmarried. The respondents with higher level of education (university complete) as compared with no education are significantly less likely to support unemployment insurance. It makes sense as highly educated people may not favour state intervention as compared with those who have no education. The respondents with large family size are significantly more likely to favour role of government in providing unemployment insurance. This result is reasonable as larger families support role of state because they get more benefits.

Table 3.2 Baseline regression

Unemployment insurance responsibility of Government	Ordered logit marginal effects for "definitely should not be"	Ordered logit marginal effects for "probably should not be"	Ordered logit marginal effects for "probably should be"	Ordered logit marginal effects for "definitely should be"
Religious Affiliation	-0.009***	-0.021***	-0.001***	0.031***
No Affiliation (Ref)	(0.001)	(0.003)	(0.000)	(0.004)
Gender: Female	-0.008***	-0.018***	-0.001***	0.027***
Male (Ref)	(0.001)	(0.002)	(0.000)	(0.004)
Marital status: Married	0.007***	0.016***	0.001***	-0.024***
Unmarried (Ref)	(0.001)	(0.003)	(0.000)	(0.004)
Education: None (Ref)				
Still at school/University	0.009***	0.027***	0.023***	-0.059***
	(0.003)	(0.008)	(0.008)	(0.018)
Incomplete primary	0.023***	0.063***	0.035***	-0.122***
Primary complete	(0.003)	(0.007)	(0.008)	(0.017)
	0.022***	0.061***	0.035***	-0.119***
Incomplete secondary	(0.002)	(0.007)	(0.008)	(0.017)
	0.027***	0.073***	0.036***	-0.136***
Secondary complete	(0.003)	(0.007)	(0.008)	(0.017)
	0.031***	0.082***	0.035***	-0.148***
Semi-higher,	(0.003)	(0.007)	(0.008)	(0.017)
Incomplete university	0.029***	0.077***	0.036***	-0.142***
	(0.003)	(0.008)	(0.008)	(0.017)
University complete	0.035***	0.091***	0.034***	-0.160***
	(0.003)	(0.008)	(0.008)	(0.018)
Household size	-0.002***	-0.005***	-0.000***	0.008***
	(0.000)	(0.001)	(0.000)	(0.001)
Observations	39184	39184	39184	39184

Standard errors in parentheses
* p<0.1, ** p<0.05, *** p<0.01

3.4.2 Self interest and other explanations

Table 3.3 incorporates more variables related to self interest like occupation and employment sector (an individual is government employee or not). The results show that unemployed people are 21.1 percent significantly more likely to favour the unemployment care should be definitely the responsibility of government as compared others. This result is quite standard and indicates that respondents think, unemployment insurance should be responsibility of government it may be due to negative outcomes of unemployment. The employed people are

2.3 percent less likely to favour role of state in providing unemployment care. Employment sector indicates government employees are 1.1 percent significantly more likely to favour

Table 3.3 Unemployment insurance and self interest

Unemployment insurance responsibility of Government	Marginal effects for "definitely should not be"	Marginal effects for "probably should not be"	Marginal effects for "probably should be"	Marginal effects for "definitely should be"
Religious Affiliation	-0.009***	-0.022***	-0.001***	0.032***
No Affiliation (Ref)	(0.001)	(0.003)	(0.000)	(0.004)
Gender: Female	-0.007***	-0.017***	-0.001***	0.025***
Male (Ref)	(0.001)	(0.002)	(0.000)	(0.004)
Marital status: Married	0.007***	0.017***	0.001***	-0.025***
Unmarried (Ref)	(0.001)	(0.003)	(0.000)	(0.004)
Education: None (Ref)				
Still at school/University	0.009***	0.026***	0.019***	-0.054***
	(0.003)	(0.008)	(0.007)	(0.018)
Incomplete primary	0.021***	0.058***	0.028***	-0.107***
Primary complete	(0.003)	(0.008)	(0.007)	(0.017)
	0.020***	0.055***	0.028***	-0.103***
Incomplete secondary	(0.003)	(0.007)	(0.007)	(0.017)
	0.025***	0.066***	0.029***	-0.119***
Secondary complete	(0.003)	(0.008)	(0.007)	(0.017)
	0.027***	0.072***	0.028***	-0.128***
Semi-higher,	(0.003)	(0.008)	(0.007)	(0.017)
Incomplete university	0.024***	0.065***	0.029***	-0.118***
	(0.003)	(0.008)	(0.007)	(0.017)
University complete	0.030***	0.078***	0.028***	-0.136***
	(0.003)	(0.009)	(0.007)	(0.018)
Household size	-0.003***	-0.006***	-0.000***	0.009***
	(0.000)	(0.001)	(0.000)	(0.001)
Occupation: others (Ref)				
Employed	0.007***	0.016***	0.000	-0.023***
	(0.001)	(0.003)	(0.000)	(0.005)
Unemployed	-0.032***	-0.094***	-0.085***	0.211***
	(0.002)	(0.004)	(0.007)	(0.012)
Retired	-0.002	-0.005	-0.001	0.007
	(0.002)	(0.004)	(0.001)	(0.006)
Employment sector:				
Non Govt. (Ref)	-0.003***	-0.007***	-0.001**	0.011***
Govt. Employee	(0.001)	(0.003)	(0.000)	(0.004)
Observations	39184	39184	39184	39184

Standard errors in parentheses
* p<0.1, ** p<0.05, *** p<0.01

unemployment insurance should be provided by state. It explains the inclination of government employees to hold government responsible for unemployment care and it may be due to the experience of communism.

In table 3.4 we include more variables like trust in government representatives (MPs) and interest in politics. These variables help to understand the relationship between unemployment care and individuals' political preferences. Individuals with more trust in government representatives and interest in politics are more likely to support role of government in unemployment care. These results can be explained by the intuition that people hold responsible the government for unemployment.

Table 3.5 incorporates country level controls GDP, KOF Globalisation Index, political rights and civil liberty. In addition, a vector of survey years is also included. A higher level of education and pro-government behaviour are negatively associated. The respondents with large family size are significantly more likely to consider unemployment insurance as responsibility of government. Individuals with higher trust in government representatives and interest in politics are significantly more likely to favour unemployment care "definitely should be" state responsibility. Interestingly, civil servants have strong preference for the role of state in providing unemployment insurance than non civil servants. The efficiency of results holds even after including additional potential control variables.

The respondent from countries having high GDP and Globalisation rate do not favour role of state. It might be attributed to the phenomena that behaviours related to unemployment care depend upon economy and economic policies. Higher of level globalisation i.e., economic, cultural and social integration, indicates people tend to follow West so might not be favouring the role of government in providing unemployment insurance.

Table 3.4 Unemployment insurance and other characteristics

Unemployment insurance responsibility of Government	Marginal effects for "definitely should not be"	Marginal effects for "probably should not be"	Marginal effects for "probably should be"	Marginal effects for "definitely should be"
Religious Affiliation	-0.009***	-0.022***	-0.001***	0.032***
No Affiliation (Ref)	(0.001)	(0.003)	(0.000)	(0.004)
Gender: Female	-0.007***	-0.018***	-0.001***	0.026***
Male (Ref)	(0.001)	(0.003)	(0.000)	(0.004)
Marital status: Married	0.007***	0.017***	0.001***	-0.025***
Unmarried (Ref)	(0.001)	(0.003)	(0.000)	(0.004)
Education: None (Ref)				
Still at school/University	0.009***	0.025***	0.018**	-0.051***
	(0.003)	(0.008)	(0.007)	(0.019)
Incomplete primary	0.021***	0.058***	0.028***	-0.107***
	(0.003)	(0.008)	(0.007)	(0.018)
Primary complete	0.020***	0.055***	0.028***	-0.103***
	(0.003)	(0.008)	(0.007)	(0.018)
Incomplete secondary	0.025***	0.067***	0.028***	-0.120***
	(0.003)	(0.008)	(0.007)	(0.018)
Secondary complete	0.028***	0.074***	0.028***	-0.129***
	(0.003)	(0.008)	(0.007)	(0.018)
Semi-higher, Incomplete university	0.025***	0.067***	0.028***	-0.121***
	(0.003)	(0.009)	(0.007)	(0.018)
University complete	0.030***	0.079***	0.027***	-0.136***
	(0.003)	(0.009)	(0.007)	(0.019)
Household size	-0.003***	-0.006***	-0.000***	0.009***
	(0.000)	(0.001)	(0.000)	(0.001)
Occupation: others (Ref)				
Employed	0.006***	0.014***	-0.000	-0.020***
	(0.001)	(0.003)	(0.000)	(0.005)
Unemployed	-0.033***	-0.096***	-0.084***	0.214***
	(0.002)	(0.005)	(0.007)	(0.013)
Retired	-0.001	-0.003	-0.000	0.004
	(0.002)	(0.004)	(0.000)	(0.006)
Employment sector:				
Non Govt. (Ref)				
Govt. Employee	-0.003***	-0.008***	-0.001*	0.011***
	(0.001)	(0.003)	(0.000)	(0.004)
Trust in MPs	-0.001**	-0.003**	-0.000**	0.004**
	(0.001)	(0.001)	(0.000)	(0.002)
Interest in Politics	-0.001*	-0.002*	-0.000	0.003*
	(0.001)	(0.001)	(0.000)	(0.002)
Observations	37718	37718	37718	37718

Standard errors in parentheses
* p<0.1, ** p<0.05, *** p<0.01

Table 3.5 Unemployment insurance and country level controls

Unemployment insurance responsibility of Government	Marginal effects for "definitely should not be"	Marginal effects for "probably should not be"	Marginal effects for "probably should be"	Marginal effects for "definitely should be"
Religious Affiliation	-0.007***	-0.017***	-0.001***	0.025***
No Affiliation (Ref)	(0.001)	(0.003)	(0.000)	(0.004)
Gender: Female	-0.008***	-0.019***	-0.001***	0.028***
Male (Ref)	(0.001)	(0.003)	(0.000)	(0.004)
Marital status: Married	0.007***	0.017***	0.001***	-0.024***
Unmarried (Ref)	(0.001)	(0.003)	(0.000)	(0.004)
Education: None (Ref)				
Still at school/University	0.008***	0.023***	0.024***	-0.056***
	(0.002)	(0.008)	(0.009)	(0.019)
Incomplete primary	0.021***	0.060***	0.042***	-0.124***
	(0.002)	(0.007)	(0.009)	(0.018)
Primary complete	0.023***	0.066***	0.043***	-0.133***
	(0.002)	(0.007)	(0.009)	(0.018)
Incomplete secondary	0.030***	0.082***	0.044***	-0.156***
	(0.003)	(0.008)	(0.009)	(0.018)
Secondary complete	0.038***	0.100***	0.042***	-0.180***
	(0.003)	(0.008)	(0.009)	(0.018)
Semi-higher,	0.030***	0.082***	0.044***	-0.156***
Incomplete university	(0.003)	(0.008)	(0.009)	(0.019)
	0.051***	0.127***	0.032***	-0.211***
University complete	(0.004)	(0.009)	(0.009)	(0.019)
Household size	-0.002***	-0.005***	-0.000***	0.007***
	(0.000)	(0.001)	(0.000)	(0.002)
Occupation: Others				
(Ref)	0.005***	0.012***	0.000	-0.018***
	(0.001)	(0.003)	(0.000)	(0.005)
Employed	-0.032***	-0.091***	-0.077***	0.200***
	(0.002)	(0.005)	(0.007)	(0.013)
Unemployed	0.001	0.003	0.000	-0.005
	(0.002)	(0.004)	(0.000)	(0.007)
Retired				
Employment sector:				
Non Govt. (Ref)	-0.004***	-0.009***	-0.001**	0.013***
Govt. Employee	(0.001)	(0.003)	(0.000)	(0.004)
Trust in MPs	-0.001***	-0.003***	-0.000**	0.005***
	(0.001)	(0.001)	(0.000)	(0.002)
Interest in Politics	-0.002***	-0.005***	-0.000***	0.008***
	(0.001)	(0.001)	(0.000)	(0.002)
Civil liberty:1 (Ref)				
	0.021***	0.048***	-0.002**	-0.066***
Civil liberty	(0.002)	(0.004)	(0.001)	(0.006)

GDP	0.045***	0.111***	0.006***	-0.162***
	(0.010)	(0.025)	(0.002)	(0.037)
KOF Globalization Index	0.001***	0.002***	0.000***	-0.003***
	(0.000)	(0.000)	(0.000)	(0.000)
Political rights:1 (Ref)				
Political rights = 2	-0.005	-0.013	-0.001	0.019
	(0.004)	(0.011)	(0.002)	(0.018)
Political rights = 3	-0.015***	-0.038***	-0.011**	0.064***
	(0.003)	(0.008)	(0.005)	(0.016)
Survey year: 1 (Ref)				
Survey year = 2	0.010***	0.025***	-0.001	-0.035***
	(0.003)	(0.008)	(0.001)	(0.012)
Survey year = 3	-0.003	-0.007	-0.001	0.011
	(0.004)	(0.010)	(0.002)	(0.015)
Observations	37718	37718	37718	37718

Standard errors in parentheses.
* p<0.1, ** p<0.05, *** p<0.01

3.5 Is there an East versus West divide?

This subsection provides results focusing on exploration related to East v/s West divide. We introduce a dummy variable "East Europe" in the regression to know East versus West divide. It will help us to test the hypothesis that Eastern European more favour role of government than Western Europeans towards unemployment care.

Table 3.6 indicates that East Europeans are less likely to support the government intervention towards unemployment care. East Europeans are 7.3 percent significantly less likely to favour the unemployment insurance definitely should be the responsibility of government than Western Europeans. We reject the hypothesis that individuals from East Europe are more pro government as compared with West Europe. The results for other variables are qualitatively same.

Table 3.6 Unemployment insurance and East-West divide

Unemployment insurance responsibility of Government	Marginal effects for "definitely should not be"	Marginal effects for "probably should not be"	Marginal effects for "probably should be"	Marginal effects for "definitely should be"
East Europe	0.021***	0.050***	0.002***	-0.073***
	(0.001)	(0.003)	(0.001)	(0.004)
Religious Affiliation No Affiliation (Ref)	-0.006***	-0.015***	-0.001***	0.021***
	(0.001)	(0.003)	(0.000)	(0.004)
Gender: Female Male (Ref)	-0.007***	-0.018***	-0.001***	0.025***
	(0.001)	(0.003)	(0.000)	(0.004)
Marital status: Married Unmarried (Ref)	0.008***	0.018***	0.001***	-0.027***
	(0.001)	(0.003)	(0.000)	(0.004)
Education: None (Ref)				
Still at school/University	0.007**	0.020**	0.012*	-0.039**
	(0.003)	(0.009)	(0.006)	(0.018)
Incomplete primary	0.018***	0.048***	0.019***	-0.085***
	(0.003)	(0.008)	(0.006)	(0.017)
Primary complete	0.015***	0.042***	0.019***	-0.076***
	(0.003)	(0.008)	(0.006)	(0.017)
Incomplete secondary	0.021***	0.056***	0.020***	-0.097***
	(0.003)	(0.008)	(0.006)	(0.017)
Secondary complete	0.025***	0.066***	0.019***	-0.111***
	(0.003)	(0.008)	(0.006)	(0.017)
Semi-higher, Incomplete university	0.024***	0.064***	0.019***	-0.107***
	(0.003)	(0.009)	(0.006)	(0.018)
University complete	0.028***	0.073***	0.018***	-0.119***
	(0.004)	(0.009)	(0.006)	(0.018)
Household size	-0.003***	-0.008***	-0.000***	0.012***
	(0.000)	(0.001)	(0.000)	(0.001)
Occupation: others (Ref)				
Employed	0.006***	0.015***	-0.000	-0.021***
	(0.001)	(0.003)	(0.000)	(0.005)
Unemployed	-0.034***	-0.100***	-0.092***	0.226***
	(0.002)	(0.005)	(0.008)	(0.013)
Retired	-0.004**	-0.010**	-0.001**	0.015**
	(0.002)	(0.004)	(0.001)	(0.007)
Employment sector: Govt. Employee Non Govt. (Ref)	-0.006***	-0.015***	-0.001***	0.022***
	(0.001)	(0.003)	(0.000)	(0.004)
Trust in MPs	-0.000	-0.001	-0.000	0.001
	(0.001)	(0.001)	(0.000)	(0.002)
Interest in Politics	0.000	0.001	0.000	-0.002
	(0.001)	(0.001)	(0.000)	(0.002)
Observations	37718	37718	37718	37718

Standard errors in parentheses
* p<0.1, ** p<0.05, *** p<0.01

3.5.1 Origins of the East and West divide

Having found a clear divide between East and West Europe we then focus on the source of preference. Table 3.7 provides estimates on the variable of interest i.e., origin of divide. The dummy East Europe compares the points' of view of Eastern Europeans and Western Europeans. The respondents from East Europe, as compared with West Europe, are 8.5 percent more likely to support the "definitely should be" option.

