Major Earthquake Experience and Presently-Gratifying Expenditures

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Abstract:[1]

Major natural disasters are often life-changing events, capable of potentially altering the economic behavior of those who experience it first-hand. We investigate the impact of experiencing a major earthquake on individuals' investment and consumption expenditure shares using the major earthquakes in China from 1920 to 2008. We focus on the hypothesis that first-hand experience with a major earthquake influences consumption towards presently gratifying items and experiences. A theoretical framework is provided in which the attraction of current consumption is heightened by direct experience with previous near-fatal events. We compare the expenditure patterns of individuals who began residing in earthquake-stricken areas in China directly before a major earthquake with those who began their residence in the area directly afterwards. Numerous robustness checks and placebo tests in the context of China's institutional migration regulations, are conducted to provide confidence in the identification approach. On average, individuals who experienced a major earthquake early in life tend to invest less in human capital, while spending more on entertainment, conspicuous consumption, health enhancements and convenience services during their subsequent years as household heads. Our study makes progress in understanding the factors which explain long term behavioral heterogeneity in spending and investment tendencies.

Keywords: earthquakes, disasters, household expenditures, consumption, gratification

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How does experience with near-fatal events shape individual preferences? Although economic analysis traditionally treats preferences as given, a growing collection of research attempts to explain variation in preference fundamentals using impressionable life events. Natural disasters are one source of significant life events which could structurally alter individual preferences. These events, like other traumatic episodes in an individual's personal history, could substantially alter individuals' life objectives and account for differences in economic behavior.

We examine the effect of experiencing a major earthquake on individuals' spending decisions several years or even decades later. We hypothesize that individuals who have experienced a major earthquake may have had their outlook on life substantially affected, such that they approach spending and investing decisions with the mentality that life is short and valuable, subsequently engaging in higher spending on presently enjoyable activities, while allocating less of their monetary resources towards long-term investments.

We consider the set of major earthquakes occurring in mainland China from 1920 to 2008. As a developing country, building codes in China are not up to the standards of fully industrialized countries and often not enforced, often resulting in catastrophic damage and loss of life each time a major earthquake occurs. For example, in August 2014, a 6.1 magnitude earthquake near a town in Yunnan Province killed over 600 people and collapsed over 12,000 houses, several times the damage of similar magnitude earthquakes typically occurring in most industrialized countries.[2] In regions which are especially earthquake-prone, facing the possibility of fatal earthquakes, especially after having first-hand experience with one, could substantially affect individuals' outlook on life.[3]

Our estimation measures the effects of the earthquake, comparing the spending behaviors of individuals who were present in an earthquake-affected county before versus after a major earthquake. The key difference is that individuals who were present in the area before the earthquake have experienced the disastrous event first-hand, while those who began their residence afterward have not. We find that for several important spending and saving categories, these two groups of individuals differ systematically in ways which cannot be explained by the need to rebuild after destruction of personal capital, which generally predicts the reverse types of behaviors.[4] Furthermore, for most of the individuals in our sample, the major earthquake in their lifetime occurred decades prior to the consumption patterns we observe, indicating that the influence of the earthquake on spending decisions is a long-term one.

On the investment side, although we find no significant differences in savings rates, individuals who directly experienced the earthquake spent significantly less on most types of education for members of their household. On the consumption side, earthquake experienced household heads spent significantly more on travel and entertainment, conspicuous consumption, health maintenance products and conveniences. These findings are consistent with the hypothesis that individuals who

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[2] For details on the 2014 Yunnan earthquake, see http://yn.xinhuanet.com/newscenter/2014-08/03/c_133528505.htm . It is difficult to make exact comparisons, due to differences in population density, urban distribution of affected area, and other factors. One potential comparison earthquake taking place in a major city in the United States is the 1989 Loma Prieta Earthquake, which was magnitude 6.9. The death toll there was reported at over 60 individuals. The Chuetsu offshore earthquake in Japan was magnitude 6.6, and destroyed 342 buildings and caused 11 deaths. Unenforced masonry is considered a key culprit in the difference in damages and death tolls in China (Zhao, Taucer and Rossetto, 2009).
https://en.wikipedia.org/wiki/1989_Loma_Prieta_earthquake
https://en.wikipedia.org/wiki/2007_Chūetsu_offshore_earthquake

[3] Some anecdotal evidence on this phenomenon has often been informally discussed in China. For example, residents of Chengdu, Sichuan province, are allegedly well-known for knowing how to enjoy life. This region is also known for its recurring catastrophic earthquakes over history. Our study was originally inspired by this anecdotal observation, which was suggested to us during travel to Chengdu.

4 See for example, Sawada and Shimizutani (2008) which indicates the challenge of affected households in Japan in keeping up prior consumption levels after the Great Hanshin-Awaji Earthquake.

have directly experienced major earthquakes are more likely to view life as short and to be enjoyed in the present, thus prioritizing more heavily on day-to-day enjoyment than their unaffected counterparts from the same geographic regions.

Our study contributes to a small but growing literature examining the effect of significant life events on individuals' preference formation. Within this literature, the majority of studies have focused on risk preferences, although a number of studies study the time preference dimension. In this paper, we focus on time preference indicators, since this corresponds more closely with anecdotal evidence in China, and is more readily testable in our data. In particular, the Urban Household Survey contains a diary of spending and investment variables, which we use to measure differences in resource allocation among household heads with first-hand earthquake experience and those without such experience. By contrast, the Urban Household Survey provides very few variables on behaviors in the risk domain.

On the topic of negative events and risk preference, Callen, Isaqzadeh, Long and Sprenger (2014) examine the relationship between violence and risk preferences in conflict-stricken areas of Afghanistan, finding that strong preference for certainty is exacerbated by exposure to and recollection of violent events. Malmendier and Nagel (2011) find that Americans who have experienced low returns on particular types of assets (stocks or bonds) during most of their lives, are less likely and less willing to own that particular class of assets. Page, Savage and Torgler (2014) find that consistent with Prospect Theory, Australian homeowners who were flood victims and facing substantial property damage, were more likely to prefer a lottery ticket over a certain amount of similar monetary value. Hanaoka, Shigeoka and Watanabe (2015) find that the Great East Japan Earthquake resulted in higher levels of risk tolerance, including gambling behavior, among men who experienced higher intensity of the earthquake.

Research on the relationship between near fatal events and time preference is sparser, and thus far the evidence on the direction of the effect is mixed. Callen (2015) finds that survivors of the Indian Ocean Earthquake who were more closely exposed to the tsunami, were in fact more patient, using experimental and survey based measures. Voors, Nillesen, Verwimp, Bulte, Lensink and Van Soest (2012) use experimental games in the field to test the effect of violent conflict on social, risk, and time preference, finding that exposure to violence is associated with greater risk-seeking and higher discount rates. Imas, Kuhn and Mirnonova (2015) find that direct exposure to violence strongly affected impulsivity among grocery shoppers in the Democratic Republic of Congo. In their experiment, giving participants a mandatory cooling-off period reduced the gap in impulsivity between violence-exposed and non-exposed individuals. Sawada and Kuroishi (2015a) provide experimental evidence of present-bias among flood victims in the Philippines, while Sawada and Kuroishi (2015b) does not find any significant evidence of present-bias among earthquake victims in Japan. Our results provide field evidence on actual consumption in the context of fatal natural disasters that generally support the findings in these previous experimental studies, which suggests that near-fatal incidents tend to reduce peoples' regard for the future.

Our estimation compares the present day spending patterns of household heads who were residing in an earthquake stricken geographic area within a time range prior to a major earthquake, to the present day spending patterns of household heads who arrived in the same area within a time range after a major earthquake. While it may be reasonable for us to believe that the timing of earthquakes in a geographic area are unpredictable, selection of individuals into and out of the survey population after a major earthquake is an issue which we must address. Fortunately, some key features of China's domestic migration policies mitigate many of the selection concerns that would typically be raised in such large-scale survey analysis.

Firstly, contrary to some countries such as the United States, China has implemented a tightly

controlled domestic migration policy since ancient times, perhaps especially so in the years after the establishment of Communist Party rule. Under the modern *hukou* system, individuals must have the endorsement of an employer before being able to change the location of their residency. The residency permit is associated with numerous social services (healthcare, education, right to own property, etc.) and government benefits, which would not be openly available to them otherwise. In other words, historically and throughout most of modern times, it has not been easy for Chinese citizens to simply migrate from place to place within China according to their personal preferences over regional features. Secondly, over 70% of our sample consists of 'migration at birth', or household heads who arrived in the relevant area simply by being born there. Among the remaining 30%, the majority arrived in their late teens or twenties. Migration at a young age may be relatively less influenced by personal preference, but more heavily influenced by availability of family and friendship ties in addition to employment opportunities which assist in settling down at a new location. Thirdly, a key intuitive pattern in migration selection runs counter to our empirical findings. One possible migration pattern is that after an earthquake, individuals who are willing to move into that geographic area may have preferences which are well-suited or tolerant to earthquake conditions, or in other words, having present-focused behaviors which match or exceed current residents. Another possibility is that migrants to an earthquake-stricken area are fundamentally less present-focused than the native population. Such pattern might be due to deliberate efforts by firms or the government to repair or recover the area by adding new laborers. To check for the influence of such unfavorable selection effects in our estimation, we conduct robustness checks which remove immediate migrants who may have arrived under such circumstances, finding very similar results.

Due to the restrictions on domestic migration in China, as well as the typical age at migration in our sample, we believe our estimations have approximated the average treatment effect of a major earthquake on the individuals who experienced it first-hand. In a pessimistic scenario in which we have potentially failed to address all the selection and migratory patterns effectively, our estimates still serve as a treatment effect of a major earthquake on the population of a geographic area, including potential population composition changes.

Our empirical methodology shows that the presence of earthquake experience is associated with systematically different spending patterns, which tend to be more focused on present enjoyment while being less future-oriented. However, we note that a limitation of our study is we cannot identify the exact transmission mechanism by which earthquake experience alters preferences over spending categories. For example, it is possible that the differences in attitudes regarding spending of different types of items were transmitted to decision-makers through social factors, including family members and the attitudes of educators and community leaders, which were also affected by the earthquake. Although we cannot distinguish among exact mechanisms in the current study with the current data, we view this as a possible fruitful avenue for future research.

The remainder of the paper proceeds as follows: Section 2 describes our theoretical framework; Section 3 describes our data sources and empirical approach; Section 4 presents the main empirical results; Section 5 discusses several robustness checks, including tests on placebo earthquakes for the direction of spending trends; Section 6 concludes.