Table 3.7 Unemployment insurance and early life experience

Unemployment insurance responsibility of Government	Marginal effects for "definitely should not be"	Marginal effects for "probably should not be"	Marginal effects for "probably should be"	Marginal effects for "definitely should be"
East Europe	0.024*** (0.002)	0.059*** (0.004)	0.002*** (0.001)	-0.085*** (0.006)
Before fall of wall	-0.005*** (0.001)	-0.013*** (0.003)	-0.001** (0.000)	0.019*** (0.005)
East Europe × Before fall of wall	-0.005** (0.002)	-0.013** (0.006)	-0.001* (0.000)	0.019** (0.008)
Religious Affiliation No Affiliation (Ref)	-0.006*** (0.001)	-0.014*** (0.003)	-0.001** (0.000)	0.021*** (0.004)
Gender: Female Male (Ref)	-0.007*** (0.001)	-0.017*** (0.003)	-0.001*** (0.000)	0.025*** (0.004)
Marital status: Married Unmarried (Ref)	0.010*** (0.001)	0.024*** (0.003)	0.001*** (0.000)	-0.035*** (0.004)
Household size	-0.004*** (0.000)	-0.010*** (0.001)	-0.000*** (0.000)	0.014*** (0.002)
Occupation: others (Ref)				
Employed	0.008*** (0.001)	0.018*** (0.003)	-0.000 (0.000)	-0.025*** (0.005)
Unemployed	-0.034*** (0.002)	-0.100*** (0.004)	-0.093*** (0.008)	0.226*** (0.013)
Retired	-0.005*** (0.002)	-0.011*** (0.004)	-0.002** (0.001)	0.018*** (0.007)
Govt. Employee	-0.004*** (0.001)	-0.011*** (0.003)	-0.001** (0.000)	0.016*** (0.004)
Non Govt. (Ref)				
Trust in MPs	-0.000 (0.001)	-0.000 (0.001)	-0.000 (0.000)	0.000 (0.002)
Interest in Politics	0.002*** (0.001)	0.005*** (0.001)	0.000** (0.000)	-0.007*** (0.002)
Observations	37836	37836	37836	37836

Standard errors in parentheses.
* p<0.1, ** p<0.05, *** p<0.0

To be more precise, we introduce a variable "before fall of wall". It is a dummy variable and indicates that an individual has spent initial 25 years of life before the fall of the wall. The assumption here is that the respondent would have acquired preferences through education or by family traits in first 25 years of life. This conjecture is in line with related studies on formation of preferences (for example, Bisin & Verdier, 2001; Farvaque et al., 2019). We introduce an interaction term (East Europe*before fall of wall) to know the role of early life experience in shaping preferences.

The estimated coefficient on interaction term implies that the difference between individuals who were educated before fall of wall and from East Europe and their counterparts (individuals who got education after fall of wall and from West Europe). It shows that difference between these to support "definitely should be" the role of government is 1.9 percent. It shows educations plays significant role in shaping preferences.

However, children's preferences are influenced by their parents, as according to (Bisin & Verdier, 2000), parents transmit their own traits to their children. Building on existing literature, there can be two potential source of construction of preferences, i.e., the role of education or transmission of traits by parents (Bisin & Verdier, 2000; Saint-Paul, 2010). In order to explore the sources of preferences formation, the effects of education and family influence are disentangled. These two channels for preferences formation are distinguished and results are presented in table 3.8. The sample is restricted to Eastern European countries and as described earlier that data on place of birth of father is only available for the last waver (2016), so we have less observations in this table. The variable "place of father" is a dummy variable coded 1 if the father is from Eastern Europe and 0 otherwise. We introduce the interaction terms (before fall of wall*educational level) and (before fall of wall* father place).

Table 3.8 Source of preferences: Education v/s intergenerational transmission

Unemployment insurance responsibility of Government	Marginal effects for "definitely should not be"	Marginal effects for "probably should not be"	Marginal effects for "probably should be"	Marginal effects for "definitely should be"
Before fall of wall	0.012	0.022	-0.010	-0.024
	(0.020)	(0.038)	(0.017)	(0.042)
Educational level	0.017***	0.032***	-0.014***	-0.035***
	(0.003)	(0.005)	(0.002)	(0.005)
Before fall of wall × Educational level	-0.009**	-0.016**	0.007**	0.018**
	(0.004)	(0.007)	(0.003)	(0.007)
Father place	-0.009	-0.017	0.007	0.018
	(0.018)	(0.033)	(0.014)	(0.036)
Before fall of wall × Father place	0.025*	0.046*	-0.020*	-0.051*
	(0.014)	(0.025)	(0.011)	(0.028)
Religious Affiliation No Affiliation (Ref)	-0.010**	-0.019**	0.008*	0.020**
	(0.005)	(0.009)	(0.004)	(0.010)
Gender: Female Male (Ref)	-0.009*	-0.016*	0.007*	0.018*
	(0.005)	(0.008)	(0.004)	(0.009)
Marital status: Married Unmarried (Ref)	0.006	0.012	-0.005	-0.013
	(0.005)	(0.009)	(0.004)	(0.010)
Household size	0.004*	0.007*	-0.003*	-0.007*
	(0.002)	(0.004)	(0.002)	(0.004)
Occupation: others (Ref)				
Employed	0.000	0.000	-0.000	-0.000
	(0.006)	(0.012)	(0.005)	(0.013)
Unemployed	-0.003	-0.006	0.003	0.007
	(0.013)	(0.025)	(0.010)	(0.029)
Retired	-0.025*	-0.053*	0.012***	0.066
	(0.013)	(0.031)	(0.004)	(0.044)
Trust in MPs	0.006**	0.010**	-0.005**	-0.011**
	(0.002)	(0.005)	(0.002)	(0.005)
Interest in Politics	-0.015***	-0.029***	0.013***	0.032***
	(0.002)	(0.005)	(0.002)	(0.005)
GDP	4.076***	7.653***	-3.344***	-8.385***
	(0.456)	(0.824)	(0.465)	(0.873)
KOF Globalization Index	-0.031***	-0.058***	0.025***	0.064***
	(0.006)	(0.011)	(0.005)	(0.011)
Political rights	0.892***	-0.034	-0.398***	-0.461***
	(0.052)	(0.024)	(0.016)	(0.042)
Civil liberty	-0.702***	-0.221***	-0.029***	0.952***
	(0.077)	(0.051)	(0.005)	(0.023)
Observations	4290	4290	4290	4290

Standard errors in parentheses
* p<0.1, ** p<0.05, *** p<0.01

Interestingly, individuals who got high level education before fall of wall, as compared with their counterparts, are significantly more likely to favor state role in providing unemployment insurance. It confirms that there is a strong role of education in shaping preferences.

3.5.2 Is Germany different?

This paper then focus on the specific case of Germany as it has been always interesting to explore for strong East-West divide. There exists plethora of studies on the specific case of Germany. East and West Germans have lived for many years in separation. Growing up in different socioeconomic environments leads to variation in behaviors.

In table 3.9, we present the results for Eastern and Western Germans' attitudes towards the responsibility of government in providing unemployment insurance. Building on extant literature, to compare behaviors of East and West Germany we introduce a dummy variable for East Germany, and coded 1 if the respondent is from East Germany while 0 for West Germans.

Table 3.9 indicates that East Germans are 10.8 percent significantly more likely to favor the unemployment insurance "definitely should be" responsibility of government, as compared with Western Germans. Table 3.9 reports the role of education is significant in shaping behavior. Surprisingly, university graduates support for role of government related to unemployment insurance and it opposite to the result for whole sample of countries. The potential explanation for this result might be the exposure to socialism. The results for unemployed and retired respondents are consistent with previous results as these agents favor role of government in providing living standard for unemployed. However, other variables are not statistically significant.

Table 3.9 Unemployment insurance and East-West divide in Germany

Unemployment insurance responsibility of Government	Marginal effects for "definitely should not be"	Marginal effects for "probably should not be"	Marginal effects for "probably should be"	Marginal effects for "definitely should be"
East Germany	-0.028***	-0.089***	0.008**	0.108***
	(0.003)	(0.009)	(0.004)	(0.011)
Religious Affiliation	-0.001	-0.005	0.000	0.006
No Affiliation (Ref)	(0.003)	(0.008)	(0.001)	(0.010)
Gender: Female	-0.003	-0.008	0.001	0.010
Male (Ref)	(0.002)	(0.007)	(0.001)	(0.008)
Marital status: Married	0.001	0.002	-0.000	-0.002
Unmarried (Ref)	(0.002)	(0.007)	(0.001)	(0.009)
Education: None (Ref)				
Still at	-0.029	-0.072	0.043	0.057
school/University	(0.026)	(0.056)	(0.046)	(0.037)
Incomplete primary	-0.025	-0.062	0.040	0.047
	(0.026)	(0.056)	(0.046)	(0.036)
Primary complete	-0.046*	-0.130**	0.043	0.133***
	(0.025)	(0.055)	(0.046)	(0.036)
Incomplete secondary	-0.033	-0.087	0.047	0.073**
	(0.025)	(0.055)	(0.046)	(0.035)
Secondary complete	-0.028	-0.070	0.043	0.055
	(0.026)	(0.056)	(0.046)	(0.036)
Semi-higher,	-0.033	-0.085	0.047	0.071*
Incomplete university	(0.026)	(0.056)	(0.046)	(0.037)
	-0.044*	-0.123**	0.045	0.123***
University complete	(0.026)	(0.056)	(0.046)	(0.038)
Household size	-0.001	-0.003	0.000	0.004
	(0.001)	(0.003)	(0.000)	(0.004)
Occupation: others (Ref)				
	0.011***	0.032***	-0.008***	-0.035***
Employed	(0.003)	(0.009)	(0.002)	(0.011)
	-0.025***	-0.091***	-0.076***	0.192***
Unemployed	(0.003)	(0.011)	(0.017)	(0.027)
	-0.012***	-0.040***	-0.009**	0.061***
Retired	(0.003)	(0.011)	(0.004)	(0.016)
Govt. Employee	-0.004	-0.013	0.001	0.017
Non Govt. (Ref)	(0.003)	(0.009)	(0.001)	(0.011)
Trust in MPs	-0.001	-0.002	0.000	0.003
	(0.001)	(0.003)	(0.000)	(0.004)
Interest in Politics	0.001	0.002	-0.000	-0.002
	(0.001)	(0.004)	(0.000)	(0.004)
Observations	5676	5676	5676	5676

Standard errors in parentheses
* p<0.1, ** p<0.05, *** p<0.01

Table 3.10 Unemployment insurance and early life experience for Germany

Unemployment insurance responsibility of Government	Marginal effects for "definitely should not be"	Marginal effects for "probably should not be"	Marginal effects for "probably should be"	Marginal effects for "definitely should be"
East Germany	-0.011***	-0.035***	0.003*	0.043***
	(0.004)	(0.014)	(0.002)	(0.017)
	-0.009***	-0.028***	0.003*	0.034***
Before fall of wall	(0.003)	(0.009)	(0.001)	(0.011)
East Europe ×	-0.024***	-0.075***	0.007**	0.092***
Before fall of wall	(0.005)	(0.016)	(0.003)	(0.019)
Religious Affiliation	-0.002	-0.005	0.001	0.006
No Affiliation (Ref)	(0.003)	(0.008)	(0.001)	(0.010)
Gender: Female	-0.002	-0.007	0.001	0.008
Male (Ref)	(0.002)	(0.007)	(0.001)	(0.008)
Marital status: Married	0.006**	0.018**	-0.002*	-0.022**
Unmarried (Ref)	(0.003)	(0.008)	(0.001)	(0.010)
Household size	-0.002**	-0.007**	0.001	0.008**
	(0.001)	(0.003)	(0.000)	(0.004)
Occupation: others (Ref)				
	0.007**	0.022**	-0.005***	-0.024**
Employed	(0.003)	(0.009)	(0.002)	(0.011)
	-0.026***	-0.094***	-0.071***	0.191***
Unemployed	(0.003)	(0.011)	(0.016)	(0.027)
	-0.011***	-0.037***	-0.005	0.053***
Retired	(0.003)	(0.011)	(0.003)	(0.016)
Govt. Employee	-0.002	-0.007	0.000	0.009
	(0.003)	(0.009)	(0.000)	(0.011)
Non Govt. (Ref)				
Trust in MPs	-0.001	-0.003	0.000	0.004
	(0.001)	(0.003)	(0.000)	(0.004)
Interest in Politics	0.001	0.004	-0.000	-0.005
	(0.001)	(0.004)	(0.000)	(0.004)
Observations	5688	5688	5688	5688

Standard errors in parentheses
* p<0.1, ** p<0.05, *** p<0.0

Finally, following the same approach as for whole sample of countries, we examine the role of early life experience, for Germans, in shaping behavior towards unemployment care as responsibility of government. Table 3.10 reports estimates on variable of interest. i.e., interaction term (East Germany * before fall of wall) and verify our hypothesis that East Germans who educated before the fall of the Berlin wall are 9.2 percent significantly more likely to favor role of state in providing unemployment insurance, as compared to West Germans who educated after the fall of the wall. Figure 1 compares this divergence between

East and West Germany. Although there was fast and substantial convergence between East and West Germany after the fall of Berlin wall yet the upbringing and early life experiences significantly contributes to attitude. The respondents who were educated before the fall of the Berlin wall are 3.4 percent significantly more likely to favor unemployment insurance "definitely should be" responsibility of government as compared with respondents who are educated after the fall of wall. Unemployed and retired individuals are significantly more likely to favor a role of government in providing unemployment insurance. Married individuals are less likely to favor role of government. Moreover, respondents with large family size are also more pro government. These results are consistent with whole sample of Eastern and Western European countries, except for the East Germany dummy. The result for East Germany is quite standard and in line with earlier studies.

3.6 Robustness check

In order to corroborate our findings, we run robustness check and for this purpose, we transformed the responses of question and converted the dependent variable into a binary variable by reducing the dimensions. The "definitely should not be" and "probably should not be" options are grouped and coded as "0", i.e., individual agree that there should not be government's responsibility towards unemployment insurance. Whereas, "probably should be" and "definitely should be" options are clubbed and coded as "1" (individual support that there should be state responsibility). Table 3.11 reports the marginal effects estimated through logistic regression and it corroborates our earlier findings that eastern Europeans having higher level of education acquired before fall of wall are 2.4 percent significantly more likely to favour the unemployment insurance as responsibility of government.