2. Theoretical Framework

To explain our empirical result, which may not be obvious from a classical economic standpoint, it is useful to consider a simple theoretical framework which can justify our general finding. We begin by presenting a simple model in which a decision-maker maximizes his expected utility by optimizing his consumption and investment across two periods given the possible states of the world. The model shows that under a set of reasonable and largely standard assumptions, a higher probability of a destructive state in the future increases the optimal consumption level (and decreases the optimal

investment level) in the earlier period.

Individuals who perceive a higher probability of a disastrous event will thus increase presently enjoyable consumption, having less incentive to invest now for future consumption. These are the expenditure tendencies we observe in our data among individuals who have experienced a major earthquake, compared to the expenditures of individuals who "just missed" the earthquake.

From there, all that remains in order to connect our theoretical result with the empirical result is an explanation of why individuals who experienced the earthquake first-hand would exhibit *stronger* such saving and investment patterns, compared to those who presumably know about the earthquake risk, but were not actually in residence at the time of the major destruction – in other words, a theory of first-hand experience. To address this question we turn to existing psychological evidence, discussed in Section 2.2. While there is some mixed evidence on this issue, the intuition is that first-hand experience creates a salience of the disastrous event, which enhances the perceived probability of another such event happening in the future.

2.1 Model

The decision-maker receives income $m_i \in \mathbb{R}_+$ at the beginning of period i, $i=1,2$, and determines his consumption level $c_1 \in \mathbb{R}_+$ and investment level (negative or positive) $k_1 \in \mathbb{R}$ in period 1. In period 2, his consumption $c_2 \in \mathbb{R}_+$ will depend on the realized state in period 2, where the decision-maker's his income in period 2 is the gross return of his investment in period 1 plus his period 2 income, $m_2 + (1+r)k_1$, where $r \geq 0$ is the rate of return on investment between the two periods.

We assume that while there is no uncertainty in period 1, however when period 2 arrives, there are two possible states of the world: with probability $1-p$ the normal state occurs, and income and gross returns will be delivered successfully, such that $c_{2,n} \leq m_2 + (1+r)k_1$, where $c_{2,n}$ denotes the consumption in period 2 in the normal state. With probability p the destructive state occurs, and only a fraction of sum of the income and the gross return will be delivered, such that $c_{2,b} \leq \alpha[m_2 + (1+r)k_1]$, where $c_{2,b}$ denotes the consumption in period 2 in the destructive state and $\alpha \in [0,1)$ denotes the degree of severity of the destructive state.

It is easy to see that a small α indicates a severely destructive state where most of period 2's wealth is destroyed or ruined, while a large α indicates a relatively better state where most of wealth is maintained.

For simplicity, we assume that the decision-maker's life time utility function is time-additive with discount factor $\delta \in (0,1]$, and that the utility functional form is both time-independent and state-independent.

The optimization problem can be written as

$$\underset{c_1,c_{2,n},c_{2,b}\in\mathbb{R}_+,k_1\in\mathbb{R}}{Max} EU\left(c_1,c_{2,n},c_{2,b}\right) = \underset{c_1,c_{2,n},c_{2,b}\in\mathbb{R}_+,k_1\in\mathbb{R}}{Max} u(c_1) + \delta\left[(1-p)\cdot u(c_{2,n}) + p\cdot u(c_{2,b})\right]$$

$$\begin{aligned} & & c_1 + k_1 &\leq m_1 \\ \textit{subject to} & & c_{2,n} &\leq m_2 + (1+r)k_1 \\ & & c_{2,b} &\leq \alpha[m_2 + (1+r)k_1] \end{aligned}$$

Following the standard assumptions that $u:\mathbb{R}_+\to\mathbb{R}$ is increasing, concave and twice continuously differentiable (C^2), it is easy to know that the above problem has an optimal solution, and that all the constraints will be binding at the optimum.

Thus, the above optimization problem is equivalent to the following:

$$\underset{c_1\in\mathbb{R}_+}{Max} \quad u(c_1)+\delta\left[(1-p)\cdot u\left(m_2+(1+r)(m_1-c_1)\right)+p\cdot u\left(\alpha\left[m_2+(1+r)(m_1-c_1)\right]\right)\right]$$

by letting $k_1=m_1-c_1$, $c_{2,n}=m_2+(1+r)k_1$, and $c_{2,b}=\alpha[m_2+(1+r)k_1]$.

In the standard literature on intertemporal consumption, it is usually assumed that the marginal utility from zero consumption is infinite, as shown below.

Assumption 1: $\lim_{c\to 0}u'(c)=+\infty$.

Assumption 1 can guarantee the uniqueness of the optimal solution, which is described by the following proposition.

Proposition 1: Under Assumption 1, the optimal consumption level c_1^* is uniquely determined by the following first order condition:

$$u'(c_1)-\delta(1+r)\left[(1-p)\cdot u'\left(m-(1+r)c_1\right)+\alpha p\cdot u'\left(\alpha\left[m-(1+r)c_1\right]\right)\right]=0$$

where $m=m_2+(1+r)m_1$.

Proof: Since $u:\mathbb{R}_+\to\mathbb{R}$ is increasing and concave, the left hand side of the first order condition, denoted by $f(c_1)$, is decreasing in c_1. When $c_1\to 0$, $f(c_1)\to+\infty$. When $c_1\to m_1+\frac{m_2}{1+r}$ (corresponding to $c_2\to 0$), $f(c_1)\to-\infty$. Since $u(\cdot)$ is C^2, $f(c_1)$ is continuous. Therefore, there exists a unique $c_1\in(0,m_1+\frac{m_2}{1+r})$ such that $f(c_1)=0$.□

Given the existence and the uniqueness of the optimal solution, we would now like to find the comparative statics results. First of all, how will an increase in the estimate of the likelihood of the destructive state will affect the optimal solution?

The answer depends on the curvature of the utility function $u(\cdot)$, which is captured by the commonly used concept: the coefficient of relative risk aversion RRA. We now introduce the following assumption on RRA.

Assumption 2: $\forall c>0$, $RRA(c)\equiv-\frac{u''(c)}{u'(c)}c\in[0,1)$.

Assumption 2 is easily satisfied by a large class of commonly used utility functions in the literature, such as constant relative risk aversion utility, $u(c)=\gamma\cdot(c)^{\rho}+\kappa$, where $\gamma,\kappa>0$ and $\rho\in(0,1)$. Note that this condition on the utility function is also relevant for other behavioral properties (see for example, Lien and Zheng, 2018 on limited self-control).

Now we are ready to state our main theoretical prediction:

Proposition 2: Under Assumptions 1 and 2, the higher the probability of the destructive state p, the greater the optimal consumption level c_1^*, that is, $\frac{\partial c_1^*}{\partial p} > 0$.

Proof: Since $f(c_1 \mid p) \equiv u'(c_1) - \delta(1+r)\left[(1-p)\cdot u'\left(m-(1+r)c_1\right) + \alpha p \cdot u'\left(\alpha\left[m-(1+r)c_1\right]\right)\right]$ is decreasing in c_1 by Assumption 1, it suffices to show $\frac{\partial f(c_1 \mid p)}{\partial p} > 0$.

By Assumption 2, $\forall c > 0$, $-\frac{u''(c)}{u'(c)}c < 1$, or $u'(c) + c \cdot u''(c) > 0$. By letting $c = tx$ and $y(t) = t \cdot u'(tx)$, we have $\frac{\partial y(t)}{\partial t} = u'(tx) + tx \cdot u''(tx) = u'(c) + c \cdot u''(c) > 0$, where $t \in (0,1]$. This implies $y(1) > y(\alpha)$, or $u'(x) > \alpha \cdot u'(\alpha x)$.

Note that $\frac{\partial f(c_1 \mid p)}{\partial p} = \delta(1+r)\left[u'\left(m-(1+r)c_1\right) - \alpha \cdot u'\left(\alpha\left[m-(1+r)c_1\right]\right)\right]$,

$= \delta(1+r)\left[u'(x) - \alpha \cdot u'(\alpha x)\right] > 0$

by letting $m-(1+r)c_1 = x$. □

If individuals who have previously experienced destruction first-hand have a higher belief in the possibility of future earthquakes, then Proposition 2 matches our empirical findings that individuals who experienced the earthquake first-hand consume more and invest less than those who did not have first-hand experience. We discuss this possibility further in Section 2.2.

In addition, our theory predicts that holding all else constant, when the destructive state becomes more severe, the optimal consumption in period 1 is higher.

Proposition 3: Under Assumptions 1 and 2, the greater the degree of severity of the destructive state α, the greater the optimal consumption level c_1^*, that is, $\frac{\partial c_1^*}{\partial \alpha} < 0$.

Proof: Since $f(c_1 \mid \alpha) \equiv u'(c_1) - \delta(1+r)\left[(1-p)\cdot u'\left(m-(1+r)c_1\right) + \alpha p \cdot u'\left(\alpha\left[m-(1+r)c_1\right]\right)\right]$ is decreasing in c_1 by Assumption 1, it suffices to show $\frac{\partial f(c_1 \mid \alpha)}{\partial \alpha} < 0$.

By Assumption 2, $\forall c > 0$, $-\frac{u''(c)}{u'(c)}c < 1$, or $u'(c) + c \cdot u''(c) > 0$. Note that

$\frac{\partial f(c_1 \mid \alpha)}{\partial \alpha} = -\delta(1+r)p\left[u'\left(\alpha\left[m-(1+r)c_1\right]\right) + \alpha\left[m-(1+r)c_1\right] \cdot u''\left(\alpha\left[m-(1+r)c_1\right]\right)\right]$,

$= -\delta(1+r)p\left[u'(c) + c \cdot u''(c)\right] < 0$

by letting $\alpha\left[m-(1+r)c_1\right] = c$. □

Similarly, when individuals are more impatient (smaller δ) or when the interest rate r is lower, the optimal consumption in period 1 will also increase, summarized by the following two propositions, respectively.

Proposition 4: Under Assumption 1, the less patient the decision-maker is, the greater the optimal consumption level c_1^*, that is, $\frac{\partial c_1^*}{\partial \delta} < 0$.

Proof: Since $f(c_1 \mid \delta) \equiv u'(c_1) - \delta(1+r)\left[(1-p)\cdot u'(m-(1+r)c_1) + \alpha p \cdot u'\left(\alpha\left[m-(1+r)c_1\right]\right)\right]$ is decreasing in c_1 by Assumption 1, it suffices to show $\frac{\partial f(c_1 \mid \delta)}{\partial \delta} < 0$. Note that $\frac{\partial f(c_1 \mid \delta)}{\partial \delta} = -(1+r)\left[(1-p)\cdot u'(m-(1+r)c_1) + \alpha p \cdot u'\left(\alpha\left[m-(1+r)c_1\right]\right)\right] < 0$. □

Proposition 5: Under Assumption 1, the lower the interest rate r, the greater the optimal consumption level c_1^*, that is, $\frac{\partial c_1^*}{\partial r} < 0$.

Proof: Since $f(c_1 \mid r) \equiv u'(c_1) - \delta(1+r)\left[(1-p)\cdot u'(m-(1+r)c_1) + \alpha p \cdot u'\left(\alpha\left[m-(1+r)c_1\right]\right)\right]$ is decreasing in c_1 by Assumption 1, it suffices to show $\frac{\partial f(c_1 \mid r)}{\partial r} < 0$. Note that $\frac{\partial f(c_1 \mid r)}{\partial r} = -\delta\left[(1-p)\cdot u'(m-(1+r)c_1) + \alpha p \cdot u'\left(\alpha\left[m-(1+r)c_1\right]\right)\right] < 0$. □

2.2 The Effect of Experience on Beliefs

Psychologists have debated on the direction of bias in decision-makers' beliefs about rare events. On the one hand, Prospect Theory (Kahneman and Tversky, 1979) proposes that decision-makers tend to overweight tail events, suggesting an overly strong belief in rare events. On the other hand, the tendency for individuals to be overly optimistic about future events which might occur to them, including rare negative events, has also been extensively documented (see for example, Weinstein, 1980).

A key factor which has been proposed as potentially explaining the differences between the two directions of beliefs, which is especially relevant to our study, is the "experience-description" gap. Hertwig, Barron, Weber and Erev (2004) propose that individuals overweight the probability of rare events when making decisions based merely on descriptions, while tending to underweight the probability of rare events when making decisions based on past experiences. Subsequent debates (Fox and Hadar, 2006) have followed regarding whether the findings under actual experience can be accounted for due to small sampling, leaving the overweighting of tail events in Prospect Theory as the dominant force.[5]

Since individuals in our setting are dealing with both small probabilities of catastrophic events, and small samples of catastrophic events, we derive the conditions under which a decision-maker who experiences a major earthquake once, will subsequently internalize a higher belief in another major earthquake happening in the future. For this we follow the Law of Small Numbers Framework for the Lucky Store Effect as modeled in Lien, Yuan and Zheng (2015), which is adopted from Rabin (2002).[6] The model captures the fully Bayesian decision-maker as a special case, and in the general formulation allows for a decision-maker who has Law of Small Numbers beliefs in the form of Rabin (2002). The model derives the conditions under which a higher belief in a future catastrophic event could result

[5] See Hertwig and Erev (2009) for a summary of the research and debate on the experience-description gap in risky choice.
[6] For the original discussion on Law of Small Numbers beliefs, see Tversky and Kahneman (1981).

from prior experience with a disaster.

The decision maker, denoted by i, is uncertain about the probability of himself experiencing an earthquake in a given period. However, he has a prior about the distribution of his ex-ante probability of experiencing an earthquake. To be more specific, i's "type" is denoted as $\theta_i \in \{p_1,...,p_K\}$ which represents i's ex ante probability of experiencing an earthquake in a given period. The priors $\pi_i(\theta_i)$ on i's each type are such that $\sum_{k=1}^{K} \pi_i(r_k) = 1$.

The decision maker i's past experience of earthquakes is denoted by $y_i = (y_{i,1},...,y_{i,t})$ where $y_{i,\tau} \in \{a,b\}(1 \le \tau \le t)$ denotes i's τ th period of experience of earthquakes where a denotes experiencing earthquake and b denotes experiencing no earthquake.

Following Rabin (2002), we suppose that the decision maker is a believer of the Law of Small Numbers, by assuming that in his mind there are in total M possible balls in the pot representing the earthquake outcomes according to his type. For example, if i's "type" is $\theta_i = 0.01$ and $M = 500$, then there are 5 "a" balls and 495 "b" balls in the pot. As it is easy to see, when $M \to +\infty$, the decision maker converges to a classical Bayesian decision-maker.

The decision maker updates his prior in a Bayesian manner, for the likelihood of earthquake θ_i after observing a set of outcomes $y_{i,t} \in \{a,b\}$. For simplicity, we mainly focus on the case of $t = 1$ in this paper and derive the result rigorously. As can be shown, our result is robust in the case of $t > 1$.

Proposition 6 (Belief Updating): There exists an M^* such that (1) if $M > M^*$, past experience of an earthquake leads to an estimate of higher likelihood of experiencing an earthquake in the future ($P(y_{i,2} = a \mid y_{i,1} = a) > \sum_{k=1}^{K} \pi_i(p_k) \cdot p_k > P(y_{j,2} = a \mid y_{j,1} = b)$); (2) if $M < M^*$, past experience of earthquake leads to an estimate of lower likelihood of experiencing an earthquake in the future ($P(y_{i,2} = a \mid y_{i,1} = a) < \sum_{k=1}^{K} \pi_i(p_k) \cdot p_k < P(y_{j,2} = a \mid y_{j,1} = b)$).

In other words, within this flexible framework of Bayesian-style updating under Law of Small Numbers, if the decision-maker has sufficiently weak representativeness bias, he or she will believe that having experienced a major earthquake in the past, he or she will be more likely to experience another such earthquake in the future. This belief guides spending decisions in the direction of focusing on presently-realized utilities.

3. Data

Our empirical analysis combines data from two main sources, the World Significant Earthquakes database from the US National Oceanic and Atmospheric Administration (NOAA) for earthquake data, and the China's Urban Household Survey (UHS) for the household spending and investment data.

The World Significant Earthquakes database includes information on 'destructive earthquakes', defined as meeting *at least one* of the following criteria: Moderate damage (of about $1 million or more), 10 or more deaths, magnitude 7.5 or greater, Modified Mercalli Intensity 10 or greater, or the earthquake generated a tsunami. We restrict consideration to those earthquakes of magnitude 5 or

greater, within the lifetimes of individuals in our household dataset, which spans from 1920 to 2008. Affected areas of the earthquake are approximated by checking whether the county of a household is within a 100 kilometer radius of the earthquake epicenter using Google Maps.

For information about individual expenditures, we utilize the Urban Household Survey, conducted by the National Bureau of Statistics in China. We have access to the UHS data from 9 provinces from years 2002 to 2009: Beijing, Liaoning, Zhejiang, Anhui, Hubei, Guangdong, Sichuan, Shaanxi, and Gansu.[7] The sample thus covers at least some provinces from each major region of China, representing a variety of economic and developmental conditions.

We consider the UHS variables pertaining to consumption-related expenditures and savings, including all possible specific categories of consumption which are related to our hypothesis. Our unit of observation in the UHS data is the member of the household who answers the survey on behalf of the entire household, and we assume that this individual also makes the expenditure decisions in the household.[8] We refer to the survey respondent as the head of household throughout the paper.

The UHS dataset is focused primarily on household income and expenditure categories, and does not contain detailed data on the amount of money the household invests into various financial instruments.[9] Thus, the primary investment variables we consider are savings and human capital expenditures. There are two measures of savings, one which is constructed by households' reported income, minus the sum of all reported expenditures. The other measure of savings asks directly about the household's bank deposits made during the year of survey. For the purposes of our study, both measures show similarly insignificant effects of earthquake experience on savings. Our data on human capital investments consists of several categories of expenditures, including education, education for children away from home, non-compulsory education, training, tutoring, and adult education.

In order to test our hypothesis that individuals who have had first-hand experience with a major earthquake may make consumption choices which more closely reflect present-focused enjoyment of life, we examine expenditure variables in the following general categories: food and drink, travel and entertainment, status goods, health and convenience. In order to choose our expenditure variables of interest, we search through all expenditure categories in the UHS data for potentially relevant variables. Table 1 displays the full set of investment and expenditure variables we consider, as well as the mean expenditure amount per household (including zeros), and the average share of family disposable income.

In the food and drink categories, we are interested in whether individuals who experienced the earthquake tend to spend relatively more on eating out compared to eating at home, and whether they consume more socially-oriented and convenient beverages such as tea, alcohol and bottled drinks. The travel and entertainment categories include three main aggregated variables which represent expenditure on cultural entertainment consumption (including movies, music, etc.), expenditure on electronic entertainment products, and expenditure on travel and touring, respectively. We examine several status good variables in order to gauge conspicuous consumption which may impress peers, such as luxury automobiles, jewelry, watches, clothing, and expenditure on grooming and cosmetics. Finally, our health and convenience variables consist of preventative health devices and preventative medicines (focusing on health status as a consumption variable), as well as housekeeping services,

[7] To our knowledge, this is one of the most comprehensive available datasets across provinces available for the UHS.

[8] If an individual other than the survey respondent is the primary decision-maker, this will introduce noise into our estimates, which will tend to bias our results towards insignificance.

[9] The survey does include questions regarding households' *revenues* from financial investments, such as stocks, bonds and insurance plans. This poses several difficulties for our interest in household behavior, since the household's revenues will be determined by many external factors other than their own decisions, and cannot be taken as directly indicative of the household's investment inputs.

which could free household members' time for other activities.