Table 3.11 Robustness check: Unemployment insurance as a binary outcome

Unemployment Insurance : Binary Variable	Logistic Regression Marginal Effects
Before fall of wall	-0.030 (0.066)
Educational level	-0.046*** (0.008)
Before fall of wall × Educational level	0.024** (0.011)
Father place	0.012 (0.053)
Before fall of wall × Father place	-0.068 (0.044)
Religious Affiliation No Affiliation (Ref)	0.037** (0.016)
Gender: Female Male (Ref)	0.018 (0.014)
Marital status: Married Unmarried (Ref)	-0.019 (0.015)
Household size	-0.009 (0.006)
Occupation: others (Ref) Employed Unemployed Retired	 -0.007 (0.020) -0.032 (0.043) 0.067 (0.051)
Trust in MPs	-0.018*** (0.007)
Interest in Politics	0.048*** (0.007)
GDP	-11.223*** (1.307)
KOF Globalization Index	0.082*** (0.018)
Political rights	-0.613*** (0.096)
Civil liberty	1.585*** (0.211)
Observations	4290

Standard errors in parentheses
* p<0.1, ** p<0.05, *** p<0.01

3.7 Conclusion

In this paper we attempt to investigate with help of data whether attitudes towards unemployment insurance are influenced by historical context of communism across the Eastern and Western Europe. More precisely, does "geo political shock" influence individuals' preferences? Following the relevant strand of literature, this study includes individual and country level characteristics, as individuals' opinion concerning unemployment insurance are dominated by key factors like economic status, employment, gender, education and historical context. In addition, the difference between the Eastern Europe and Western Europe can be explained by culture and institutions. The communism era provides an exceptional setting to examine how upbringing in certain political regime influences preferences.

The historical context helped us to distinguish between the effects of being educated under socialist regime versus getting education in post socialist period. Communism left a long lasting impact on the people who have lived under this regime. There is clear divide between Eastern and Western Europeans' opinions about the responsibility of government in providing unemployment insurance.

We find evidence in favour of role of education through indoctrination, in shaping attitudes. For the specific case of Germany, the Eastern Germans found to be more likely to favour role of government than Western Germans. And the role of education is important in explaining the divergence between behaviours of East and West Germans due to their early life experiences. This may be attributed to state control over schools in socialist regime which shaped the opinions and preferences.

3.A Appendix

Table A.1 List of countries included in the analysis

Serial no.	Country	Country code	Region
1	Czech Republic	203	East Europe
2	France	250	West Europe
3	Germany	276	East and West Europe
4	Hungary	348	East Europe
5	Latvia	428	East Europe
6	Norway	578	West Europe
7	Slovenia	705	East Europe
8	Spain	724	West Europe
9	Sweden	752	West Europe
10	Switzerland	756	West Europe
11	United Kingdom	826	West Europe

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4 Lost in Partition? Culture, Ethnicities and Education from the British Raj to Modern Pakistan[10]

4.1 Introduction

Large-scale events have immediate, obvious, consequences. Be they natural (like earthquakes, or tsunamis) or geopolitical (wars, for example), their impact cannot be disregarded. Mounting evidence documents that these types of events also have long-run impacts (see, e.g., Nunn, 2009, Nunn and Wantchekon, 2011, Nunn and Puga, 2012, Grosjean, 2014, or Michalopoulos and Papioannou, 2016).

The literature tends to consider these events as natural experiments and, for social scientists, as the best alternative to field or laboratory experiments. Even though they may not be so "natural" (in the case of conflicts, for instance), such "experiments" are "historical episodes that provide observable, quasi-random variation in treatment subject to a plausible identifying assumption" (Fuchs-Schündeln and Hassan, 2016). The word natural itself indicates that the researcher has not designed this event or episode consciously, but is interested in the causal relationship(s) arising from events that can safely be considered as exogenous with regard to individual decisions. Some of these events, either being due to political events, or related to really natural disasters, have now been subject to important scrutiny. If the consequences of an episode such as the Chinese 'Leap Forward' have been considered (see, for example, Li and Yang, 2005), the German experiences of separation and reunification (in 1949 and 1989, respectively) have also been studied in depth (see, e.g., Alesina and Fuchs-Schündeln, 2007,

[10] This chapter is co authored with Etienne Farvaque from University of Lille and Muhammad Azmat Hayat from University of the Punjab, Pakistan. The authors would like to thank Morgane Chevé, Marek A. Dąbrowski, Guillaume Daudin, Nicolas Debarsy, Simona Ferraro, Remigiusz Gawlik, Frédéric Gannon, Manon Garrouste, Boris Ginzburg, Jakub Janus, Franck Malan, Cyrille Piatecki, Vincenzo Verardi, Marta Wajda-Lichy, as well as participants in seminars in Le Havre, Lille and Krakow, and in the 3rd EWPM, 68th French Economics Association, 2nd Baltic Economic Association meeting, and the 2019 conference of the European Public Choice Society, for useful comments on previous versions of the paper.

Bönke and Neidhöfer, 2018, Chevalier and Marie, 2017, Peichl and Ungerer, 2017). And for what concerns natural disasters, the impacts of flood submersion in Pakistan have been considered (Kosec and Mo, 2017), as well as, for example, the consequences of earthquakes in Japan (Hanaoka et al., 2018), or of the 2004 tsunami (Cassar et al., 2017). Bernile et al. (2017) show how much these disasters can impact the behavior of agents (in their case, CEOs). However, there is still a lack of knowledge on the long-run impacts of disastrous events in the case of developing countries, which have also known large-scale traumatizing episodes, whose impacts can also be of determinant importance, in particular if education is impacted (Krueger and Lindhal, 2001, Sianesi and Van Reenen, 2003).

Here, we fill this gap, by considering the partition of British India into India and Pakistan, in 1947. More precisely, we investigate the long-run consequences of the partition on education in Pakistan, specifically looking at the relative educational performance of the children and grandchildren of partition that possess different ethnic and cultural traits. The "children of partition" (hereafter designed by CoP) are the cohorts born during the period of splitting British India into India and Pakistan, while the grandchildren of partition are those born two generations after them. In other words, we analyze the impact of the partition on the first and third generations of people impacted by this event, differentiating them by their cultural and ethnic belonging. In itself, this delivers an important contribution, as it offers a longer perspective on the impact of large-scale event, using survey-data.[11]

That large events or disasters lead to income losses, with short term as well as long-term impact on household members, has been shown by Maccini and Yang (2009). The fact that children are in the front line of the impact of large-scale events, and that early life experiences have longer-term effect on educational and socioeconomic outcomes is now acknowledged

[11] Although Duncan et al. (2017), for example, look at the long-run educational perspectives of migrants to the US, these cannot be related to an historical shock equivalent to what the partition represents for India and Pakistan.

(see, for instance, Akbulut-Yuksel, 2014, Akresh et al., 2012, Almond, 2006, Almond et al., 2011). Here, we look at children from the third generation to assess the duration of the impact and, importantly, we look if the impact differs across ethnic lines.

Another feature that makes the analysis of the partition case important is that it has forced people to move massively across (newly designed) borders. The partition episode has created one of the largest migration of its kind in human history, involving the displacement of about 18 million people, the slaughtering of thousands, the division of families, and other induced upheavals (Bharadwaj et al., 2008, 2015, Becker and Ferrra, 2019). And most of this occurred along ethnic fractures and religious affiliations. However, the impact on successive generations has not really been considered, and studies related to the Indian partition are generally qualitative or narrative (see, e.g., Bose and Jalal, 2017, Butalia, 2000, or Tan and Kudaisya, 2000). This is quite unfortunate as the Pakistani context and data can allow us to look at the differentiated impact of the event on "types" of people. Here, we use language as a proxy for the ethnic belonging, and we show that the different ethnicities are impacted differently overtime, revealing separated patterns of adaptation to the new contexts in which people are raised and educated. Although the importance of ethnicity is now a well-known feature for Pakistan (Ansari, 2005, Rashid and Shahhed, 1993), the influence of ethnic belonging on socio-economic attitudes and preferences is still an under-researched area.[12]

Hence, not only do we provide evidence on the long-run impact of a large and traumatic historical event, but we also look at the situation from the perspective of cultural transmission across ethnic groups. In other words, we are studying how the historical event affects the evolution of preferences through the endogenous socialization efforts of the various ethnicities. We therefore emphasize the role of socialization and the transmission of cultural

[12]Dev et al. (2016) have looked at the case of ethnicity and education for Nigeria, bur the related evidence they offer to support their theoretical predictions does not have the inter-temporal dimension of ours.

preferences, following a strand of literature stemming from Bisin and Verdier (2001) that explores the role of intergenerational transmission of preferences to explain the persistence of educational differences across generations. Doepke and Zilibotti (2008) study the role of the intergenerational transmission of tastes for leisure and patience during the industrial revolution, while Farvaque et al. (2018) analyze how preference transmission can induce changes across economic systems. Here, we build on the model by Sáez-Martí and Sjögren (2008), to analyze the transmission of preference in a context where assimilating to the larger population can be desirable (even if it comes at the price of the loss of identity), depending on the belonging of a group to such or such ethnic group.

So, does childhood exposure to shocks (civil wars, conflicts, famines, partitions, reunifications and deep economic recessions) impact educational outcomes in the long run? If yes, then what are the possible reasons and consequences of such events from history? And how does it depend on ethnicity? This paper essentially brings new light to these questions, and is organized as follows: Section 2 provides a sketch of the historical background of British India partition. Section 3 details the model and its testable implications while Section 4 presents the data used. Section 5 introduces the empirical estimation methodology, and provides baseline results for the children of partition. Section 6 does the same for the grandchildren of partition. Section 7 provides several robustness checks, while section 8 concludes the analysis.

4.2 Historical background on the partition of the British Raj

Pakistan, formerly a part of British India (aka the Raj), became independent in 1947, in a process marked by massive migration and bloodsheds, leaving the country largely traumatized. The objective of this section is to provide some historical background on the process of partition and on the ways it has been implemented.

The aim of partition was to split colonial India into separate states, on the basis of religion: one new state would host a Hindu majority (India), while the other (Pakistan) would have a Muslim majority. The aim was to resolve the conflicts between the two religious groups as, after World War II, the British Empire found it next to impossible to keep peace between Hindus and Muslims, nor to act as a broker for consensus between the respective political parties.[13] So it was decided to divide the region. British Prime Minister Attlee then warned the quarrelling political parties that the United Kingdom would cease to administer India after July 1948. Lord Mountbatten was delegated the task to end the British rule in India, and this was done almost a year prior to the agreed schedule (see, e.g., Wilcox, 1964). He asked Sir Radcliffe, a lawyer by profession, to chair the Bengal and Punjab boundary commission, which delivered the partition plan of June 3rd, 1947. Unfortunately, even though he was impartial and unbiased to any political party in British India, Radcliffe was not familiar with boundary drawing mechanism, nor was he fully aware about the geography and human characteristics of the region. Moreover, he had to act under a strict time deadline, being given only five weeks to perform the task (Khilnani, 1999).

The details of the partition were not made public until a few months prior to partition, making it an almost totally exogenous event for most people. In addition, it is now considered that the figures from the census of 1941 have been used to determine the different majorities, whereas, given that the notion of a separate Muslim state was raised as early as 1940, the 1941 census was probably rigged, with a biased reporting of certain religious groups. (Bharadwaj et al., 2008).

Pakistan thus emerged as a Muslim country out of the British-occupied Indian empire on August 14, 1947. At the time of inception, it had two parts: West Pakistan (now Pakistan) and East Pakistan (which became Bangladesh later on - see, Tan and Kudaisya, 2000).

[13] The campaign for an independent Muslim state became prominent in 1930s, as it was evident that Hindus and Muslims had contradicting interests that could not be reconciled.

Unfortunately, when people came to know about the drawing of the boundary, a majority of the concerned people found themselves on the "wrong" side of border, in particular people from Punjab. The exchange of people was based upon religious background, i.e., Hindus and Sikhs moving from Pakistan to India while Urdu-speaking and Punjabi Muslims moved out of India to live in Pakistan. It was, alas, too late for affected people to make preparations or provisions for the evacuation. The violence among Hindus, Muslims and Sikhs resulted in probably more than half a million deaths, along with the forced migration of millions (see Wilcox, 1964, or Bharadwaj et al., 2008, 2015). As a consequence, as Cheema (2000) states, "no man-made boundary has caused so many troubles and effectively impeded the advent of peace in South Asia as the Punjab boundary". Radcliffe himself declared, later on: "there will be roughly 80 million people with a grievance who will begin looking for me" (Khilnani, 1999).[14]

Precise estimates still lack, but it is generally estimated that around 18 million people migrated during this partition process. Examples of large inflows of migrants in Pakistan thus abound. In Karachi city (now the capital of the Sindh province), 28 % of the population had migrated in 1951 while, according to the 1931 census of India, 50 % of its population was non-Muslim. Hence, Karachi is one of the highly affected cities of Pakistan. Lahore (capital of the province of Punjab) also faced some severe consequences as a result of partition, due to the closure of factories and the relocation of corporate organizations, along with banks and other institutions (Tan and Kudaisya, 2000). Overall, the partition reduced the share of Muslims in India from 23.8 percent in 1941 to 9.8 percent, according to the 1951 census (Swenden, 2017, Bharadwaj and Mirza, 2019).

[14]At the time of independence, Pakistan and India were very much dependent upon each other: the share of India in the global imports and exports of Pakistan was equal to 50.6 percent and 23.6 percent, respectively, in 1948-49 which gradually shrunk to 0.06 percent and 1.3 percent respectively in 1975-76. Similarly, the share of Pakistan in India's global imports and exports reduced to 0.13 percent and 0.7 percent respectively in 2005-06 (from 1.1 percent and 2.2 percent respectively during 1951-52). Although it is recognized that trade should be higher among closer countries, even though borders may reduce flows (Anderson and van Wincoop, 2003), the border between Pakistan and India reinforces the paradox of less trade at very short distance.

Other consequences from the partition had an impact on our variable of interest, education. In the first years, many among Pakistan top leaders were Urdu migrants, due to their high level of skills and education, although they were not really able to intermingle with the native inhabitants. Simultaneously, literacy rates declined, due to the outflow of highly educated Hindus and Sikhs - not fully compensated by the arrival of (mostly Urdu) people that formed part of the backbone of the British army and administration (Jha and Wilkinson, 2012). Also, the large-scale migrations resulted in a decline in male ratios in both Pakistan and India (Bharadwaj et al., 2009, 2015). If education is a necessary component of development, then the educational impact of the partition may explain the divergent growth paths. In other words, if the marginal returns on parental education are high, then their evolution across time is a policy-relevant issue. This is something towards which we now turn.

4.3 A model of intergenerational preference transmission after the shock of partition

Our theory is based on Sáez-Martí and Sjögren's (2008) model, who consider a situation where children are immerged in a cultural context with several variants of cultural traits, and who have to pick the variant they prefer among their peers' ones, and under a parental effort to transmit their own family trait. The model thus covers the possibility of a direct, vertical, transmission of a cultural trait, or of an indirect, oblique, transmission (Bisin and Verdier, 2010). It is a useful framework to analyze cultural dynamics when parents agree on which cultural variant is desirable, while their own offspring is subject to their -and other's- influence. Sáez-Martí and Sjögren (2008) show that a variant that parents do not promote can survive if children adopt it, either because they like it or because they have a conformist bias and their environment is dominated by the cultural variant. As we will show, the model fits the situation of Pakistani relative minorities who have to decide upon the transmission of their cultural specificities.

4.3.1 Assumptions

Consider that there are two cultural variants, k and u. Each is related to a language, or ethnicity. In the context of Pakistan, one can think of, respectively, Sindhi, Punjabi (both of k-types) and Urdu languages (u-type), with the related degree of appetence for education that comes with the belonging to each ethnic group. Urdu language being the official language of Pakistan, Urdu-speaking people being (or considering themselves) at the origin of the sheer idea of Pakistan, and Urdu-speaking officers and administrative employees having reached an elite status in the new Pakistani society, the challenge for Sindhi and Punjabi people is thus to adopt a strategy and decide if they want to assimilate to the new national language (and associated dominant culture), or to try to defend and promote their cultural and ethnic trait. The difference between Sindhis and Punjabis, however, is that Sindhis were always

considered as a minority (i.e., before and after the partition), while Punjabis can be considered as dominating before the partition, and forming a non-ruling large share of the population in Punjab today, relatively to Urdus.