Table 1: Investment and Expenditure Variables

Dependent Variable	Description	Chinese Description (for reference)	Mean (Main Sample)	% of family total disposable income
Savings				
saving	**= disposable income – consumption (calculated)**		**18,351**	**32.1%**
deposit	self-reported deposit in bank increased in the survey year	存入储蓄款	14,528	19.1%
Human Capital Investments				
raiseeducost	expenditure of children attending education away from home	在外就学子女费用	640	1.6%
eduexp	**expenditure on education**	**教育支出，包括学费，教材费，家教费，赞助费，住宿费等**	**2,301**	**5.5%**
nonprieducost	non-compulsory education fees	非义务教育学杂费	993	2.4%
adulteducost	adult education fees	成人教育费	371	0.7%
tutorcost	tutor fees	家教费	65	0.1%
traincost	training course fees	培训班	222	0.5%
Food and Drink				
drinkcost	**expenditure on drinks (ie. bottled drinks and tea)**	**饮料**	**462**	**1.3%**
alcoholcost	expenditure on liquor	酒类	351	1.1%
diningexp	expenditure on dining outside the home	在外饮食	2,899	6.5%
diningratio2	= diningexp / food expenditure on grain and oil (main components for dining at home)		3.002	
Travel and Entertainment				
entercost	**expenditure on cultural interaction and entertainment, including consumption on entertaining goods and services**	**娱乐文化支出**	**3,122**	**6.1%**
entergoodexp	expenditure on entertainment related goods	文化娱乐用品支出	1,684	3.4%
tvcost	expenditure on televisions	彩色电视机	270	0.5%
pccost	expenditure on home-use personal computers	家用电脑	509	0.9%
audiocost	expenditure on music centers	组合音响	15	0.03%
dvcost	expenditure on video cameras	摄像机	20	0.03%
cameracost	expenditure on cameras	照相机	139	0.03%
musixexp	expenditure on music instruments	钢琴和其他中高档乐器	22	0.03%
enterserexp	expenditure on entertainment related services	文化娱乐服务支出	1,438	2.7%
entercost2	expenditure on trips, travels and other entertaining services (created)		1,314	2.5%
tourcost	expenditure on sightseeing	参观游览	206	0.4%
tripcost	expenditure on group travel	团体旅游	808	1.3%
otheractcost	expenditure on other entertainment activities, like movies, show tickets, etc.	其他文娱活动费，如电影票等	300	0.8%
Status Goods				
showcost	**expenditure on clothes, jewelry and watch (**created**)**		**3,491**	**8.4%**
clothexp	expenditure on clothes	衣着	3,283	8.0%
jewelry	expenditure on jewelry	金银珠宝首饰	179	0.3%
watch	expenditure on watches	手表	29	0.1%
beautycost	**expenditure on self-appearance: including haircut and beauty devices and services, makeup (**created**)**		**592**	**1.4%**
hairdress	expenditure on hairdressing devices and services	理发美容用具+理发洗澡费	94	0.3%
makeup	expenditure on makeups	化妆品	369	0.9%

beautyser	expenditure on beauty services	美容费	129	0.2%
Health and Convenience				
healthexp	**expenditure on health protection devices and drugs (**created**)**		**503**	**1.1%**
healthequipexp	expenditure on health protection devices*	保健器具,如按摩器，健身球，磁疗枕，护膝，护腰，护肩，不包括体育运动器材	74	0.1%
healthfoodexp	expenditure on health protection drugs (preventative)**	滋补保健品，包括人参，鹿茸，蜂王浆，蜂蜜，花粉，阿胶，青春宝，西洋参，营养口服液，燕窝，胎盘等；	429	1.0%
tobaccocost	expenditure on tobacco	烟类	529	1.7%
housesercost	**expenditure on housekeeping services**	**家政服务支出**	**89**	**0.2%**

*including Massager fitness ball, magnetic therapy pillow, knee pads Waist guard, shoulder supporter, not including sports equipment
**including Ginseng, pilose antler, royal jelly, honey, pollen, gelatin, Qingchunbao, American ginseng, nutritional beverage, bird's nest, placenta

3.1 Estimation Approach

We utilize an approach similar to a local linear regression discontinuity estimation which compares the expenditure shares of individuals who were living in the affected counties *prior to* a major earthquake, to the expenditures of individuals who reported living in the affected area *after* the occurrence of the earthquake.[10] Our household data is collected between 2002 and 2009 on households' 'current year' consumption, reflects the long-run effect (between several years to decades later) of first-hand exposure to the earthquake. We focus on the spending and investment behavior of residents in counties within 100 kilometers from the epicenter of major earthquakes in China from 1920 to 2008.[11]

Our empirical specification is a Tobit model as follows:

$$exshare_i = \alpha_0 + \alpha_1 \cdot earthquake_i + \beta_1 \cdot headchar_i + \beta_2 \cdot familychar_i + \beta_3 \cdot quakechar_i + \gamma \cdot fixed + \varepsilon_i$$

where *exshare* is an expenditure variable of interest, left-censored at zero, and *earthquake* is an indicator variable for whether individual i moved to the region before the earthquake. Individual characteristics, gender, education level, age and household income are controlled for in the vector *headchar*, basic family composition characteristics in *familychar* and basic earthquake characteristics in *quakechar*, as well as fixed effects for province, the year of survey and the year the earthquake occurred. Standard errors are clustered at the earthquake level.[12]

We consider the windows of residing in the affected area which are ± 5 years from the time of the major earthquake. Out of these time windows, we take ± 5 years as the most plausible for our identification purposes, although our main results are robust to moderate adjustments to this window.[13]

[10] The standard regression discontinuity approach estimates effects via a "policy" which is implemented with a threshold on an explanatory variable. The identification argument is that individuals to the left and right of the policy thresholds are similar (or at least their differences can be adequately controlled for), and thus the coefficient on the "policy" indicator reflects the effect of the policy itself. A number of behavioral economics studies have utilized this same idea, but with psychological events or thresholds instead of those imposed by policies (see for example, Berger and Pope, 2011). Our study follows this literature in using a local regression discontinuity model to estimate the effect of psychologically relevant events.

[11] We also implement the analysis under a 200 km radius of the epicenter. See Section 5.4 for discussion.

[12] Clustering standard errors at the county level yields similar results.

[13] A substantially shorter time window (for example, 2 years before and after the earthquake) leads to many fewer households in our data set being relevant within the time window. A longer time window (ex. 10 years before and after the earthquake) begins to incorporate macroeconomic trends, and is no longer as appropriate for our local regression discontinuity approach.

As a robustness check, we also consider a ± 1 to ± 5 year window, which serves to reduce effects which are due to acute time proximity of the earthquake, with similar results which are shown in Appendix B.

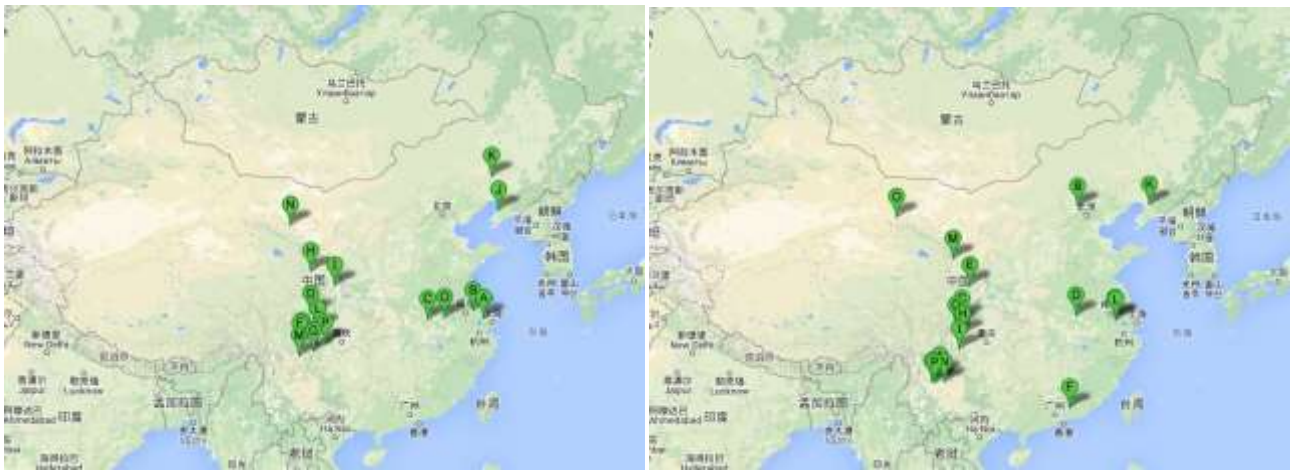
3.2 Data Summary and Descriptive Statistics

There are thirty-four earthquakes in the World Significant Earthquakes database which occurred over the time periods 1920 to 2008, in geographic areas for which we have household level data, which are at least of 5 point magnitude. The locations of epicenters of these earthquakes are shown in Figure 1.

Figure 1: Major Earthquakes in China, for UHS available households

(greater than 5.0 in magnitude, have residents in our dataset within 100 kms and 5 year window)

Years 1920-1954 ***Years 1955-2009***



Our ability to utilize each earthquake in the empirical analysis is limited by the availability of households from the affected areas in the UHS data. For the benchmark cutoff of 5.0 magnitude which we use, Table A1 in the Appendix displays all the earthquakes for which there are households available in the UHS data within the 100 km affected areas. Smaller but "significant" earthquakes which occurred in the same year and same affected geographic area have been grouped together under the earthquake-specific features of the larger earthquake. Based on this initial set of earthquakes, we need to restrict the sample further based on some other considerations which we describe here.

First, a complication arises if multiple significant earthquakes occur in a single region within a 10 year window. The issue is that, for example, the distinction between a household arriving after the first earthquake may overlap with our time window of households arriving before the second earthquake. For our main results, we thus exclude earthquakes which occurred within close time and similar location proximity to each other for cleaner identification of the effect of a single earthquake. This implies that households which have experienced multiple earthquakes in a short time frame are excluded from our analysis. Second, in our main results, we exclude those earthquakes from Table A1 in the Appendix, any earthquakes for which 100% of the relevant households in our data are either influenced, or uninfluenced (in other words, those earthquakes for which we have no variation in earthquake experience). Finally, we also exclude the earthquakes for which we only have less than 50 observed households in the relevant time band, as the low UHS sample size for those earthquakes may create noise in the estimates.

The adjusted sample of earthquakes used in our main analysis is displayed in Table 2.

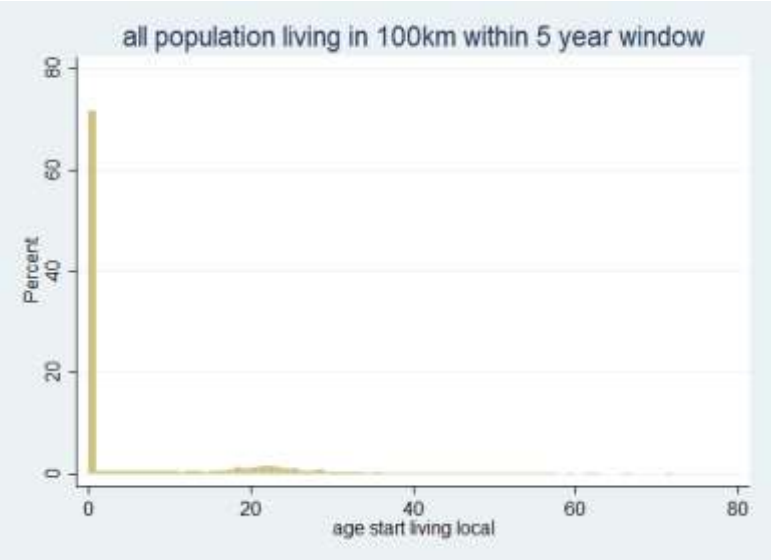
Table 2: Significant Earthquakes Used in Main Analysis

id	label	province	year	magnitude	intensity	damage	obs	proportion Of Heads Migrate/Born Within 5 Years Before The Earthquake	latitude	longitude
4	H	Gansu	1936	7	9	4	70	22.9%	35.4	103.4
7	J	Liaoning	1940	6	8	4	122	48.4%	40.2	122
24	L	Sichuan	1943	5	6	1	217	36.0%	30.6	104.1
26	M	Sichuan	1952	7	9	4	118	38.1%	28.3	102.2
28	O	Anhui	1954	5	6	1	467	33.6%	31.6	116.6
29	P	Sichuan	1954	5	7	1	558	52.5%	29.4	104.8
31	B	Hebei	1956	5	6	1	5201	58.8%	40.5	115.5
32	C	Sichuan	1958	6	7	1	319	50.5%	31.5	104
33	D	Henan	1959	5	6	1	57	63.2%	31.8	115.3
35	E	Gansu	1961	6	7	1	148	47.3%	34.33	104.78
34	F	Guangdong	1962	6	8	4	75	60.0%	23.72	114.67
9	K	Liaoning	1975	7	10	4	523	58.1%	40.64	122.58
10	L	Jiangsu	1979	5	8	4	83	51.8%	31.452	119.241
11	M	Gansu	1995	5		4	107	69.2%	36.427	103.123

Our measure of whether individuals have first-hand experience with a particular earthquake is derived from the variable in the Urban Household Survey: "Year of beginning residence in current city/town". Since there is no actual question in the survey directly asking whether the respondent has experienced a major earthquake, this variable is our best available proxy for first-hand experience.

There are several reasons to believe that this should be a valid measure: First, although the question does not address the issue of whether the respondent was physically present in the specified location at the time of the earthquake, the implication is that the respondent maintained a residence there. Thus, he or she was affected by the earthquake in a first-hand manner, even if in terms of property damages or through the impacts on close friends, family and acquaintances. Second, historically there has been limited mobility in residence of individuals in China due to the *hukou* (residency registration) system which involves an employer's assistance and lengthy application process for switching residency location. As Figure 2 shows, the most common age in our sample for the age at the start of residency is birth. A substantial fraction of individuals, around 30% in our earthquake-relevant sample, migrated in their youth, mostly in their early 20s.

Figure 2: Age at Start of Residence 100 km affected, 5 year window



Our identification of the effect of major earthquakes relies on the comparison of individuals who were in residency (having "experienced" the earthquake) to those individual who were not yet in residency (having started living in the area after the earthquake). We would like to see if there are any visible systematic differences between these two groups of households based on basic demographic characteristics. Table 3 shows the average characteristics of the two samples, and corresponding means tests.[14]

The sample of individuals who were living there before the earthquake are on average slightly older, slightly less educated, and have slightly fewer people in their household. These three significantly different factors all accord with our intuition on demographic trends: individuals present before the earthquake are older, less educated due to the increasing education trend in China over time, and have smaller family size due to the time trend in family size in China. Other factors such as gender, marital status, income, expenses and savings show no significant differences. Table 3 also breaks down the same summary statistics by age of the respondent at the time of beginning residence. Most of the results from the aggregated sample are driven by respondents who began residence at a young age. Among individuals who migrated later in life, we find that those migrating later tended to have higher family disposable income and savings, which also accords with our intuition of higher income individuals being associated with greater mobility.

[14] Since our measure of residency is at the year level, it serves as a noisy proxy for whether the respondent was actually in residence at the exact date of the earthquake. If the individual reported being in residence in the year the earthquake occurred, we count him or her as being in residence. Therefore, in addition to controlling for immediacy effects, the 1 to 5 year window regressions in Appendix B serve as a robustness check on the measurement of residency at the time of the earthquake.

Table 3: Summary statistics: samples before and after earthquakes, within 100 km, 5 year window

Variables	obs	mean	obs	mean	MeanDiff
	0 to 5 years after		0 to 5 years before		
Sex(male = 1)	4620	0.611	6175	0.602	0.0100
Age	4620	50.44	6175	52.04	-1.602***
Education year	4620	11.84	6175	11.22	0.620***
No. of people in the household	4620	2.874	6175	2.848	0.025*
Marital status (married = 1)	4620	0.943	6172	0.936	0.00700
Family disposable income (per person)	4620	43000	6174	43000	-299.6
Family expense (per person)	4620	44000	6175	43000	1398
Family saving (per person)	4620	9818	6175	10000	-645.6
Age below 5 at residency					
Sex(male = 1)	3240	0.554	4770	0.574	-0.020*
Age	3240	47.28	4770	50.25	-2.973***
Education year	3240	12.15	4770	11.22	0.927***
No. of people in the household	3240	2.897	4770	2.859	0.037**
Marital status (married = 1)	3240	0.944	4767	0.951	-0.00700
Family disposable income (per person)	3240	42000	4770	45000	-2.3e+03***
Family expense (per person)	3240	45000	4770	45000	36.18
Family saving (per person)	3240	7941	4770	10000	-2.3e+03***
Age 5 to 16 at residency					
Sex(male = 1)	357	0.669	336	0.676	-0.00600
Age	357	51.88	336	54.78	-2.894***
Education year	357	11.38	336	11.73	-0.351
No. of people in the household	357	2.759	336	2.753	0.00600
Marital status (married = 1)	357	0.950	336	0.926	0.0240
Family disposable income (per person)	357	59000	336	45000	14000
Family expense (per person)	357	64000	336	42000	22000
Family saving (per person)	357	21000	336	14000	6829
Age over 16 at residency					
Sex(male = 1)	1023	0.772	1069	0.703	0.070***
Age	1023	59.95	1069	59.18	0.776
Education year	1023	11.00	1069	11.02	-0.0200
No. of people in the household	1023	2.841	1069	2.828	0.0130
Marital status (married = 1)	1023	0.939	1069	0.872	0.068***
Family disposable income (per person)	1023	39000	1068	36000	2976.953***
Family expense (per person)	1023	34000	1069	32000	1715
Family saving (per person)	1023	12000	1069	10000	1521.883*

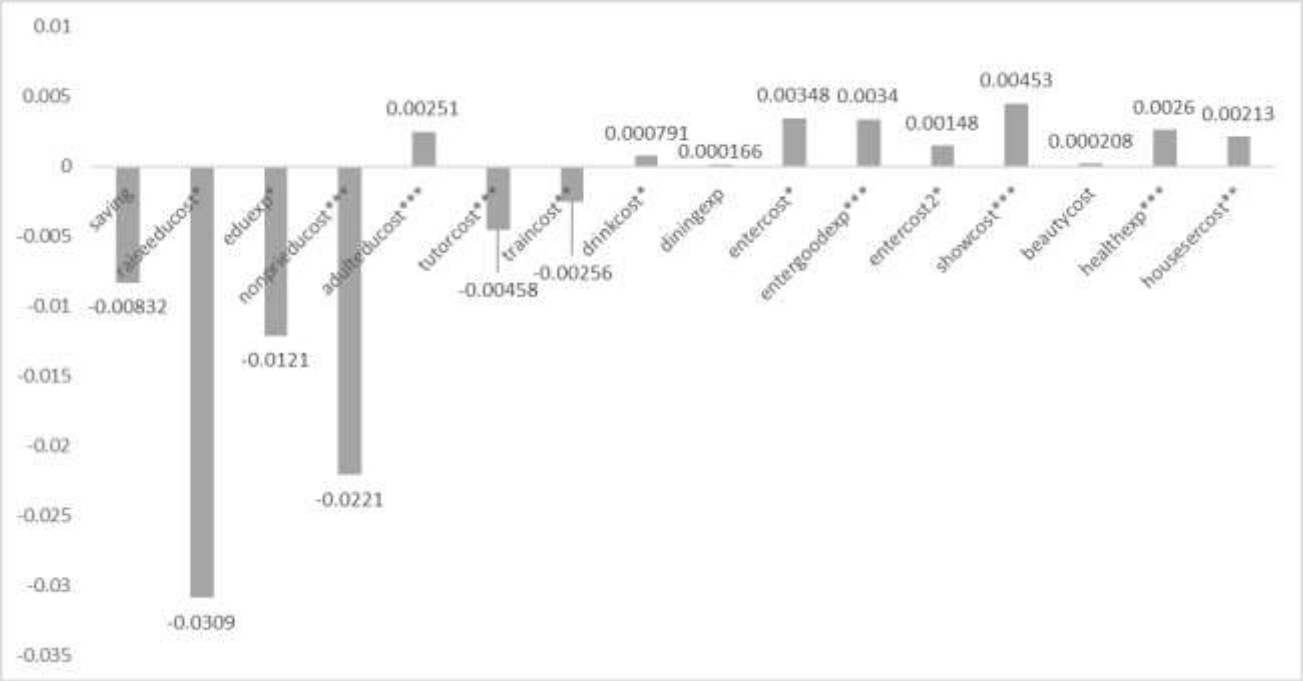
*Significance levels: *** p<0.01, ** p<0.05, * p<0.1*

4. Baseline Results

We divide our analysis into the effect of first-hand experience with a major earthquake on the following main categories: savings, human capital investments, and consumption shares. The analysis of consumption shares consists of the following categories discussed earlier which are thought to be present-oriented: food and drink, travel and entertainment, conspicuous consumption, and health and convenience. In addressing each major consumption category we consider, we discuss its relative benefit incurred in terms of current utility.

A summarizing preview of our findings is presented in Figure 3, which shows the relevant coefficient on the earthquake experience variable in different expenditure categories. The graph illustrates the main empirical finding, which is that for heads of household that experienced an earthquake first-hand, expenditure shares were generally lower for future-oriented investments, particularly in human capital, while being higher for "presently gratifying" categories, including entertainment and social signaling expenditures.

Figure 3: Summary of Estimated Coefficients, Spending Shares



Note:

1. Numbers shown on the graph are the coefficients of "present at earthquake" from the Tobit regression on corresponding dependent variables shown as the vertical labels, controlled for gender, education year, age, log(household income), number of family member, live with child under age 18 (= 1), live with elderly over 60 (= 1), magnitude, distance to center, County Fixed Effects, Survey Year Fixed Effects, Earthquake Year Fixed Effects.
2. Standard errors clustered at the earthquake level; Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

In the sections that follow, we discuss each of these expenditure categories in detail.