Theoretically, there is a probability $\tau_i \geq 0$ ($i = k,u$) that a child adopts the parents-promoted cultural trait. In other words, this probability denotes the vertical transmission. With probability $(1 - \tau_i)$ the child will nevertheless adopt the trait, but through oblique transmission. Let $q \geq 0$ be the proportion of parents holding the *k*-variant. Then, the probability of a Sindhi (respectively, Punjabi) child to adopt the Sindh-related (resp. Punjabi-related) cultural traits (in our context, language and education) is given by:[15]

$$S_k(\tau_k; q) = \tau_k + (1 - \tau_k)q \tag{1}$$

Note that we have $S_u(\tau_u, q) \leq q \leq S_k(\tau_k, q)$. In other words, ex-ante, the transmission of the cultural trait promoted by parents is probabilistically superior to the transmission of the other trait, due to the fact that oblique and vertical transmission will add up in the first case, while only oblique transmission can have a role in the latter one.

Ex-post, transmitting a cultural trait is costly, and parents have to support a cost equal to $c_i(\tau)$ when transmitting their favored variant.[16] This can be written as a function of the probability of adoption, and we have:

$$C(S_k, q) = \begin{cases} c_k(S_k - q)(1 - q)^{-1} & if\ S_k \geq q \\ c_u(q - S_k)q^{-1} & if\ S_k < q \end{cases} \tag{2}$$

[15] For simplicity of exposition, we assume that the oblique transmission part (last term of equation (1)) is linear. See Sáez-Martí and Sjögren (2008) for a more general function. Note also that we consider the situation of Sindhi and Punjabi people viz. Urdu ones as a bilateral problem, as the issue for Sindhis is to either keep their trait or taking the Urdu one, while adopting Punjabi-related trait is not an option, from a rational point of view (and reciprocally for Punjabis).

[16] It is assumed that the cost function is positive, twice continuously differentiable and convex. In particular, $c_i(0) = 0$ and $\lim_{\tau \to 1} c_i(\tau) = +\infty$. The latter assumption ensures that no parent can completely determine the trait of her child.

In other words, if the probability of an oblique transmission of a parent's trait is inferior to the share of this trait in the population ($S_k \leq q$), then the cost of transmission negatively depends on the share of this trait in the population (q), as parents have to go uphill to transmit their variant.

Parents care about their children's welfare, but with what is generally referred to as "imperfect empathy", meaning that they use their own preferences to evaluate their children's choices. Imperfectly empathic parents means that their welfare increases when children adopt the parents' cultural traits (Doepke and Zilibotti, 2017). Denoting by V^{ij} the utility a parent of type i attaches to nurturing a child of type j, the problem of parents of both k-types can be written the following way:

$$max_{S_k \in [0;1]} \{ [S_k V^{ik} + (1 - S_k) V^{iu}] - C(S_k, q) \} \quad (3)$$

4.3.2 Solution, dynamics, impacts of partition and ethnicity

Defining $\Delta V^i \equiv V^{ik} - V^{iu}$, the solution to the parents' problem is $S_k^*(q, \Delta V^i)$, which is the solution to the following:

$$[V^{ik} - V^{iu}] - C(S_k, q) = 0 \quad (4)$$

Take a parent of Sindhi ethnicity, living after partition in Sindh, while Urdu-speaking people are now the ruling elite of the country, and consider that this parent prefers her child to belong to the new dominating ethnic group than to be "stigmatized"(as belonging to a discriminated-minority group) by keeping the Sindhi-related cultural trait. In such a case, $\Delta V^i < 0$, and the cost of transmission will increase in q (the more prevalent the trait in the province of

residence, the costlier it will be for the parent to get the child adopt the national variant) and decrease in ΔV^i. In the opposite case, if a Sindhi-type parent prefers the children to keep the Sindhi-related characteristics (language and level of education, in particular), instead of conforming to the majority, then $\Delta V^i > 0$, and $S_k^*(q, \Delta V^i)$increases both in q and in ΔV^i. This is because the probability of transmission is also a reflection of the effort the parents exert for transmitting their favored trait.

To consider the dynamics of cultural traits, let's assume that births and deaths follow a Poisson process, and that the population is constant over time, as Hauk and Sáez-Martí (2002) and Sáez-Martí and Sjögren (2008) do. Following these authors, when denoting by λ the probability that an adult survives, and by (1-λ) the probability that this adult has a child that reaches adulthood the next period, the fraction of the population bearing the *k*-type can be written as:

$$q_{t+1} = \lambda q_t + (1-\lambda)\Big(q_t S_k^*(q_t, \Delta V^k) + (1-q_t) S_k^*(q_t, \Delta V^u)\Big) \qquad (5)$$

What would be the effect of partition on the evolution of cultural traits? One can first think about an immediate consequence, which is the death (in the migration-related-to-partition process, see above) of part of the population bearing a specific trait. Here, this would mean an abrupt reduction in λ. It appears that such a reduction has an ambiguous impact on the fraction of the population bearing the *k*-type, as we have $\frac{\partial q_{t+1}}{\partial \lambda} = q_t - \Big(q_t S_k^*(q_t, \Delta V^k) + (1-q_t) S_k^*(q_t, \Delta V^u)\Big)$, the sign of which depends on the sign and value of the ΔV^i function.

Conjecture 1. The assimilation process in the newly formed country means that, for some ethnicities, their relative size, with regard to the whole population, decreases. In such a case,

this is denoted by, for population of *k*-type, a reduction in the value of q. Then, from equation (5), this implies that $\frac{\partial q_{t+1}}{\partial q} = \lambda + (1-\lambda)\Big(S_k^*(q_t, \Delta V^k) - S_k^*(q_t, \Delta V^u)\Big)$. If a Sindhi parent, for example, considers that assimilation is a bad thing, then we are in the case where $\Delta V^s > 0$ (see above, as well as below, for historical evidence), and it is thus all the more probable that the sign of the derivative becomes positive. In other words, the fact of becoming a (smaller than historically) minority reinforces the effort to transmit the valued cultural trait.

Conjecture 2. Finally, if the population does not benefit from the same opportunities it had in the former, pre-partition) province, it means that its relative socio-economic status has eroded, making it costlier to transmit the cultural trait (if only because of the need to allocate time to the transmission of language to children, or to direct money to education-related costs). In such a case, for any *k*-type parents, $C(S_k, q)$ increases. We thus have in this case: $\frac{\partial q_{t+1}}{\partial C(S_k,q)} = \lambda q_t + (1-\lambda)\left(q_t S_k^*\Big(q_t, \Delta V^k(C')\Big) + (1-q_t) S_k^*\big(q_t, \Delta V^u(C')\big)\right)$, where (C') indicates the derivative of the cost function. Here again, the sign is ambiguous, as it will depend upon the relative size of the minority, q, with regard to the sign of the ΔV^i. Nevertheless, it is all the more probable that, in small groups who consider that assimilation is a good thing, the increase in the cost of transmission will accelerate the extinction of the cultural trait, which can translate in, for instance, reduced use of the related language, or by lower efforts to improve upon the education of children.

We now turn to the consequences of the historical background of the partition in which we have considered our model of transmission, before delivering an empirical analysis of the impact of this particular event.

4.3.3 Partition and ethnicity: impacts on education and transmission

The partition has had differentiated impacts over Pakistan. The flow of refugees was not ethnically composed the same way in the different parts of the new country, and these were not welcomed at the same degree. As Bhavnani (2016, p. 791) frames it:

> *"It has become a Muhajir [migrant] legend that, during the difficult months of 1947–48, non-Punjabi [Urdu-speaking] Muslim refugees who attempted to disembark from trains at stations in West Punjab were told that Pakistan was further on. Thus, refugees from Punjab were privileged over other refugees in terms of popular sympathy, government willingness to accept and accommodate them, and the quantity and quality of resources allocated towards their rehabilitation."*

In the Sindh province, in particular, the partition has meant a massive inflow of migrants. If, in 1947, 95% of the population was of Sindhi ethnicity, four years later, 50% of the urban population in this province is composed of Urdu-speaking people. As Karachi was (then) the capital of the new country, a majority of migrants considered this city as their destination (Bhavnani, 2016). This soon created tensions, and the initial welcoming behavior quickly turned sour.

Even if the account of the historical events is still disputed, it is now quite consensual to state that the previous tendency was reinforced as both Sindhis and Punjabis were exposed to new occupation of land (previously belonging to people who had left to India) by other ethnic groups. They thus felt themselves as deprived of the land they had sometimes considered with envy (Rashid andShahhed, 1993, Ansari, 1995). Some of these people thus began to see themselves as "sons of the soil" (to use the expression of Fearon and Laitin, 2011). Moreover, while they could have expected to participate in the new government, the elite quickly came

out to be Punjabi and, overall, Urdu-speaking, either from Punjab or from Mohajirs (often with experience in the British administration or army – Jha and Wilkinson, 2012), at the detriment of Sindhis. Theythen began to feel and behave like a minority group, and this has been the case up to today, where they are still considering themselves as being discriminated against. In a nutshell, the initial feeling of the new migrants of being superior and having made the Pakistan existing due to their own sacrifice carries over to today, and the Sindhi culture is still viewed in a condescending way (Ansari, 1995).

Relative poverty and the feeling of being discriminated fuels the intensity of the Sindhi identity, that members of the group want to protect and promote against the will of the governing majority. This inevitably translates into different fertility behavior, with Sindhi women having more children than other ethnic groups (and, in particular, the dominant ones - Muhammad, 1996). Should educational efforts being made by the group, then, they should be oriented towards the preservation of the Sindhi identity. In other words, we can expect Sindhis to reduce the use of (and parental investment in) the national, official, education system, promoting different languages and values than the ones of the minority.

Theoretically, then, we are in the case where Sindhi parents invest in their children to keep the Sindhi-related characteristics (language and level of education), instead of conforming to the majority. We thus are in the situation where $\Delta V^i > 0$, and $S_s^*(q, \Delta V^i)$ increases both in q and in ΔV^i, with q being small. From equation (5), we can assess that $\frac{\partial q_{t+1}}{\partial \lambda} = q_t - \left(q_t S_s^*(q_t, \Delta V^s) + (1 - q_t) S_s^*(q_t, \Delta V^p)\right)$ will be globally positive. In the Sindhi case, due to the partition-related deprivation, λ will decrease, meaning that the Sindhi specific trait(s) will disappear over time, except if people do try to fight the trend by reinforcing their effort to transmit it to the next generation(s). As seen above, the other derivative will also be

positive, meaning a stronger effort to transmit the identifying traits over generations. However, the cost of transmission will increase over time, as can be derived from the above third derivative. Hence, empirically, we should expect, for Sindhi people, partition to have a negative impact on their use of the (official) educational system (this is Conjecture 1 restated in our context). For the next generations, the education could remain lower, comparatively, to the other ethnic groups, except if the Sindhi-related traits disappear over time. However, given that the fertility rate of Sindhi people is higher, this should not be the case (or the speed of decline should be low), and for the most recent generations, the national education system would still be under-used by Sindhi people.

For Punjabi-speaking people in Punjab, the situation is different: they thought they would be associated to the Urdu elite to rule the country, and that they were forming the majority of the new Pakistan. However, they quickly discovered, to their own disadvantage and discontent, that, would they be considered as part of the ruling elite, that would be in a second-tier position, and that there was now a non-zero risk of losing the majority (see the above quote, for an example of an early reaction to this state of fact). Hence, Punjabis are in the situation where assimilation has a value, and where $\Delta V^i < 0$, with the opposite consequences (compared to Sindhi people in Sindh province) to be expected: the first generation should not particularly benefit from, or use, the national education system, but the next ones should use it more, with a lower degree of "defense" of the Punjabi-related cultural traits. However, this means that the feeling of cultural domination erodes over time by a lower presence in the population (due to, for example, lower fertility rates). In such a case, efforts could be reduced, and we can expect that this groupto be confronted with lower educational efforts, ceteris paribus.[17] This sets Conjecture 2 in our empirical context.[18]

[17] Taking into account nation-building efforts, or quotas in favor of the discriminated minorities (as under the government of Benazir Butto) would only reinforce this conclusion.

We now turn to the data to see if these predictions (Conjectures 1 and 2) are backed by the evolution of the level of education of the different generations of ethnic groups in Pakistan, first detailing the sources of data used to estimate educational attainment across generations and groups.

4.4 Data: Household Integrated Economic Survey (HIES) and Pakistan Social and Living Standard Measurement Survey (PSLM)

The Household Integrated Economic Survey (HIES), led by the Pakistan Bureau of Statistics, has been conducted since 1963. The HIES questionnaire was revised in 1990 and used for the subsequent survey periods. Moreover, in 1998-99, the HIES questionnaire and methodology for the collection of data were modified to reflect the integration of HIES inside the Pakistan Integrated Household Survey (PIHS). The HIES was conducted in parallel with the PIHS for 1998-99 and 2001-02, followed by changes in both the questionnaire and data collection methods. In 2004, the program was renamed as Pakistan Social & Living standard measurement survey (PSLM), yet the HIES part remained intact. The PSLM/HIES has been conducted for 2004-05, 2005-06, 2007-08, 2010-11, 2013-14 and 2015-16. In this study, we use survey data released by the Pakistan Bureau of Statistics under HIES for all the datasets that are available and provide data on ethnicities (i.e., languages): 2007-08, 2010-11, 2011-12, 2013-14 and 2015-16.The HIES is the most suited data to analyze the impact of partition on socioeconomic outcomes, as it allows us to analyze the answers from respondents born during the partition time, as well as in the surrounding years. It provides information at the household level about key characteristics such as language, education, social indicators and consumption expenditure.

[18]Karachiwalla (2019) shows that low-caste people in Punjab benefit more from the educational system, and insists on the complementarity between parents and children's efforts. Our comparison between the two provinces thus enlarges the scope of these first results.

How can one identify the people directly affected by the partition process? It can of course be argued that the entire country was affected by the shock, and that no differentiated impact should be looked at. However, this would overlook that large parts of the population had to migrate, and that migrants have settled more largely in Punjab and Sindh provinces. As Table 4.1 indicates, the proportion of migrants (or Muhajirs) in Pakistan, according to the 1951 census, is large, as almost ten percent of the whole population had to move, i.e., more than 7 million people. The highest number of migrants settled in the province of Punjab. In parallel, the province of Sindh, as well as the federal capital area of Karachi[19], received the second largest numbers of migrants. The third largest number of migrants moved to East Pakistan (which became Bangladesh later on). In other words, as can be seen in table 4.1, if the whole of Pakistan was affected by the partition shock and undergone (both voluntary and involuntary) migration processes, the shock was not homogeneously distributed. Hence, in what follows, we focus on the experience of Punjab and Sindh provinces, where we can expect the stronger long-term effects (Bharadwaj et al., 2008, 2015).

The majority of Pakistani people today speak several languages, among which Urdu, Punjabi, Sindhi and Pashtu are the most largely spoken. Moreover, some speak local languages (such as the Balochi, Saraiki and Kashmri). Urdu is the most spoken language, being also the country's official language. The other languages thus reveal the ethnic group to which one belongs, and the choice to speak a language inside the household is taken here as indicative of the ethnicity. Table 4.2 indicates the prevalence of the spoken languages in the different provinces, in our sample. Most people speak Urdu and Punjabi languages in Punjab, whereas the majority speaks Urdu and Sindhi in Sindh. There are tiny proportions of other languages spoken in both provinces but, in order to have clear reference categories in terms of languages, we have dropped them for the provincial analysis. As indicated by the fourth

[19] Islamabad is currently the capital of Pakistan, albeit Karachi was the capital at the birth of the country.

column of table 4.2, which details the situation in the others provinces, such a choice is innocuous with regard to our goal, but it allows us to sharpen the exposition of the results.