4.1 Savings

Table 4 shows that there was no significant difference in the saving to disposable income ratio for households whose heads had experienced a major earthquake, compared to those who had not experienced one. Thus, on the whole, households with earthquake experience did not differ in their total savings and expenditure rates, as one might expect if valuation on the future on all expenditure items was systematically lowered under an assumption of fixed consumption bundle composition.

However, what we do find are systematic differences in the *proportions* of households' expenditures in different categories, among earthquake and non-earthquake households. This can be understood in terms of the differences in "current" utility derived from each expenditure category, as compared to the stream of discounted future utilities, as discussed in much of the self-control literature (see Laibson, 1997; Milkman, Rogers and Bazerman, 2008).

The other coefficients in the regression mostly take on intuitive values given the demographic trends in China, with male respondents reporting saving less on average, more educated individuals saving less, older household heads saving more, and the savings ratio increasing with household income, and decreasing in the number of family members. In the right-most column, where earthquake-specific characteristics are controlled for, we observe that the savings to expenditure ratio is significantly decreasing moving away from the earthquake epicenter. We attribute this to the selection criteria of significant earthquakes, which as an artifact, tends to select earthquakes in relatively more urban areas, such that observed households farther from the epicenter may tend to have higher expenditure to savings ratios.

Although we use the savings to expenditure ratio here to remain consistent with the rest of our analysis, savings as a fraction of disposable income (as well as calculations of savings rates, relying on other measures such as savings deposits) shows similarly insignificant results, which we omit here due to space considerations.

4.2 Human Capital Investments

Although households that experienced a major earthquake were not systematically different in their savings to expenditure ratios, the shares of their expenditures on various categories did differ from households that did not experience the earthquake.

One of the important categories of expenditure which systematically differs across earthquake experience is spending on education. It is widely known that education is a type of investment requiring substantial monetary and psychological resources up front, with recipients receiving the returns in future years through higher wages and other quality of living factors. A large literature recognizes the initial costs of educational investments by parents and children alike (see for example, Li, Zhang, Luo, Rozelle, Sharbono and Shi, 2009).

Table 4: Dependent Variable: Savings to expenditure ratio

Model: Tobit Regression; Time Band: 5 years before and after the earthquake

	Saving		
earthquake	-0.00579	-0.00861	-0.00832
	(0.00520)	(0.00554)	(0.00542)
gender	-0.0143***	-0.0101***	-0.00998***
	(0.00349)	(0.00372)	(0.00369)
education year	-0.00405***	-0.00543***	-0.00543***
	(0.00150)	(0.00117)	(0.00118)
age	0.00239***	0.00172***	0.00169***
	(0.000621)	(0.000603)	(0.000604)
log(household income)	0.124***	0.139***	0.139***
	(0.0121)	(0.00906)	(0.00905)
family members		-0.0327***	-0.0330***
		(0.00762)	(0.00761)
live with under age 18)		-0.0129	-0.0129
		(0.00973)	(0.00972)
live with over 60		0.00373	0.00395
		(0.0114)	(0.0113)
magnitude			0.000904
			(0.00675)
dist to center			-0.00343***
			(0.000290)
County FE	Y	Y	Y
Survey Year FE	Y	Y	Y
Earthquake Year FE	Y	Y	Y
Constant	-1.066***	-1.080***	-0.736***
	(0.122)	(0.107)	(0.132)
Observations	5,593	5,593	5,593

Standard errors clustered at the earthquake level; Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 5: Dependent Variable: Investment in human capital as proportion of total expenditure

Model: Tobit Regression; Time Band: 5 years before and after the earthquake

	raiseeducost			eduexp		
earthquake	-0.00577	-0.0305*	-0.0309*	-0.0214**	-0.0122*	-0.0121*
	(0.0218)	(0.0174)	(0.0176)	(0.00937)	(0.00667)	(0.00671)
gender	0.00760	0.0319*	0.0319*	0.0173***	0.00891*	0.00896*
	(0.0193)	(0.0169)	(0.0169)	(0.00519)	(0.00533)	(0.00530)
education	0.00702***	0.00579***	0.00585***	0.00268***	0.00309***	0.00309***
	(0.00211)	(0.00197)	(0.00196)	(0.000860)	(0.000567)	(0.000570)
age	-0.00522**	-0.00746*	-0.00743*	-0.00391***	-0.00239***	-0.00240***
	(0.00242)	(0.00393)	(0.00394)	(0.000285)	(0.000582)	(0.000580)
log(household income)	0.0322***	0.0490***	0.0493***	0.00136	-0.00417**	-0.00420**
	(0.00689)	(0.0129)	(0.0130)	(0.00200)	(0.00205)	(0.00205)
family members		-0.0432**	-0.0430**		0.0189***	0.0188***
		(0.0203)	(0.0204)		(0.00700)	(0.00703)
live with under 18		-0.201***	-0.201***		0.0730***	0.0729***
		(0.0634)	(0.0635)		(0.0134)	(0.0134)
live with over 60		-0.00899	-0.00906		-0.0114**	-0.0114**
		(0.0321)	(0.0321)		(0.00471)	(0.00472)
magnitude			-0.109***			0.0118***
			(0.0209)			(0.00417)
dist to center			0.0103***			-0.00115***
			(0.00105)			(0.000145)
County FE	Y	Y	Y	Y	Y	Y
Survey Year FE	Y	Y	Y	Y	Y	Y
Earthquake Year FE	Y	Y	Y	Y	Y	Y
Constant	-0.740***	-0.572***	-1.061***	0.234***	0.133***	0.190***
	(0.139)	(0.162)	(0.141)	(0.0275)	(0.0245)	(0.0258)
Observations	8,166	8,166	8,166	8,164	8,164	8,164

Standard errors clustered at the earthquake level; Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 6: Dependent Variable: Investment in human capital as proportion of total expenditure (continued)

Model: Tobit Regression; Time Band: 5 years before and after the earthquake

	nonprieducost			adulteducost			tutorcost			traincost		
earthquake	-0.0225**	-0.0221*	-0.0221***	0.00636***	0.00251***	0.00251***	-0.0104***	-0.00460***	-0.00458***	-0.0123**	-0.00258**	-0.00256**
	(0.0109)	(0.0115)	(0.000315)	(7.03e-05)	(8.31e-05)	(7.54e-05)	(8.21e-05)	(5.96e-05)	(4.78e-05)	(0.00602)	(0.00121)	(0.00121)
gender	0.0192***	0.0126*	0.0127***	0.00362***	0.00273***	0.00273***	0.00475***	0.00102***	0.00112***	0.00466**	-0.000160	-0.000146
	(0.00597)	(0.00653)	(0.000283)	(0.000103)	(7.36e-05)	(6.09e-05)	(4.10e-05)	(6.11e-05)	(5.58e-05)	(0.00209)	(0.00120)	(0.00119)
education	0.00190***	0.00271***	0.00272***	0.00124***	0.00209***	0.00209***	0.000928***	0.000722***	0.000725***	0.00223***	0.00214***	0.00214***
	(0.000691)	(0.000717)	(2.37e-05)	(7.44e-06)	(6.12e-06)	(5.06e-06)	(3.82e-06)	(5.58e-06)	(4.65e-06)	(0.000789)	(0.000466)	(0.000465)
age	-0.00526***	-0.00320***	-0.00322***	-0.00160***	-0.00112***	-0.00112***	-0.00153***	-0.000764***	-0.000768***	-0.00117***	-0.000698***	-0.000700***
	(0.000745)	(0.00103)	(7.86e-06)	(2.70e-06)	(3.34e-06)	(3.05e-06)	(1.10e-06)	(1.75e-06)	(1.56e-06)	(0.000224)	(0.000198)	(0.000198)
log(household income)	0.00648	-0.000982	-0.00115***	0.0303***	0.0244***	0.0244***	0.0118***	0.0122***	0.0122***	0.00956***	0.00805***	0.00804***
	(0.00457)	(0.00570)	(3.45e-05)	(1.24e-05)	(1.01e-05)	(8.21e-06)	(5.16e-06)	(7.44e-06)	(6.16e-06)	(0.00217)	(0.00232)	(0.00231)
family members		0.0284***	0.0282***		0.0184***	0.0184***		-0.000615***	-0.000740***		0.00438**	0.00435**
		(0.00967)	(0.000121)		(3.20e-05)	(2.61e-05)		(2.78e-05)	(2.44e-05)		(0.00202)	(0.00204)
with under 18		0.0332*	0.0330***		-0.0187***	-0.0187***		0.0450***	0.0449***		0.0518***	0.0517***
		(0.0183)	(0.000791)		(0.000101)	(9.26e-05)		(8.02e-05)	(8.43e-05)		(0.00905)	(0.00908)
with over 60		-0.0300***	-0.0300***		-0.00988***	-0.00988***		-0.00201***	-0.00193***		0.00175	0.00177
		(0.00819)	(0.000359)		(6.76e-05)	(6.40e-05)		(3.32e-05)	(2.87e-05)		(0.00203)	(0.00204)
magnitude			0.152***			-0.0261***			0.0278***			0.00220
			(7.22e-05)			(1.93e-05)			(1.21e-05)			(0.00168)
dist to center			-0.0259***			0.00252***			-0.00715***			-0.000587***
			(3.91e-06)			(8.71e-07)			(7.09e-07)			(4.98e-05)
County FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Survey Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Earthquake Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Constant	0.134*	0.0135	1.842***	-0.299***	-0.314***	-0.435***	-0.125***	-0.181***	0.396***	-0.106***	-0.147***	-0.0994***
	(0.0685)	(0.0835)	(0.000379)	(0.000146)	(0.000117)	(9.68e-05)	(5.39e-05)	(7.84e-05)	(6.54e-05)	(0.0270)	(0.0191)	(0.0240)
Observations	8,168	8,168	8,168	8,168	8,168	8,168	8,168	8,168	8,168	8,168	8,168	8,168

Standard errors clustered at the earthquake level; Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

As Tables 5 and 6 show, respondents who experienced the earthquake subsequently spend less on educational expenditures, education of children away from home, non-compulsory education, tutoring and training, when they were running their own households later in life.[15] The magnitudes of the differences vary but were as high as 3% of total expenditures for the case of educating children away from the home.[16] The only type of education which earthquake-experienced households tend to spend relatively more on is "adult education". Although the types of spending qualifying as adult education are not mentioned very specifically in the UHS data, some examples could include supplements to remedy for gaps in more traditional forms of education. Other possibilities could include socially-oriented activities for adults such as exercise classes or other activities. Without knowing more precisely about the meaning of "adult education" from the perspective of the survey respondents, we omit further speculation.

4.3 Consumption Shares

Educational expenditures are one of few "investment" categories which we can observe in the UHS data, so we now turn attention to the results on consumption shares of "presently enjoyable" goods and services. Just as in our previous dependent variables, the consumption expenditure variables expressed as percentages of total household expenditures during the year of the survey. We maintain the three specifications used so far in the analysis.

In interpreting the coefficients, note that the results are expressed in terms of expenditure shares. Given that we find no significant differences in savings among earthquake-experienced and non-experienced households, an increase in expenditure share in a particular category is occurring at the 'sacrifice' of some other expenditure category. Our empirical strategy is to run the empirical test on all the categories in the UHS expenditure questionnaire which can be interpreted as advancing a more presently enjoyable lifestyle. Thus, if we observe increases in shares due to the earthquake, they are likely to be occurring at the sacrifice of some other less enjoyable type of expenditure. An alternative approach would be to attempt to estimate the expenditure shares for all possible categories of expenditure, which would be a substantially more complex and tedious procedure which we perceive as unlikely to yield additional insights to our main hypothesis.

4.3.1 Food and Drink

Expenditure shares on food and drink can be straightforwardly interpreted as enhancing the household's current leisure and instantaneous quality of living (see for example, Chang and Hsieh, 2006). On the one hand, eating away from home, and having a larger food and drink budget, tend to increase the expenditure on food and drink respectively. In addition to the leisure (free time) obtained by eating out of the home or types of more expensive prepared foods, people may derive direct utility from these types of consumption.

Table 7 shows that across households who experienced and did not experience the earthquake, households with first-hand earthquake experience spend very slightly more on bottled beverages and tea *(drinkcost)*.

We consider two measures of household expenditures on prepared foods outside of the home: the total reported expenditure on dining out (*diningexp*), and the ratio of expenditures on dining out to expenditures on grain and oil, which are common ingredients used in preparing food at home When considering the ratio of expenditures for dining outside of the home, compared to the total food expenditures for dining inside the home, we do not find any significant differences among earthquake

[15] These categories are derived from individual questions in the UHS survey asking respondents about the household expenditure on that specific category.

[16] This figure is for the expenditure on children's education away from home (ie. public boarding schools), which is a common practice in geographic areas whose local schools are considered inferior to options which are farther away.

and non-earthquake households. We also do not find significant differences in expenditure shares for alcohol or tobacco and we omit these results here out of space considerations.

4.3.2 Travel and Entertainment

Expenditures on entertainment is one of the important indicators of leisure and enhancing the current enjoyment of life. The UHS has fairly detailed data on entertainment expenditures of households. We consider all the categories in the survey which could be reasonably interpreted as entertainment-related, including expenditures on travel (sightseeing, tours, etc.), electronic entertainment devices (music centers, televisions, video cameras, personal computers, etc.), entertainment activities (movies and show tickets, etc.).

While some of the categories can be straightforwardly interpreted as entertainment, certain product categories may also potentially be used for non-entertainment purposes. These include personal computers, musical instruments, and some others, subject to interpretation. For this reason, it is important for us to examine the expenditures in the travel and entertainment category comprehensively, and not rely on any single category alone for interpretation.

Table 8 shows that households who experienced a major earthquake spent more on cultural interaction and entertainment (*entercost*), and entertainment related goods (*entergoodexp*) of about 0.3 percentage points, and about 0.1 percentage points more on trips, travels and other entertainment services (*entercost2*). We do not find any significant effects for the expenditure on entertainment related services (*enterserexp*). Appendix Tables B2a and B2b show the expenditure share differences for more detailed categories of entertainment goods and services.

4.3.3 Conspicuous Consumption

A literature dating as far back as Veblen (1899), examines the motives of consumers in purchasing visibly "luxurious" and expensive products and services. Bagwell and Bernheim (1996) derive the conditions under which consumers will be willing to pay higher prices for otherwise equivalent goods, due to social status signaling motives. Other perspectives argue for a psychological fulfillment derived from conspicuous consumption. Braun and Wicklund (1989) find that there is a compensatory relation between an individual's professional competence and the tendency to claim material prestige symbols. Their explanation is that individuals' insecurity regarding their desired identity is a key motive. Charles, Hurst and Roussanov (2007) find that racial minorities in the United States spend substantially more on visible goods such as clothing, jewelry and cars, and propose a model of status-seeking relative to a reference group. Many of these explanations about the potential motives for conspicuous consumption, have in common the idea that individuals incur presently costly expenditures in order to feel more satisfied with themselves in the present.

We consider whether households that have experienced the earthquake spend more on such types of visible status consumption. We divide the conspicuous expenditures into two categories, one which represents spending on personal accessories, mainly clothing, jewelry and watches (*showcost*), and another which represents spending on self-appearance (*beautycost*), such as hairdressing services, cosmetics and other beauty services.

As Table 9 shows, we find significant positive effects of earthquake exposure on the composite variable (*showcost*) for clothing, jewelry and watches, near half a percentage point of expenditure shares. Each of these finer spending categories also carries a significant positive effect, as shown in the Appendix. For spending on self-appearance, there is no significant effect on the composite variable (*beautycost*) as shown in Table 9. There are marginally significant positive effects for the finer categories of beauty services and hairdressing, which are displayed in Appendix B.

Table 7: Dependent Variable: Expenditure on food as proportion of total expenditure

Model: Tobit Regression; Time Band: 5 years before and after the earthquake

	drinkcost			diningexp		
earthquake	0.000466	0.000794*	0.000791*	0.000251	0.000127	0.000166
	(0.000347)	(0.000432)	(0.000436)	(0.00107)	(0.00138)	(0.00137)
gender	-0.000682	-0.000891	-0.000893	-0.00380***	-0.00414***	-0.00412***
	(0.000601)	(0.000640)	(0.000637)	(0.000794)	(0.000806)	(0.000809)
education	0.000301**	0.000365***	0.000365***	0.00205***	0.00214***	0.00214***
	(0.000118)	(0.000139)	(0.000139)	(0.000226)	(0.000244)	(0.000244)
age	1.71e-06	-4.20e-05*	-4.17e-05*	-0.000611***	-0.000505*	-0.000509*
	(2.41e-05)	(2.48e-05)	(2.45e-05)	(0.000185)	(0.000268)	(0.000269)
log(household income)	-0.0112**	-0.0120***	-0.0120***	-0.00675	-0.00756	-0.00758
	(0.00445)	(0.00465)	(0.00465)	(0.00914)	(0.00976)	(0.00975)
family members		0.00207**	0.00208**		0.00231	0.00227
		(0.000898)	(0.000894)		(0.00216)	(0.00217)
live with under 18		-0.000202	-0.000200		0.000396	0.000381
		(0.000603)	(0.000605)		(0.00249)	(0.00249)
live with over 60		0.000997***	0.000995***		-0.00130	-0.00128
		(0.000309)	(0.000308)		(0.00178)	(0.00178)
magnitude			-0.00106			0.00855***
			(0.000674)			(0.00323)
dist to center			5.08e-05			-0.000605***
			(4.11e-05)			(9.98e-05)
County FE	Y	Y	Y	Y	Y	Y
Survey Year FE	Y	Y	Y	Y	Y	Y
Earthquake Year FE	Y	Y	Y	Y	Y	Y
Constant	0.130***	0.133***	0.133**	0.160*	0.156	0.174
	(0.0450)	(0.0443)	(0.0516)	(0.0936)	(0.0952)	(0.116)
Observations	8,168	8,168	8,168	8,147	8,147	8,147

Standard errors clustered at the earthquake level; Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 8: Dependent Variable: Expenditure on entertainment as proportion of total expenditure

Model: Tobit Regression; Time Band: 5 years before and after the earthquake

	entercost			entergoodexp			entercost2 (services)		
earthquake	0.00303**	0.00343*	0.00348*	0.00289***	0.00337***	0.00340***	0.000674	0.00142	0.00148*
	(0.00153)	(0.00199)	(0.00197)	(0.000894)	(0.00120)	(0.00119)	(0.000626)	(0.000910)	(0.000875)
gender	-0.00399***	-0.00399***	-0.00396***	-0.000358	-0.000628	-0.000612	-0.00337***	-0.00326***	-0.00322***
	(0.00101)	(0.00107)	(0.00109)	(0.000723)	(0.000661)	(0.000663)	(0.00109)	(0.00116)	(0.00118)
education	0.00235***	0.00237***	0.00236***	0.00139***	0.00148***	0.00148***	0.00115***	0.00106***	0.00106***
	(0.000370)	(0.000391)	(0.000392)	(0.000266)	(0.000276)	(0.000277)	(0.000143)	(0.000151)	(0.000151)
age	-1.34e-05	-0.000124	-0.000130	-0.000297**	-0.000367*	-0.000370*	0.000333**	0.000185	0.000178
	(9.41e-05)	(0.000138)	(0.000138)	(0.000131)	(0.000196)	(0.000196)	(0.000159)	(0.000147)	(0.000149)
log(household income)	0.00776	0.00744	0.00742	0.00598	0.00499	0.00497	0.00848***	0.00903***	0.00900***
	(0.00480)	(0.00522)	(0.00521)	(0.00548)	(0.00575)	(0.00575)	(0.00102)	(0.00104)	(0.00103)
family members		0.000744	0.000700		0.00274**	0.00272**		-0.00163**	-0.00169**
		(0.00171)	(0.00172)		(0.00128)	(0.00128)		(0.000749)	(0.000742)
with under 18		-0.000573	-0.000591		-0.000297	-0.000307		0.00198	0.00197
		(0.00101)	(0.00102)		(0.000821)	(0.000819)		(0.00133)	(0.00134)
with over 60		0.00183	0.00187		0.00150	0.00153		0.00242***	0.00247***
		(0.00136)	(0.00136)		(0.00120)	(0.00120)		(0.000716)	(0.000718)
magnitude			-0.000456			0.00263			-0.00253*
			(0.00163)			(0.00164)			(0.00145)
dist to center			-0.000706***			-0.000434***			-0.00102***
			(0.000105)			(9.37e-05)			(7.97e-05)
County FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Survey Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Earthquake Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Constant	-0.0257	-0.0197	0.0538	-0.0130	-0.00882	0.0218	-0.0919***	-0.0862***	0.0295*
	(0.0440)	(0.0463)	(0.0547)	(0.0583)	(0.0600)	(0.0643)	(0.00989)	(0.0103)	(0.0151)
Observations	8,154	8,154	8,154	8,161	8,161	8,161	8,161	8,161	8,161