Table 4.1 Proportion of Muhajirs (Migrants) in the population of Pakistan, 1951

Province and state	Population (000s)	Muhajirs (Migrants) (000s)	% of population
Pakistan	*73880*	*7226*	*9.8*
Baluchistan	1154	28	2.4
East Bengal*	41932	699	1.7
Federal Capital Area (Karachi)	1122	617	55
NWFP/KPK	3222	51	1.6
Punjab and Bahawalpur	20636	5281	25.6
Sindh and Khairpur state	4925	550	11.2

* East Bengal became an independent country as Bangladesh in1971.
Source: Pakistan Census, 1951

Table 4.2 Statistics on Languages spoken, figures (and percentages of total)

Languages	Provinces			Total
	Punjab	Sindh	Others	
Urdu (and others)	14,162 (42.43)	7,368 (38.50)	23,272 (95.78)	44,802
Punjabi	19,189 (57.49)	127 (0.66)	111 (0.46)	19,427
Sindhi	27 (0.08)	11,645 (60.84)	914 (3.76)	12,586
Total	33,378	19,140	24,297	76,815

Source: Authors' calculation based on the pooled cross sections from PSLM for the years 2007-08, 2010-11, 2011-12, 2013-14 and 2015-16. Figures are for the sample that will be used afterwards.

In addition to the geographical and linguistic elements, the time dimension is important for our purpose. Here, we focus on the individuals (both male and female) born before, during and after partition, and their descendants. Given the sociological background of Pakistan, and the way decisions are taken in households, in what follows, we use the birth year of the household head as our reference for the whole household. The children born during the years 1947 and 1948 are the ones who have been directly exposed and are thus coined "Children of Partition" (COP). Even though the partition took place in 1947, we also consider the 1948

cohort as being the Children of Partition, as at least part of them are most likely to have been exposed in womb to the partition (Almond, 2006). The cohorts born before and after this period are termed, respectively, the pre-partition and post-partition children (and, globally considered, they form the surrounding cohorts).

We restrict our sample to 1980 to define the post-partition cohorts, due to the high level of education attainment after that period. In addition, as the dataset includes the year of birth of the grandchildren starting from this period, going further than 1980 would both blur and bias the third generation estimates, as some grandchildren would also be household heads. Concerning the pre-partition, there are obviously fewer and fewer observations as we go back in time, which is the reason why we do not go beyond 1930. As can be seen from table 4.3, the partition process severely affected socioeconomic outcomes of the impacted generations. If the size of the households is larger for the CoP, their per-capita consumption, educational attainment (years of schooling) and educational status (defined as "at least completed five years of education") are lower, compared to the surrounding cohorts.

Table 4.3 Descriptive statistics: Partition viz. surrounding cohorts

Variables	Partition Cohort(COP) (1947)	Surrounding Cohorts (1930-1946) &(1948-1980)	Difference	SE	P-Value
Per Capita Consumption (Rupees - deflated)	7331.357	8239.802	908.445	145.610	0.000
Household Size	7.456	6.868	- .5883	.062	0.000
Educational Status	.411	.5271	.1162	.009	0.000
Educational Attainment	3.978	5.218	1.239	.102	0.000
Observations	2,862	73,953			

Source: Authors' calculation based on pooled data from various rounds of PSLM/HIES.

4.5 Empirical methodology

4.5.1 Children of Partition

The estimation strategy relies upon the comparison of educational attainment of the individuals born during the partition period and those born before or after the partition. More precisely, we focus on the provinces that are close to the India-Pakistan border, as they faced the largest inflows and outflows of migrants. The underlying assumption are (i) that the children born during partition and who grew up in the more exposed provinces (i.e., Punjab and Sindh) could have reached a lower educational attainment, compared to the children born before or after the partition period that are living in the same provinces and, (ii) that the disruption associated with the partition would have a larger impact on those speaking the local language (i.e., Punjabi and Sindhi), compared to Urdu (see table 4.2).

Our dependent variable is a measure of educational outcome. The "educational status" is a binary variable: if an individual has completed at least five years of education, then it is considered as educated and assigned a value "1", and "0" otherwise. The estimated equation by Logistic regression is the following:

$$Children\ of\ Partition\ Education = \beta_1 * (Household\ head\ birth\ cohort) + \beta_2 * (Language\ ) + \beta_3 * (Household\ head\ birth\ cohort * Language) + \lambda * X + \gamma * (Survey\ year) + \varepsilon \qquad (6)$$

where $\beta_1$captures the impact of partition on the educational outcome of the children who were born during the partition period (and, respectively, of those born during the pre- and post-partition periods), while β_2 measures the impact of partition on schoolingof children who were born during the partition (or before, or after) and speak, for instance, Sindhi language.

The coefficient β_3 measures the impact of the partition on schooling of children who speak, for instance, Punjabi language, depending upon their birth cohort.

The *X* vector includes household level characteristics. As for the latter, we consider household consumption, household size, gender of household head, location of household head (i.e., province), and language spoken at home. The "household consumption" variable reflects the household status, using the household consumption expenditures as a proxy of income (because self-reported income may result in a bias towards the revelation of a subjective status, as well as inducing a classic endogeneity issues with regard to each household head's education level). This consumption variable is considered by quartiles. Furthermore, as data comes from different survey rounds, we have adjusted these variables for inflation (the average inflation rate was 10.49 per cent a year between 2007 and 2015 (Government of Pakistan, 2017). The household size variable indicates the number of people in a house (i.e., 1, 2, 3,… up to the maximum number of members). The household head gender is a dummy variable, being equal to 1 for males. Presently, there are five provinces in Pakistan: Punjab, Sindh, Khyber Pakhtunkhwa, Baluchistan and Gilgat-Baltistan. The Gilgat-Baltistan was introduced as a province in 2009. Given our focus, in what follows, we merge Khyber Pakhtunkhwa, Baluchistan and Gilgat-Baltistan under the name of "others". The "province" variable represents the location of the household head. If a household head belongs to Punjab province it is coded as "1", and "2" is for Sindh province, "3" being for others. Language spoken at home is also a categorical variable. Languages are coded as 1, 2 and 3 for others (group of Urdu and other local languages), Punjabi and Sindhi, respectively.

The final variable is the indication of the year in which the survey was taken. As our data consists of different surveys, we include a vector of survey years to control for any changes in adulthood outcomes related to a specific survey year.

4.5.2 Grandchildren of Partition

Then, in order to know whether the impact of partition was limited to children (household heads) born before, during and after partition, or if it has been transferred to the next generations, we look at the educational attainment of the first generation whose grand-parents were born during the partition, whom we aim at comparing with those who were grew up with grand-parents born before or after the partition period. The related equation thus writes:

$$Grandchildren\ of\ Partition\ Education = \beta'_1 * (Grandparent\ birth\ cohort) + \beta'_2 * (Language) + \beta'_3 * (Grandparent\ birth\ cohort * Language) + \beta'_4 * (Grandparent\ education) + \lambda * X + \gamma * (Survey\ year) + \varepsilon \quad (7)$$

We use data related to the grandchildren of age at least equal to 12 and we assume that, by 12, they should have at least completed the 8th class (i.e., middle education). The dependent variable is a binary variable: if an individual is considered as educated (i.e., if he/she has at least having 8 years of schooling), then the value "1" is attributed, and "0" otherwise. And this measure will be used in a Logistic regression.

Similarly, the coefficient of interest is β'_1. It relates to a dummy variable equal to "1" according to the cohort to which the grandparent belongs, and "0" otherwise. It captures the indirect impact of partition on the educational outcomes of grand children conditionally to the birth cohort of the grandparent.

β'_2 measures the impact of each language on schooling of the children, while the coefficient β'_3 relates to whose grandparent was born during partition (respectively, pre-and post-

partition) and speaks a given language. The coefficient β'_4 measures the influence of a grandparent's education on the grandchildren's education. We define it as a binary variable (equal to"1" if a grandparent is educated – i.e., has at least reached five years of schooling - and "0" otherwise). In equation (7), the set of control variables now also includes the gender of the grandchild (male versus female).

4.6 Results

We first present the results obtained for the first generation (CoP) and then turn to the ones related to the grandchildren of partition. Obviously, although the variables of interest are important in themselves, the interacted variables are of primary interest.

4.6.1 Children of Partition

In table 4.4, we present the baseline results, with column (1) displaying the results obtained for the generation who was born during the partition, while column (2) shows the results for the surrounding cohorts, and column (3) reports the results for a sample restricted to the post-partition cohorts of the years 1949 and 1950. The table reports the average marginal effects of the Logistic regression, with education as a dichotomous variable.

The results indicate a 11.1 percent significantly lower probability that an individual born during the partition period would be educated, compared with the individuals born in the surrounding cohorts (pre- and post-partition periods). Hence, there is a clear negative impact of partition on education. The impact of partition on the pre- and post-partition cohorts degree of schooling, is given in column (2) of table 4.4. On average, children born before partition are 2.5 percent significantly less likely to be educated, whereas the children born after the partition have a 12.6 percent higher probability of being educated. This could be expected from table 4.3 although, in the context of an increasing trend towards more education in developing countries in general, the impact of partition with regard to the pre-partition cohort

in particular is both sizeable and notable. Restricting the sample to the cohorts following the ones immediately affected by the partition (i.e., to people born in 1949 and 1950) does not substantially affect the results.

With regard to the vector of controls, *X*, it appears that consumption has a positive and significant effect on educational attainment, and that a male child outperforms a female child in educational outcome. The household size is found to be negatively associated with schooling. These results could be expected and confirm the validity of the basic model.

Concerning our topic, it has to be noted that people in Sindh province tend to be more educated than those in Punjab, while those in more remote provinces are at a disadvantage, compared to either Punjab or Sindh. However, looking at ethnicity (through language), it appears that, for any cohort, Sindhi-speaking people have a lower chance to be educated than Punjabi-speaking ones, and that both groups have a lower chance to reach the 5-year level of education than Urdu-speaking ones.

However, these effects are estimated on the whole sample, covering all of Pakistan, while the theoretical predictions depend on the (feeling of being a) relative majority in a given province. Hence, in tables 4.5 and 4.6, we estimate the impact of partition separately for the regions of Punjab and Sindh, respectively. If the results for the control variables are not changed, qualitatively speaking, it now clearly appears that, in Punjab, if speaking Punjabi implies an educational disadvantage, belonging to the partition cohort has no supplementary impact. This is not the case for Sindhi-speaking people in Sindh province (see table 4.6): if any Sindhi-speaking person has a lower chance to be educated than any Urdu-speaking person living in Sindh province, this is even truer for the members of the partition cohort. This reveals that Sindhi-speaking people have suffered even more form the partition period, as the historical evidence reviewed could lead us to expect. However, even more interesting is the result that

Sindhi-speaking people belonging to the next cohorts (i.e., those born after the partition) have a higher chance to be educated than the other cohorts. Even though being Sindhi in Sindh creates a disadvantage (compared to Urdus), generations raised after the partition tend to use more the education system than other generations.

Table 4.4 Impact of partition on educational outcomes of household heads (Children of partition) across Pakistan

Explanatory Variables	Dependent variable: Education status		
	Partition cohort (1947-48)	Pre and Post Partition cohorts	Post Partition cohort (1949-50)
	[1]	[2]	[3]
Household head born before partition		-0.025** (0.010)	
Household head born during partition	-0.111*** (0.009)		
Household head born after partition		0.126*** (0.009)	0.025** (0.011)
Household consumption	2: 0.230*** (0.005) 3: 0.307*** (0.005) 4: 0.480*** (0.005)	2: 0.230*** (0.005) 3: 0.306*** (0.005) 4: 0.481*** (0.005)	2: 0.245*** (0.005) 3: 0.278*** (0.015) 4: 0.454*** (0.016)
Household size	-0.021*** (0.001)	-0.020*** (0.001)	-0.016*** (0.002)
Household head gender Male (Ref)	-0.243*** (0.006)	-0.243*** (0.006)	-0.236*** (0.021)
Province 1. Punjab(Ref) 2. Sindh 3. Others	2: 0.065*** (0.006) 3: -0.108*** (0.005)	2: 0.063*** (0.006) 3: -0.109*** (0.005)	2:0.082*** (0.021) 3:-0.155*** (0.015)
Language 1. Urdu(Ref) 2. Punjabi 3. Sindhi	2: -0.050*** (0.005) 3: -0.078*** (0.007)	2: -0.048*** (0.005) 3: -0.081*** (0.007)	2:-0.077*** (0.016) 3:-0.138*** (0.021)
Year of survey	-0.031*** (0.001)	-0.033*** (0.001)	-0.027*** (0.004)
Observations	76815	76815	7155

Notes: Average marginal effects are reported. *, ** and *** indicates statistical level of significance at 10, 5 and 1 percent, respectively. We have used robust standard errors.

Table 4.5 Impact of partition convulsion among ethnicities in Punjab province

Dependent variable: Education status				
Explanatory Variables	Baseline		Interaction with language	
	Partition cohort (1947-48)	Pre and Post Partition cohorts	Partition cohort (1947-48)	Pre and Post Partition cohorts
	[1]	[2]	[3]	[4]
Household head born before partition		-0.040*** (0.015)		-0.021 (0.024)
Household head born during partition	-0.084*** (0.013)		-0.084*** (0.021)	
Household head born after partition		0.100*** (0.013)		0.097*** (0.021)
Household consumption	2:0.272*** (0.007)	2: 0.271*** (0.007)	2:0.272*** (0.007)	2:0.271*** (0.007)
	3:0.329*** (0.007)	3: 0.325*** (0.007)	3:0.329*** (0.007)	3:0.325*** (0.007)
	4:0.492*** (0.007)	4: 0.490*** (0.007)	4:0.492*** (0.007)	4:0.490*** (0.007)
Household size	-0.023*** (0.001)	-0.022*** (0.001)	-0.023*** (0.001)	-0.022*** (0.001)
Household head gender Male (Ref)	-0.215*** (0.009)	-0.215*** (0.009)	-0.215*** (0.009)	-0.216*** (0.009)
Language: Punjabi Urdu(Ref)	-0.052*** (0.005)	-0.050*** (0.005)	-0.052*** (0.005)	-0.051* (0.026)
Year of survey	-0.026*** (0.002)	-0.028*** (0.002)	-0.026*** (0.002)	-0.028*** (0.002)
Household head born before partition*Punjabi Language				-0.032 (0.031)
Household head born during partition*Punjabi Language			-0.000 (0.027)	
Household head born after partition*Punjabi Language				0.005 (0.027)
Observations	33351	33351	33351	33351

Notes: Average marginal effects are reported. *, ** and *** indicates statistical level of significance at 10, 5 and 1 percent respectively. We have used robust standard errors.

Table 4.6 Impact of partition convulsion among ethnicities in Sindh Province

Dependent variable: Education status				
Explanatory Variables	Baseline		Interaction with language	
	Partition cohort (1947-48)	Pre and Post Partition cohorts	Partition cohort (1947-48)	Pre and Post Partition cohorts
	[1]	[2]	[3]	[4]
Household head born before partition		-0.012 (0.021)		-0.036 (0.034)
Household head born during partition	-0.111*** (0.018)		-0.061** (0.029)	
Household head born after partition		0.123*** (0.018)		0.071** (0.029)
Household consumption	2: 0.211*** (0.009) 3: 0.317*** (0.010) 4: 0.505*** (0.009)	2: 0.211*** (0.009) 3: 0.318*** (0.010) 4: 0.506*** (0.009)	2: 0.211*** (0.009) 3: 0.318*** (0.010) 4: 0.505*** (0.009)	2: 0.211*** (0.009) 3: 0.319*** (0.010) 4: 0.507*** (0.009)
Household size	-0.020*** (0.001)	-0.020*** (0.001)	-0.020*** (0.001)	-0.020*** (0.001)
Household head gender Male (Ref)	-0.210*** (0.016)	-0.205*** (0.016)	-0.210*** (0.016)	-0.206*** (0.016)
Language: Sindhi Urdu(Ref)	-0.085*** (0.008)	-0.087*** (0.008)	-0.082*** (0.008)	-0.167*** (0.037)
Year of survey	-0.042*** (0.002)	-0.044*** (0.002)	-0.042*** (0.002)	-0.044*** (0.002)
Household head born before partition*Sindhi Language				0.040 (0.044)
Household head born during partition*Sindhi Language			-0.084** (0.037)	
Household head born after partition*Sindhi Language				0.085** (0.037)
Observations	19013	19013	19013	19013

Notes: Average marginal effects are reported. *, ** and *** indicates statistical level of significance at 10, 5 and 1 percent respectively. We have used robust standard errors.

Sindh and Punjab are very different from each other regarding language. The majority of migrants to Punjab were Punjabi speakers, while the majority of migrants to Sindh were Urdu speakers. And the (local) inhabitants of the Sindh province were globally Sindhi speakers. The migrants to Pakistan were more educated than the locals (Bharadwaj et al., 2009, 2015), if only due to the role of the British army as a formative institution (Jha and Wilkinson, 2012, Swenden, 2017). Migrants to the Sindh settled in towns and took over the functions of the Hindus who departed from Sindh. It created a clear urban – rural divide. Almost 42 percent of the urban population from Sindh state Urdu as their mother language while just 2 percent state Urdu language as the mother language in rural areas (Pakistan Census, 1998).[20]

Summing up, the results signal, in general, a significant negative impact of partition on educational outcomes of the children of partition. However, in particular, children born during the partition, and who speak the Sindhi language at home, are most exposed to the negative impact of the partition, as they have a significantly lower probability of being educated. This first set of result tends to reveal Sindhi-speaking people as a minority overruled by the newly arriving people displaced by the partition process. In other words, the Sindhis have suffered relatively more from the partition, although the generations after the partition tend to have increased their educational effort. This confirms then that, in the assimilation process in the newly formed country, the fact of becoming a (smaller than historically) minority reinforces the effort to transmit the valued cultural trait. Data thus tends to support the theoretical Conjecture 1. The question is now to see if this reaction lasts over the next generations.

[20]Of course, it would be preferable to know whether the respondent to the survey had been a migrant or resident (the people who did not migrated), but this information is not available. We have thus used the birth year as variable of interest and rely on the interactions to infer our interpretations from the estimated results.

4.6.2 Grandchildren of Partition

Tables 4.7 and 4.8 successively display the results for the estimates related to the grandchildren's educational outcomes for each province. As above, logistic regressions are run, for which provide the average marginal effects.

In both provinces, the coefficient attached to the consumption variable indicates that an increase in declared consumption levels (by quartiles) results in a significantly higher probability of a grandchild's reaching the official reference in terms of level of schooling. Also, the household size is negatively associated with a grandchild education. On the opposite, a higher level of education of any grandparent has a positive influence on the education of the grandchildren.

The differences between the two sets of estimates start with the impact of gender: a female grandchild has a significantly lower chance of being educated in Sindh province than in Punjab. This confirms results obtained by, e.g., Aslam and Kingdon (2008) and Aslam (2009), and highlights the differences between the cultural traditions of the ethnic groups we consider.[21] A second difference appears when we look at the impact of language on education: in Sindh, people who speak Sindhi have on average a 10% lower chance to be educated than their Urdu peers (see table 4.8), while there is no significant difference in Punjab for Punjabis (see table 4.7). Moreover, in Sindh, having grandparents who were born during the partition period does not impact the educational level. Hence, among Sindhi-speaking people, the cultural disadvantage does not tend to be reduced over time. Nevertheless, the situation is different for Punjabi-speaking people in Punjab, compared to Urdu-speaking ones. In this province, having a grandparent who was born during the partition reduces education and, as can be seen by comparing the last two columns of table 4.7, this is only true for Punjabi-speaking grandchildren.

[21] Although they confirm the education gender gap in Pakistan (Lloyd et al., 2005, Aslam, 2009), our results also reveal that one has to go deeper than country-level analyses to understand education and labor market gender-related gaps (Jayachandran, 2015).

To sum up, everything happens as if, for the ethnic group who thought it would belong to the elite after the partition shock (Punjabis), the effort to educate is lower (in relative terms) than for the dominant group (Urdus). This validates Conjecture 2 for Punjabis. Things are different for the discriminated minority: for Sindhis, education tends to be lower on average, but the negative impact of the partition does not last (at least, it is no longer significant, compared to other determinants). At least, partition is no longer the main driving mechanism explaining the lower performance of Sindhis in Sindh, compared to Urdus. In theoretical terms, while for the first generation (children of partition), Conjecture 1 was verified for Sindhi people, the mechanism seems to vanish over time. In the terms of Sáez-Martí and Sjögren (2008), it appears that, while Punjabis tend to assimilate to the Urdu-speaking, Sindhis are maintaining the Pakistani "melting-pot" by defending their culture.

Table 4.7 Impact of partition on the education of grandchildren - Punjab province

	Dependent variable: Education status			
Explanatory Variables	[1]	[2]	[3]	[4]
Household consumption	2. 0.083*** (0.028) 3.0.082*** (0.029) 4. 0.137*** (0.030)	2. 0.083*** (0.028) 3. 0.082*** (0.029) 4. 0.139*** (0.030)	2. 0.087*** (0.028) 3. 0.084*** (0.029) 4. 0.140*** (0.030)	2. 0.087*** (0.028) 3. 0.084*** (0.029) 4. 0.138*** (0.030)
Household size	-0.007*** (0.002)	-0.007*** (0.002)	-0.007*** (0.002)	-0.006*** (0.002)
Grandparent Education Non Educated = (Ref)	0.156*** (0.021)	0.154*** (0.021)	0.154*** (0.021)	0.155*** (0.021)
Gender of Grandchild Male = (Ref)	-0.031 (0.020)	-0.031 (0.020)	-0.029 (0.020)	-0.028 (0.019)
Year of survey	-0.015** (0.008)	-0.016** (0.008)	-0.016** (0.008)	-0.016** (0.008)
Language : Punjabi Urdu(Ref)		-0.017 (0.020)	-0.016 (0.020)	-0.001 (0.021)
Grandparent born during partition			-0.124*** (0.038)	-0.013 (0.055)
Grandparent born during partition*Punjabi language				-0.207*** (0.078)
Observations	2452	2452	2452	2452

Notes: Average marginal effects are reported. *, ** and *** indicates statistical level of significance at 10, 5 and 1 percent respectively. We have used robust standard errors.

Table 4.8 Impact of partition on the education of grandchildren-Sindh province

Dependent variable: Education status				
Explanatory Variables	[1]	[2]	[3]	[4]
Household consumption	2.0.128*** (0.036) 3.0.156*** (0.038) 4.0.237*** (0.044)	2.0.109*** (0.036) 3.0.127*** (0.039) 4.0.207*** (0.044)	2.0.109*** (0.036) 3.0.129*** (0.039) 4.0.209*** (0.044)	2.0.108*** (0.036) 3.0.129*** (0.039) 4.0.208*** (0.045)
Household size	-0.013*** (0.003)	-0.009*** (0.003)	-0.009*** (0.003)	-0.009*** (0.003)
Grandparent Education Non Educated = (Ref)	0.137*** (0.025)	0.128*** (0.025)	0.129*** (0.025)	0.129*** (0.025)
Gender of Grandchild Male = (Ref)	-0.126*** (0.026)	-0.130*** (0.026)	-0.129*** (0.026)	-0.130*** (0.026)
Year of survey	-0.027** (0.011)	-0.026** (0.011)	-0.027** (0.011)	-0.027** (0.011)
Language : Sindhi Urdu(Ref)		-0.099*** (0.029)	-0.100*** (0.029)	-0.104*** (0.031)
Grandparent born during partition			-0.038 (0.041)	-0.059 (0.069)
Grandparent born during partition*Sindhi language				0.033 (0.086)
Observations	1172	1172	1172	1172

Notes: Average marginal effects are reported. *, ** and *** indicates statistical level of significance at 10, 5 and 1 percent respectively. We have used robust standard errors.

4.7 Robustness checks

This section details several robustness checks, which are provided in the Appendix (4.A). First, since Pakistan's inception on the global map, there have been unsettled disputes between India and Pakistan, which resulted in several open wars (in 1945, 1965, 1971 and 1999). The second last one led to the emergence of a new country, Bangladesh. Hence, we introduce a dummy variable for the household heads who were born during the civil war of 1970-71, which led to the emergence of a new country, Bangladesh (formerly, it was part of Pakistan before this date). In other words, it can be termed as a second partition. As such, it could have the same impact on the people of Pakistan, although it can also be considered as occurring in a distant place, and as being less traumatic, at least for the people living in Punjab and Sindh. If anything, this event had in fact a positive impact on education levels, confirming its remoteness for the people living in both Punjab and Sindh.[22]

Second, we redefine the affected cohort by enlarging the children of partition cohort from 1947-48 to 1946-48, to consider potential prenatal affects as well (in the spirit of, e.g., Almond, 2006). If a household head is born during the 1946-48 period, then it is termed as partition cohort or children of partition, in order to make comparison with the pre- and post-partition cohorts. The results are qualitatively similar to the previous ones, which corroborates our findings.

Third, and for what concerns grandchildren, we have redefined our definition of the schooling level by considering an alternative measure, namely the percentage of children who have attended school (without necessarily reaching the 8 years of education level). Here again, the results are qualitatively the same, substantiating our findings for the grandchildren of partition.

[22]For space limitations, we do not provide these estimates, but full results are of course available upon request.

4.8 Conclusion

This study measures the impact of the British-Indian partition on educational outcomes, using survey data collected by the Pakistan Bureau of statistics. The partition created one of the biggest migration movement in human history, concerning almost18 million people (Becker and Ferrara, 2019). By analyzing the areas affected by the partition shock, we develop the hypothesis that households' heads born during that period and living in the provinces that are close to the Indian border have a higher probability to be influenced by the shock of partition. We find that the exposure to the shock in the affected areas (namely, the provinces of Sindh and Punjab) results in stronger long-term impacts on the education level of their residents. We find lower schooling outcomes for the children who were born during the partition period. Moreover, children of partition speaking the Sindhi language have an even lower probability of being educated.

Also, grandchildren whose grandparents were born during the partition have a lower probability of schooling, as compared with individuals whose grandparent from the surrounding cohorts (pre- and post-partition periods). Furthermore, grandchildren whose grandparent were born during the partition and who speak Punjabi are the relatively most affected ones, with a lower probability of being educated, relatively to Urdu-speaking people in Punjab. Our results thus validate the intergenerational persistence of educational gaps from the British Raj to contemporary Pakistan.

One important delimitation of this study is that, due non-availability of data, we only explored the impact of partition on an extensive measure of education (years of schooling), and not an intensive measure (quality of education). Undoubtedly, the quality of education is an dimension whose importance is more and more acknowledged. We leave as an avenue for further research the possibility that reaching different qualities of educational goods is also split across ethnic backgrounds. Notwithstanding such limitations, this type of research

reinforces the growing literature emphasizing the links between historical events and present-days behaviors.[23]

[23]For another example, in a different cultural context, see, e.g., Lowes et al. 2017).

4.A Appendix

Table A.1 Introducing civil war dummy in case of Punjab province

Dependent Variable: Education Status		
Explanatory Variables	Partition cohort (1947-48)	Pre and Post Partition cohorts
	[1]	[2]
Household head born before partition		-0.041*** (0.015)
Household head born during partition	-0.081*** (0.013)	
Household head born after partition		0.098*** (0.013)
Household consumption	2: 0.272*** (0.007) 3: 0.329*** (0.007) 4: 0.492*** (0.007)	2: 0.271*** (0.007) 3: 0.325*** (0.007) 4: 0.491*** (0.007)
Household size	-0.023*** (0.001)	-0.022*** (0.001)
Household head gender Male (Ref)	-0.215*** (0.009)	-0.215*** (0.009)
Language: Punjabi Urdu(Ref)	-0.052*** (0.005)	-0.050*** (0.005)
Year of survey	-0.026*** (0.002)	-0.028*** (0.002)
Household head born during civil war (1971-72)	0.052*** (0.011)	0.035*** (0.011)
Observations	33351	33351

Notes: Average marginal effects are reported. *, ** and *** indicates statistical level of significance at 10, 5 and 1 percent respectively. We have used robust standard errors.

Table A.2 Introducing civil war dummy in case of Sindh dummy

Dependent variable: Education Status		
Explanatory Variables	Partition cohort (1947-48)	Pre and Post Partition cohorts
	[1]	[2]
Household head born before partition		-0.012
		(0.021)
Household head born during partition	-0.107***	
	(0.018)	
Household head born after partition		0.119***
		(0.018)
Household consumption	2: 0.210***	2: 0.211***
	(0.009)	(0.009)
	3: 0.317***	3: 0.318***
	(0.010)	(0.010)
	4: 0.505***	4: 0.506***
	(0.009)	(0.009)
Household size	-0.020***	-0.020***
	(0.001)	(0.001)
Household head gender Male (Ref)	-0.209***	-0.205***
	(0.016)	(0.016)
Language: Sindhi Urdu(Ref)	-0.086***	-0.087***
	(0.008)	(0.008)
Year of survey	-0.042***	-0.044***
	(0.003)	(0.002)
Household head born during civil war (1971-72)	0.062***	0.051***
	(0.013)	(0.013)
Observations	19013	19013

Notes: Average marginal effects are reported. *, ** and *** indicates statistical level of significance at 10, 5 and 1 percent respectively. We have used robust standard errors.

Table A.3 Redefining the partition cohort for Punjab Province

Dependent variable: Education Status		
Explanatory Variables	Partition cohort (1946-48)	Pre and Post Partition cohorts
	[1]	[2]
Household head born before partition		-0.025 (0.022)
Household head born during partition	-0.083*** (0.019)	
Household head born after partition		0.095*** (0.019)
Household consumption	2: 0.272*** (0.007) 3: 0.329*** (0.007) 4: 0.492*** (0.007)	2: 0.271*** (0.007) 3: 0.325*** (0.007) 4: 0.490*** (0.007)
Household size	-0.023*** (0.001)	-0.022*** (0.001)
Household head gender Male (Ref)	-0.215*** (0.009)	-0.216*** (0.009)
Language: Punjabi Urdu(Ref)	-0.052*** (0.005)	-0.047* (0.024)
Year of survey	-0.026*** (0.002)	-0.028*** (0.002)
Household head born before partition*Punjabi Language		-0.041 (0.029)
Household head born during partition*Punjabi Language	0.005 (0.025)	
Household head born after partition*Punjabi Language		0.001 (0.025)
Observations	33351	33351

Notes: Average marginal effects are reported. *, ** and *** indicates statistical level of significance at 10, 5 and 1 percent respectively. We have used robust standard errors.

Table A.4 Redefining the partition cohort for Sindh Province

Dependent variable: Education Status		
Explanatory Variables	Partition cohort (1946-48)	Pre and Post Partition cohorts
	[1]	[2]
Household head born before partition		-0.064* (0.033)
Household head born during partition	-0.044 (0.028)	
Household head born after partition		0.055** (0.028)
Household consumption	2: 0.211*** (0.009) 3: 0.318*** (0.010) 4: 0.505*** (0.009)	2: 0.211*** (0.009) 3: 0.319*** (0.010) 4: 0.507*** (0.009)
Household size	-0.020*** (0.001)	-0.020*** (0.001)
Household head gender Male (Ref)	-0.210*** (0.016)	-0.206*** (0.016)
Language: Sindhi Urdu(Ref)	-0.082*** (0.008)	-0.171*** (0.036)
Year of survey	-0.042*** (0.002)	-0.044*** (0.002)
Household head born before partition*Sindhi Language		0.048 (0.044)
Household head born during partition*Sindhi Language	-0.088** (0.036)	
Household head born after partition*Sindhi Language		0.089** (0.036)
Observations	19013	19013

Notes: Average marginal effects are reported. *, ** and *** indicates statistical level of significance at 10, 5 and 1 percent respectively. We have used robust standard errors.

Table A.5 Grandchildren of Partition in Punjab province: Alternative definition of grandchildren education

Dependent variable: Out of school children				
Explanatory Variables	Estimation Method			
	Logistic Regression	Logistic Regression	Logistic Regression	Logistic Regression
	[1]	[2]	[3]	[4]
Household consumption	2: 0.100*** (0.012) 3: 0.117*** (0.012) 4: 0.151*** (0.012)	2: 0.097*** (0.012) 3: 0.113*** (0.012) 4: 0.145*** (0.012)	2: 0.097*** (0.012) 3: 0.113*** (0.012) 4: 0.145*** (0.012)	2: 0.099*** (0.012) 3: 0.114*** (0.012) 4: 0.146*** (0.012)
Household size	-0.004*** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)
Grandparent Education Non Educated = (Ref)	0.104*** (0.007)	0.109*** (0.007)	0.109*** (0.007)	0.109*** (0.007)
Gender of Grandchild Male = (Ref)	-0.031*** (0.007)	-0.032*** (0.007)	-0.032*** (0.007)	-0.032*** (0.007)
Year of survey	-0.010*** (0.003)	-0.008*** (0.003)	-0.008*** (0.003)	-0.008*** (0.003)
Language : Punjabi Urdu(Ref)		0.056*** (0.007)	0.057*** (0.007)	0.062*** (0.008)
Grandparent born during partition			-0.006 (0.012)	0.026 (0.019)
Grandparent born during partition*Punjabi language				-0.057** (0.024)
Observations	8137	8137	8137	8137

Notes: Average marginal effects are reported. *, ** and *** indicates statistical level of significance at 10, 5 and 1 percent respectively. We have used robust standard errors.

Table A.6 Grandchildren of Partition in Sindh province: Alternative definition of grandchildren education

Dependent variable: Out of school children				
Explanatory Variables	Estimation Method			
	Logistic Regression	Logistic Regression	Logistic Regression	Logistic Regression
	[1]	[2]	[3]	[4]
Household consumption	2: 0.146*** (0.019) 3: 0.200*** (0.020) 4: 0.321*** (0.020)	2: 0.127*** (0.019) 3: 0.165*** (0.020) 4: 0.278*** (0.022)	2: 0.127*** (0.019) 3: 0.166*** (0.020) 4: 0.277*** (0.022)	2: 0.127*** (0.019) 3: 0.166*** (0.020) 4: 0.278*** (0.022)
Household size	-0.011*** (0.001)	-0.008*** (0.001)	-0.008*** (0.001)	-0.008*** (0.001)
Grandparent Education Non Educated = (Ref)	0.201*** (0.014)	0.185*** (0.014)	0.185*** (0.014)	0.185*** (0.014)
Gender of Grandchild Male = (Ref)	-0.126*** (0.014)	-0.128*** (0.013)	-0.128*** (0.013)	-0.128*** (0.013)
Year of survey	-0.036*** (0.006)	-0.032*** (0.005)	-0.032*** (0.005)	-0.032*** (0.005)
Language : Sindhi Urdu(Ref)		-0.142*** (0.017)	-0.143*** (0.017)	-0.140*** (0.018)
Grandparent born during partition			-0.024 (0.021)	-0.001 (0.047)
Grandparent born during partition*Sindhi language				-0.028 (0.053)
Observations	4361	4361	4361	4361

Notes: Average marginal effects are reported. *, ** and *** indicates statistical level of significance at 10, 5 and 1 percent respectively. We have used robust standard errors.

General Conclusion

This thesis examines how, and to what extent, the occurrence of natural and geo-political shocks affects individuals' decision-making and preferences. The devastation brought by natural disasters and political shocks has led to exploration of such shocks-related outcomes. These events lead to falling apart of families and communities. Children are lost in amid of natural and political shocks. Particularly, children in under-developed countries forgot to go to schools due to unsafe places in wake of disasters. The recovery period last for many years and traumas sow the seed and take the root which in result shape the life of exposed individual and families. The different shocks have different influences and outcomes differ from country to county (if only between developed and developing countries). In addition, the disaggregated analysis of disasters plays a vital role in understanding the mechanisms pertaining to outcomes.

To the best of our understanding, there is a little information and dearth of empirical analysis on how the occurrence of natural and geo-political shocks influences decision-making and behaviours. Thus, it is imperative to study the effects of natural and human-made (geo-political) shocks. To serve this purpose, this thesis provides compilation of four essays, and each essay provides an empirical investigation of an exogenous shock and its effects. The findings of the thesis contribute to the strand of literature on the shaping of decision making and preferences by disasters.

The first two essays deals with natural disasters. In the first essay, we investigate the impact of earthquake on religiosity. The aim of this essay is to explore how the level of religiosity is influenced by earthquake in a developing country (Pakistan). It is insightful because it has been shown that the individuals from a damaged dwelling behave differently than those from undamaged dwelling on religious outcomes.

In this essay, we use the individual level detailed data on time devoted to religious and other activities in a day. Recently, the study by Bentzen (2019) explores the relationship between earthquakes and religiosity worldwide. Her analysis focuses on combining individual level information on religious attendance with districts exposed to earthquake. In our case, we use a very precise measure of religiosity, i.e., time spent in religious activities (other studies have focused on dummy variables or frequency of prayers which may lead to reliability and measurement issues) and household level information related to damaged caused by the 2005 earthquake. It provides a better identification than alternatives. Moreover, we introduce a novel dimension of religiosity (social religiosity) in the empirical investigation. We reveal that an earthquake influences social and individual religiosity differently.

The analysis starts with the investigation of the factors that can influence religiosity. We find a positive association between exposure to the 2005 earthquake and religiosity. It indicates the individuals whose house was damaged by earthquake are more religious as compared with individuals from undamaged dwellings. Furthermore, individuals with completely damaged dwellings, followed by exposure to earthquake, have greater religiosity.

It offers support for the *religious coping hypothesis* and is consistent with the results of the related body of research (for example see, Sibley and Bulbulia (2012), Bentzen (2019)). Education and age play an important role as religiosity in coping with earthquake tend to varies with individuals' education and age. We find that the experience of an earthquake fosters individual as well as social religiosity. The social religiosity consoles and has a very important role in resilience after an earthquake. It is quantified by the time spent in participating in religious activities. Our findings remain robust after the inclusion of other important household and provincial level covariates.

The chapter 2 is motivated by the results from chapter1, i.e., earthquake tends to shape the individuals' behavior towards religiosity in a developing country. In chapter 2, we focus on more than one country (a large sample of both developing and developed countries) and a series of natural disaster (earthquakes, floods, drought, storms and epidemics).

It explores how children exposed to traumas in their early life behave when facing similar disasters when they become governor of a central bank. In recent times, natural disasters and climate change have gained importance and researchers are acknowledging the role of these factors in monetary policy making. The second essays builds on a related work by Farvaque et al, (2019) which indicates that a central bankers' early life experiences related to recession shape their policy decision. Their work is however delimited to a small sample containing few countries, economic recessions and interest rates.

Our intuition here is that the early life recessions are not only a source of influencing the governor's decision making but that natural disasters also matter. We introduce a theoretical framework which attempts to link central bankers' early life experiences to current disasters. In our analysis, we have 204 central bankers and data on their biographical information is gathered from different sources (central bank websites and personal emails).

The analysis first deals with the determinants of inflation dynamics, and then it turns to disaggregated analysis of disasters by focusing on earthquakes, floods, droughts, storms and epidemics. We find that early life experiences of traumas influence central bankers' present-day behavior. The central bankers who have faced a trauma behave differently, compared with unaffected central bankers with regard to policy making. In particular, except for floods, central bankers who have experienced traumas during their early life are inclined to manage inflation differently, and more conservatively.

The findings remain robust for different specifications, after controlling for important covariates like the relative power of the governor and coastline. Finally, the results remain consistent and deliver the same message after considering forward inflation as a dependent variable to take care of implementation lags.

The last two chapters focus on human made disasters. Chapter 3 investigates the influence of a geo-political shock on the formation of preferences. We build an empirical investigation based on ISSP dataset which provides information on the role of government in providing support for various outcomes in many countries. More specifically, we analyze whether Eastern and Western Europeans' opinions about the responsibility of government in providing unemployment insurance are influenced by the historical context of communism.

We first identify the factors that facilitate the shaping of formation of preferences. Then we examine whether Eastern Europeans behave differently, in comparison, to Western Europeans by exploring their responses towards unemployment insurance as a responsibility of government. Our results indicate a clear divide between Eastern and Western Europeans' preferences/support.

Then we disentangle the possible underlying incentives which can shape individuals' support towards unemployment insurance as responsibility of government. Building on (Alesina & Fuchs-Schündeln, 2007, Bisin & Verdier, 2001) our results point out that early life experiences influence the formation of preferences and being educated under a particular regime (communism) plays an important role in shaping preferences. Our findings show that East Europeans who were educated under the socialist regime are more likely to favour the role of government towards unemployment insurance, in comparison to Western Europeans who were educated after the fall of communism.

In order to contribute to vast body of enquiry, we turn our analysis to the specific case of Germany and explore whether this behavioural division exists between East Germans and

West Germans as well. We find that East Germans, in comparison to West Germans, are more likely to favour the role of government in providing unemployment insurance. Consequently, opinion making is likely to be associated with state control over schools in socialist regime.

The final chapter focuses on educational outcomes emerging from British-India partition of 1947, across Pakistan. We examine the educational outcomes of the first and third generations among different ethnicities following the partition shock.

The existing studies on British-India partition are more descriptive and narrative in nature. We introduce a theoretical model for explaining the mechanisms and provide an empirical investigation of its consequences. To scrutinize this phenomenon, we develop a conjecture that a household head born during partition and living in provinces close to the Indian (Punjab and Sindh) border are more likely to be impacted by the partition convulsion. In order to quantify this, we develop a measure of being educated (i.e., at least having five years of education) for household heads. The baseline regression results show that children born during the partition period have lower schooling outcomes. In particular, the children born during the partition (aka children of partition) and who speak the Sindhi language have an even lower probability of being educated.

Given the impact of partition on the first generation, we then analyze the influence of partition on the grandchildren of partition. Our results point out that the grandchildren (i.e., whose grandparent were born during the partition)-in comparison to grandchildren whose grandparents born during surrounding periods-have a lower probability of being educated. In addition, the Punjabi-speaking grandchildren whose grandparents were born during the partition, in comparison to Urdu-speaking whose grandparents were born in the surrounding periods have a lower probability of being educated. Thus, our results verify the intergenerational persistence of educational gaps.

In the end, the essays in this thesis have enhanced our understanding of the implications of natural and geo-political shocks through empirical scrutiny. Thus, these essays provide new insights on the underlying mechanisms and consequences of these shocks.

This research work has opened new avenue for future research on various outcomes related to economic development and well-being, following natural and human-made disasters. Thus, this thesis provides motivation for a future research path that would delve into further theoretical and empirical investigations of such shocks. Moreover, future research can focus on a wide range of coping strategies, based on different individual and household level characteristics (e.g., wealth, consumption, borrowing, savings, migration and aspiration), in response to different shocks. It may be a future work to investigate the role of social protection programs in mitigation of the severe consequences of these shocks and a comparative analysis of shocks can also shed light on risk-coping strategies.

We have explored intergenerational effects, related to education, arising from one political shock (British-India partition), but it can be a future research avenue to explore intergenerational effects of early life experiences on various outcomes by using other natural experiments.

The literature on natural and human-made disasters is growing and future research should make an effort to do a meta-analysis. It will help to understand the reasons for different findings on decision-making and formation of preferences.

References

Akbulut-Yuksel, M. (2014). Children of War The Long-Run Effects of Large-Scale Physical Destruction and Warfare on Children. *Journal of Human Resources*, *49*(3), 634–662.

Akresh, R., Bhalotra, S., Leone, M., and Osili, U. O. (2012). War and Stature: Growing Up during the Nigerian Civil War. *American Economic Review*, *102*(3), 273–277.

Alesina, A., and Fuchs-Schündeln, N. (2007). Goodbye Lenin (or Not?): The Effect of Communism on People's Preferences. *American Economic Review*, *97*(4), 1507–1528.

Alesina, A., Giuliano, P., Bisin, A., and Benhabib, J. (2011). *Handbook of Social Economics*. North Holland.

Almond, D. (2006). Is the 1918 Influenza Pandemic Over? Long-Term Effects of In Utero Influenza Exposure in the Post-1940 U.S. Population. *Journal of Political Economy*, *114*(4), 672–712.

Almond, D., and Currie, J. (2011). Killing Me Softly: The Fetal Origins Hypothesis. *Journal of Economic Perspectives*, *25*(3), 153–172.

Almond, D., Currie, J., and Duque, V. (2018). Childhood Circumstances and Adult Outcomes: Act II. *Journal of Economic Literature*, *56*(4), 1360–1446.

Anderson, J. E., and van Wincoop, E. (2003). Gravity with Gravitas: A Solution to the Border Puzzle. *American Economic Review*, *93*(1), 170–192.

Ansari, S. (1995). Partition, migration and refugees: Responses to the arrival of Muhajirs in Sind during 1947–48. *South Asia: Journal of South Asian Studies*, *18*(sup001), 95–108.

Ansari, S. F. D. (2005). *Life After Partition: Migration, Community and Strife in Sindh, 1947-1962*. Oxford University Press.

Aslam, M. (2009). Education Gender Gaps in Pakistan: Is the Labor Market to Blame? *Economic Development and Cultural Change*, *57*(4), 747–784.

Aslam, M., and Kingdon, G. G. (2008). Gender and household education expenditure in Pakistan. *Applied Economics*, *40*(20), 2573–2591.

Barro, R. J., and McCleary, R. M. (2003). Religion and Economic Growth across Countries. *American Sociological Review*, *68*(5), 760–781.

Bassett, W. F., Chosak, M. B., Driscoll, J. C., and Zakrajšek, E. (2014). Changes in bank lending standards and the macroeconomy. *Journal of Monetary Economics*, *62*, 23–40.

Becker, S. O., and Ferrara, A. (2019). Consequences of forced migration: A survey of recent findings. *Labour Economics*, *59*, 1–16.

Bekaert, G., and Hoerova, M. (2014). The VIX, the variance premium and stock market volatility. *Journal of Econometrics*, *183*(2), 181–192.

Bernile, G., Bhagwat, V., and Rau, P. R. (2017). What Doesn't Kill You Will Only Make You More Risk-Loving: Early-Life Disasters and CEO Behavior. *The Journal of Finance*, *72*(1), 167–206.

Besley, T., Montalvo, J. G., and Reynal-Querol, M. (2011). Do Educated Leaders Matter?*. *The Economic Journal*, *121*(554), F205-227.

Bharadwaj, P., and Ali Mirza, R. (2019). Displacement and development: Long term impacts of population transfer in India. *Explorations in Economic History*, *73*, 101273.

Bharadwaj, P., Khwaja, A. I., and Mian, A. (2015). Population Exchange and its Impact on Literacy, Occupation and Gender – Evidence from the Partition of India. *International Migration*, *53*(4), 90–106.

Bharadwaj, P., Khwaja, A. I., and Mian, A. R. (2009). *The Partition of India: Demographic Consequences* (SSRN Scholarly Paper No. ID 1294846).

Bharadwaj, P., Khwaja, A., and Mian, A. (2008). The Big March: Migratory Flows after the Partition of India. *Economic and Political Weekly*, *43*(35), 39–49.

Bhavnani, N. (2016). Unwanted Refugees: Sindhi Hindus in India and Muhajirs in Sindh. *South Asia: Journal of South Asian Studies*, *39*(4), 790–804.

Bisin, A., and Verdier, T. (2000). "Beyond the Melting Pot": Cultural Transmission, Marriage, and the Evolution of Ethnic and Religious Traits. *The Quarterly Journal of Economics*, *115*(3), 955–988.

Bisin, A., and Verdier, T. (2001). The Economics of Cultural Transmission and the Dynamics of Preferences. *Journal of Economic Theory*, *97*(2), 298–319.

Bisin, A., and Verdier, T. (2011). The economics of cultural transmission and socialization. *Handbook of Social Economics*, *1*(1 B), 339–416.

Blanchflower, D. G. (2007). *Is Unemployment More Costly Than Inflation?* (Working Paper No. 13505).

Bönke, T., and Neidhöfer, G. (2018). Parental Background Matters: Intergenerational Mobility and Assimilation of Italian Immigrants in Germany. *German Economic Review*, *19*(1), 1–31.

Bordo, M., and Istrefi, K. (2018). Perceived FOMC: The Making of Hawks, Doves and Swingers, in *Hawks and Doves: Deeds and Words - Economics and Politics of Monetary Policymaking*, ed. S.Eijffinger, D. Masciandaro,CEPR.

Bose, S., and Jalal, A. (2017). *Modern South Asia: History, Culture, Political Economy*. Routledge.

Buser, T. (2015). The Effect of Income on Religiousness. *American Economic Journal: Applied Economics*, *7*(3), 178–195.

Butalia, U. (2000). *The Other Side of Silence: Voices from the Partition of India*. Duke University Press.

Cameron, L., and Shah, M. (2015). Risk-Taking Behavior in the Wake of Natural Disasters. *Journal of Human Resources*, *50*(2), 484–515.

Campa, P., and Serafinelli, M. (2018). Politico-Economic Regimes and Attitudes: Female Workers under State Socialism. *The Review of Economics and Statistics*, *101*(2), 233–248.

Campante, F., and Yanagizawa-Drott, D. (2015). Does Religion Affect Economic Growth and Happiness? Evidence from Ramadan. *The Quarterly Journal of Economics*, *130*(2), 615–658.

Cassar, A., Healy, A., and von Kessler, C. (2017). Trust, Risk, and Time Preferences After a Natural Disaster: Experimental Evidence from Thailand. *World Development*, *94*, 90–105.

Cesur, R., Freidman, T., and Sabia, J. J. (2018). *Death, Trauma and God: The Effect of Military Deployments on Religiosity* (Working Paper No. 24954).

Cheema, P. I. (2000). *The Politics of the Punjab Boundary Award* (Working paper No. 10.11588/heidok.00004006).

Chevalier, A., and Marie, O. (2017). Economic Uncertainty, Parental Selection, and Children's Educational Outcomes. *Journal of Political Economy*, *125*(2), 393–430.

Conzo, P. (2018). Natural Disasters and Social Preferences: The Effect of Tsunami-Memories on Cheating in Sri Lanka. *The Journal of Development Studies*, *54*(10), 1912–1931.

Coeuré, B. (2018). Monetary policy and climate change, Speech, conference on "Scaling up Green Finance: The Role of Central Banks", organized by the Network for Greening

the Financial System, the Deutsche Bundesbank and the Council on Economic Policies, Berlin, 8 November.

Corneo, G. (2001). Inequality and the State: Comparing US and German Preferences. *Annales d'Economie et de Statistique*, (63), 283–296.

Dev, P., Mberu, B. U., and Pongou, R. (2016). Ethnic Inequality: Theory and Evidence from Formal Education in Nigeria. *Economic Development and Cultural Change*, *64*(4), 603–660.

Doepke, M., and Zilibotti, F. (2008). Occupational Choice and the Spirit of Capitalism. *The Quarterly Journal of Economics*, *123*(2), 747–793.

Doepke, M., and Zilibotti, F. (2017). Parenting With Style: Altruism and Paternalism in Intergenerational Preference Transmission. *Econometrica*, *85*(5), 1331–1371.

Dohmen, T., Falk, A., Huffman, D., and Sunde, U. (2012). The Intergenerational Transmission of Risk and Trust Attitudes. *The Review of Economic Studies*, *79*(2), 645–677.

Dreher, A., Lamla, M. J., Lein, S. M., and Somogyi, F. (2009). The impact of political leaders' profession and education on reforms. *Journal of Comparative Economics*, *37*(1), 169–193.

Duncan, B., Grogger, J., Leon, A. S., and Trejo, S. J. (2017). *New Evidence of Generational Progress for Mexican Americans* (Working Paper No. 24067).

Durlauf, S. N., Kourtellos, A., and Tan, C. M. (2012). Is God in the details? A reexamination of the role of religion in economic growth. *Journal of Applied Econometrics*, *27*(7), 1059–1075.

Dye, H. (2018). The impact and long-term effects of childhood trauma. *Journal of Human Behavior in the Social Environment*, *28*(3), 381–392.

Eckel, C. C., El-Gamal, M. A., and Wilson, R. K. (2009). Risk loving after the storm: A Bayesian-Network study of Hurricane Katrina evacuees. *Journal of Economic Behavior and Organization*, *69*(2), 110–124.

Ehrmann, M., and Tzamourani, P. (2012). Memories of high inflation. *European Journal of Political Economy*, *28*(2), 174–191.

Emmenegger, P., Marx, P., and Schraff, D. (2016). Off to a Bad Start: Unemployment and Political Interest during Early Adulthood. *The Journal of Politics*, *79*(1), 315–328.

Farvaque, E., Hammadou, H., and Stanek, P. (2011). Selecting Your Inflation Targeters: Background and Performance of Monetary Policy Committee Members. *German Economic Review*, *12*(2), 223–238.

Farvaque, E., Malan, F., and Stanek, P. (2019). Misplaced childhood: When recession children grow up as central bankers. *Journal of Economic Dynamics and Control*, 103697.

Farvaque, E., Mihailov, A., and Naghavi, A. (2018). The Grand Experiment of Communism: Discovering the Trade-Off between Equality and Efficiency. *Journal of Institutional and Theoretical Economics (JITE)*, *174*(4), 707–742.

Farvaque, E., Stanek, P., and Vigeant, S. (2014). On the Performance of Monetary Policy Committees. *Kyklos*, *67*(2), 177–203.

Fearon, J. D., and Laitin, D. D. (2011). Sons of the Soil, Migrants, and Civil War. *World Development*, *39*(2), 199–211.

Frijters, P., Haisken-DeNew, J. P., and Shields, M. A. (2004). Money Does Matter! Evidence from Increasing Real Income and Life Satisfaction in East Germany Following Reunification. *The American Economic Review*, *94*(3), 730–740.

Fuchs-Schündeln, N., and Hassan, T. A. (2016). Chapter 12 - Natural Experiments in Macroeconomics. In J. B. Taylor and H. Uhlig (Eds.), *Handbook of Macroeconomics* (Vol. 2, pp. 923–1012).

Fuchs-Schündeln, Nicola, and Schündeln, M. (2005). Precautionary Savings and Self-Selection: Evidence from the German Reunification "Experiment." *The Quarterly Journal of Economics*, *120*(3), 1085–1120.

Giuliano, P., and Spilimbergo, A. (2014). Growing up in a Recession. *The Review of Economic Studies*, *81*(2), 787–817.

Göhlmann, S., and Vaubel, R. (2007). The educational and occupational background of central bankers and its effect on inflation: An empirical analysis. *European Economic Review*, *51*(4), 925–941.

Government of Pakistan.(2017). *Pakistan Economic Survey*. Finance Division, Economic Advisor's Wing, Islamabad.

Grosjean, P. (2014). A History of Violence: The Culture of Honor and Homicide in the Us South. *Journal of the European Economic Association*, *12*(5), 1285–1316.

Guiso, L., Sapienza, P., and Zingales, L. (2013). *Time Varying Risk Aversion* (Working Paper No. 19284).

Haller, M., and Ressler, R. (2006). National and European identity. *Revue francaise de sociologie*, *Vol. 47*(4), 817–850.

Hanaoka, C., Shigeoka, H., and Watanabe, Y. (2018). Do Risk Preferences Change? Evidence from the Great East Japan Earthquake. *American Economic Journal: Applied Economics*, *10*(2), 298–330.

Hauk, E., and Saez-Marti, M. (2002). On the Cultural Transmission of Corruption. *Journal of Economic Theory*, *107*(2), 311–335.

Hayo, B., and Neumeier, F. (2012). Leaders' Impact on Public Spending Priorities: The Case of the German Laender. *Kyklos*, *65*(4), 480–511.

Heckman, J. J. (2007). The economics, technology, and neuroscience of human capability formation. *Proceedings of the National Academy of Sciences*, *104*(33), 13250–13255.

Heinen, A., Khadan, J., and Strobl, E. (2019). The Price Impact of Extreme Weather in Developing Countries. *The Economic Journal*, *129*(619), 1327–1342.

Hjerm, M., and Schnabel, A. (2010). Mobilizing nationalist sentiments: Which factors affect nationalist sentiments in Europe? *Social Science Research*, *39*(4), 527–539.

Hvidtjørn, D., Hjelmborg, J., Skytthe, A., Christensen, K., and Hvidt, N. C. (2014). Religiousness and Religious Coping in a Secular Society: The Gender Perspective. *Journal of Religion and Health*, *53*(5), 1329–1341.

Iyer, S. (2016). The New Economics of Religion. *Journal of Economic Literature*, *54*(2), 395–441.

Jayachandran, S. (2015). The Roots of Gender Inequality in Developing Countries. *Annual Review of Economics*, *7*(1), 63–88.

Jha, S., and Wilkinson, S. (2012). Does Combat Experience Foster Organizational Skill? Evidence from Ethnic Cleansing during the Partition of South Asia. *The American Political Science Review*, *106*(4), 883–907.

Karachiwalla, N. (2018). A Teacher Unlike Me: Social Distance, Learning, and Intergenerational Mobility in Developing Countries. *Economic Development and Cultural Change*, 67(2), 225–271.

Khilnani, S. (1999). The Idea of India. Penguin Books India.

Kim, Y.-I., and Lee, J. (2014). The long-run impact of a traumatic experience on risk aversion. *Journal of Economic Behavior and Organization*, *108*, 174–186.

Kosec, K., and Mo, C. H. (2017). Aspirations and the Role of Social Protection: Evidence from a Natural Disaster in Rural Pakistan. *World Development*, *97*, 49–66.

Krueger, A. B., and Lindahl, M. (2001). Education for Growth: Why and For Whom? *Journal of Economic Literature*, *39*(4), 1101–1136.

Kudaisya, G., and Yong, T. T. (2002). *The Aftermath of Partition in South Asia* (1 edition). Routledge.

Li, W., and Yang, D. T. (2005). The Great Leap Forward: Anatomy of a Central Planning Disaster. *Journal of Political Economy*, *113*(4), 840–877.

Lloyd, C. B., Mete, C., and Sathar, Z. A. (2005). The Effect of Gender Differences in Primary School Access, Type, and Quality on the Decision to Enroll in Rural Pakistan. *Economic Development and Cultural Change*, *53*(3), 685–710.

Lombardelli, C., and Saleheen, J. (2003). Public expectations of UK inflation. *Bank Engl. Quat. Bull. 43*, 281–290.

Lowes, S., Nunn, N., Robinson, J. A., and Weigel, J. L. (2017). The Evolution of Culture and Institutions: Evidence From the Kuba Kingdom. *Econometrica*, *85*(4), 1065–1091.

Maccini, S., and Yang, D. (2009). Under the Weather: Health, Schooling, and Economic Consequences of Early-Life Rainfall. *American Economic Review*, *99*(3), 1006-26.

Malmendier, U., and Nagel, S. (2011). Depression Babies: Do Macroeconomic Experiences Affect Risk Taking?*. *The Quarterly Journal of Economics*, *126*(1), 373–416.

Malmendier, U., and Nagel, S. (2016). Learning from Inflation Experiences. *The Quarterly Journal of Economics*, *131*(1), 53–87.

McFarlane, A. C. (2010). The long-term costs of traumatic stress: intertwined physical and psychological consequences. *World Psychiatry: Official Journal of the World Psychiatric Association (WPA)*, *9*(1), 3–10.

Michalopoulos, S., and Papaioannou, E. (2016). The Long-Run Effects of the Scramble for Africa. *American Economic Review*, *106*(7), 1802–1848.

Muhammad, A. (1996). Ethnic Fertility Differentials in Pakistan. *The Pakistan Development Review*, *35*(4), 733–744.

Nunn, N. (2009). The Importance of History for Economic Development. *Annual Review of Economics*, *1*(1), 65–92.

Nunn, N., and Puga, D. (2010). Ruggedness: The Blessing of Bad Geography in Africa. *The Review of Economics and Statistics*, *94*(1), 20–36.

Nunn, N., and Wantchekon, L. (2011). The Slave Trade and the Origins of Mistrust in Africa. *American Economic Review*, *101*(7), 3221–3252.

Okulicz-Kozaryn, A. (2010). Religiosity and life satisfaction across nations. *Mental Health, Religion and Culture*, *13*(2), 155–169.

Pargament, Kenneth I., Koenig, H. G., and Perez, L. M. (2000). The many methods of religious coping: Development and initial validation of the RCOPE. *Journal of Clinical Psychology*, *56*(4), 519–543.

Pargament, Kenneth Ira. (1997). *The psychology of religion and coping: Theory, research, practice.* New York, NY, US: Guilford Press.

Parker, M. (2018). The Impact of Disasters on Inflation. *Economics of Disasters and Climate Change*, *2*(1), 21–48.

Peichl, A., and Ungerer, M. (2017). Equality of Opportunity: East Vs. West Germany. *Bulletin of Economic Research*, *69*(4), 421–427.

Rainer, H., and Siedler, T. (2009). Does democracy foster trust? *Journal of Comparative Economics*, *37*(2), 251–269.

Romer, C. D., and Romer, D. (1999). Monetary policy and the well-being of the poor. *Economic Review*, (Q I), 21–49.

Sáez-Martí, M., and Sjögren, A. (2008). Peers and Culture*. *The Scandinavian Journal of Economics*, *110*(1), 73–92.

Saint-Paul, G. (2010). Endogenous Indoctrination: Occupational Choices, the Evolution of Beliefs and the Political Economy of Reforms. *The Economic Journal*, *120*(544), 325–353.

Schneider, J. C., Trinh, N.-H. T., Selleck, E., Fregni, F., Salles, S. S., Ryan, C. M., and Stein, J. (2012). The Long-Term Impact of Physical and Emotional Trauma: The Station Nightclub Fire. *PLOS ONE*, *7*(10), e47339.

Sianesi, B., and Reenen, J. V. (2003). The Returns to Education: Macroeconomics. *Journal of Economic Surveys*, *17*(2), 157–200.

Sibley, C. G., and Bulbulia, J. (2012). Faith after an Earthquake: A Longitudinal Study of Religion and Perceived Health before and after the 2011 Christchurch New Zealand Earthquake. *PLOS ONE*, *7*(12), e49648.

Sinding Bentzen, J. (2019). Acts of God? Religiosity and Natural Disasters Across Subnational World Districts*. *The Economic Journal*, *129*(622), 2295–2321.

Swenden, W. (2018). Governing Diversity in South Asia: Explaining Divergent Pathways in India and Pakistan. *Publius: The Journal of Federalism*, *48*(1), 102–133.

Wilcox, W. (1964). The Economic Consequences of Partition: India and Pakistan. *Journal of International Affairs*, *18*(2), 188–197.