Standard errors clustered at the earthquake level; Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 9: Dependent Variable: Expenditure on status goods as proportion of total expenditure

Model: Tobit Regression; Time Band: 5 years before and after the earthquake

	showcost			beautycost		
earthquake	0.00582***	0.00445***	0.00453***	9.98e-05	0.000187	0.000208
	(0.00113)	(0.00118)	(0.00120)	(0.000449)	(0.000421)	(0.000430)
gender	-0.00701***	-0.00732***	-0.00727***	-0.00164***	-0.00164***	-0.00162***
	(0.00127)	(0.00120)	(0.00121)	(0.000329)	(0.000327)	(0.000332)
education	0.00205***	0.00214***	0.00213***	0.000430***	0.000449***	0.000449***
	(0.000228)	(0.000328)	(0.000329)	(0.000130)	(0.000132)	(0.000133)
age	-0.00132***	-0.000916***	-0.000925***	-0.000246***	-0.000292***	-0.000294***
	(0.000117)	(0.000203)	(0.000206)	(4.16e-05)	(4.03e-05)	(4.09e-05)
log(household income)	-0.0123*	-0.0124	-0.0125	-0.00436**	-0.00461**	-0.00462**
	(0.00745)	(0.00898)	(0.00895)	(0.00190)	(0.00196)	(0.00196)
family members		0.000860	0.000779		0.000631	0.000607
		(0.00469)	(0.00471)		(0.000432)	(0.000434)
live with under 18		0.000472	0.000423		-0.000899*	-0.000912*
		(0.00492)	(0.00490)		(0.000475)	(0.000477)
live with over 60		-0.00632***	-0.00625***		0.000693**	0.000710**
		(0.00133)	(0.00133)		(0.000313)	(0.000308)
magnitude			-0.000629			0.00206***
			(0.00285)			(0.000651)
dist to center			-0.00127***			-0.000353***
			(7.84e-05)			(2.12e-05)
County FE	Y	Y	Y	Y	Y	Y
Survey Year FE	Y	Y	Y	Y	Y	Y
Earthquake Year FE	Y	Y	Y	Y	Y	Y
Constant	0.262***	0.242***	0.374***	0.0677***	0.0704***	0.0957***
	(0.0727)	(0.0736)	(0.0904)	(0.0184)	(0.0183)	(0.0226)
Observations	8,134	8,134	8,134	8,166	8,166	8,166

Standard errors clustered at the earthquake level; Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

4.3.4 Health Enhancement and Convenience

The final category of expenditures we consider is health enhancement and convenience services. Although health is often regarded as an investment in future quality of living, a large literature in economics emphasizes the importance of current health status as a state variable which can shift current utility. Early examples of such utility formulations as applied to health insurance models include Zeckhauser (1970, 1973) and Arrow (1974). Subsequent empirical work has estimated the utility and marginal utility change due to changes in health status. Viscusi and Evans (1990) find that job injuries significantly reduce utility and marginal utility of income. Finkelstein, Luttmer and Notowidigdo (2013) find that the marginal utility of consumption declines substantially as health status deteriorates.

To examine the hypothesis that household heads who experienced a major earthquake place a higher priority on expenditures which improve health status, we consider the composite variable *healthexp* which combines two categories of expenditures: health production devices *(healthequipexp)*, and preventative health drugs *(healthfoodexp)*. Households whose heads had first-hand earthquake experience spent about a quarter of a percent expenditure share more on these items. The expenditures for each of the finer categories *healthequipexp* and *healthfoodexp* are also significantly higher and of similar magnitude, shown in Appendix B.

In the preventative health drugs category (*healthfoodexp*), many of the items may in fact serve dual-purpose as a status consumption good, including ginseng, pilose antler, royal jelly, nutritional beverage, bird's nest and placenta. These are regarded as highly luxurious and typically expensive foods with positive health properties in the traditional Chinese culture.

Other expenditures which could contribute to current health status as well as convenience, include domestic services which create an easier and more convenient lifestyle for household members (for example, see Cortes and Pan, 2013). In this category, we consider the household's expenditures on housecleaning services, which could reduce labor expended in the household. Once controlling for household income and family composition characteristics, we also find that earthquake-exposed households spend significantly more than non-earthquake exposed households on house cleaning services (*housercost*). These expenditures are consistent with the idea that households whose heads have experienced a major earthquake may place a higher value on current quality-of-life factors.

Table 10: Dependent Variable: Expenditure on healthy goods as proportion of total expenditure

Model: Tobit Regression; Time Band: 5 years before and after the earthquake

	healthexp			housesercost		
earthquake	0.00152**	0.00265***	0.00260***	0.000447	0.00212**	0.00213**
	(0.000608)	(0.000706)	(0.000708)	(0.000711)	(0.00108)	(0.00108)
gender	-0.00220*	-0.00186*	-0.00190*	0.000252	0.000425	0.000430
	(0.00114)	(0.00104)	(0.00106)	(0.00146)	(0.00139)	(0.00139)
education	0.00152***	0.00139***	0.00140***	0.00106***	0.000929***	0.000928***
	(0.000120)	(0.000123)	(0.000124)	(9.81e-05)	(0.000125)	(0.000125)
age	0.00108***	0.000779***	0.000786***	0.000712***	0.000401***	0.000400***
	(0.000194)	(0.000206)	(0.000203)	(0.000171)	(0.000132)	(0.000132)
log(household income)	0.00335	0.00404	0.00407	0.00403**	0.00459**	0.00459**
	(0.00331)	(0.00339)	(0.00341)	(0.00201)	(0.00217)	(0.00217)
family members		-0.00231***	-0.00226***		-0.00193	-0.00194
		(0.000848)	(0.000828)		(0.00143)	(0.00143)
live with under 18		0.00114	0.00117		0.00354***	0.00354***
		(0.00113)	(0.00111)		(0.00122)	(0.00122)
live with over 60		0.00446***	0.00443***		0.00482***	0.00481***
		(0.00129)	(0.00129)		(0.000927)	(0.000928)
magnitude			-0.0159***			-0.00617***
			(0.00226)			(0.00155)
dist to center			0.00127***			-0.000240***
			(3.15e-05)			(6.92e-05)
County FE	Y	Y	Y	Y	Y	Y
Survey Year FE	Y	Y	Y	Y	Y	Y
Earthquake Year FE	Y	Y	Y	Y	Y	Y
Constant	-0.100***	-0.0868***	-0.135***	-0.101***	-0.0875***	-0.0326
	(0.0258)	(0.0259)	(0.0361)	(0.0143)	(0.0168)	(0.0269)
Observations	8,167	8,167	8,167	8,169	8,169	8,169

Standard errors clustered at the earthquake level; Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

5. Robustness Checks

Several checks are in order to verify that the effects we find are robust to different criteria. In this section we describe the robustness checks we conduct in order to gain confidence about the validity of our baseline results. The tables of results are available in the Appendix.

5.1. Alternative Time Windows

One potential concern is that there are selection effects among household heads who moved or were born in the earthquake-stricken area directly after the earthquake. For example, some individuals (or their parents, in the case of "migration by birth") might have migrated directly after the earthquake to assist with relief efforts and rebuilding of the area, and may thus be systematically different in their spending habits based on personal traits, compared to those who were present before the earthquake. Another possibility is that individuals (or their parents) who began living in the affected area directly after the earthquake have systematically different discount factors, risk attitudes, disaster tolerance and so on, compared to the general population.

In general, the patterns we find do not appear to be supportive this alternative story, since household heads arriving after the earthquake tend to be significantly more "conservative" in their spending patterns, which is counter to what one might expect from selection effects in migration after news of an earthquake was made known. However, to account for the possibility that household heads who arrive directly after the occurrence of the earthquake may be somehow systematically different than other individuals, we implement the identical regressions as in Section 4, but excluding those households who first began living in the affected region one year before or one year after the major earthquake. The indirect effects of the earthquake by then (for example, news reports, recovery and rebuilding, etc.), which we might expect to influence migration decisions, should have dampened by this time.

This robustness check also serves to more precisely pinpoint whether individuals have "experienced" the earthquake or not. As mentioned in the data description section, we only observe the year in which the household head began residing in the county, but not the month or date. Thus our baseline specification contains noise in the residence at earthquake variable, which is avoided in the 1 to 5 year robustness check.

These results are displayed in Appendix C, and show similar patterns to what we find in the main results. As a further robustness check on the length of window considered, we try a 3 year window and an 8 year window around the earthquake years, which are shown in Appendix E. The tables show that the 8 year window tended to give similar results to the baseline 5 year window, although the 3 year window often did not estimate statistically significant effects. The lack of effect in the 3 year window case is likely due to the restricted availability of households 'migrating' in the relevant geographic areas and time periods.

5.2. Falsification Test

Since our "control" group of households always arrives in the affected area chronologically later than the "treatment" group of households, another potential concern in our baseline results is that we may have merely detected some social or institutional trends over time which affect household spending patterns in the direction of the effects we have detected. If this were the case, even a placebo earthquake could generate the effects we find in the data. In order to test this possibility, we run our baseline regressions for a set of hypothetical earthquakes which never actually occurred.[17]

Just as in the case of our real earthquakes, our ability to run the tests depend on the availability of households in the UHS data in the particular time and location in question. We generate five placebo earthquakes using the following general criteria: First, we want to avoid placing the placebo

[17] We are grateful to Seonghoon Kim for suggesting this approach to us.

earthquakes too close to the time period and geographic area of the real earthquakes which occurred, so that the regressions do not pick up the effects of the real earthquakes. Secondly, we make sure to include at least one placebo earthquake in Sichuan and Gansu provinces, where most of the real earthquakes occurred, to avoid any biases which may occur at the province level. Finally, subject to these criteria, the epicenter of the placebo earthquakes are chosen at random on Google Maps, with the additional condition that the chosen epicenter should not be in so remote of a geographic area that poses difficulty in finding enough nearby households in the UHS data.

Appendix D shows the details and results of the falsification test. To summarize briefly, we do not find the significant effects on expenditure shares due to the placebo earthquakes that we estimate with the real earthquakes. In some cases, the placebo earthquakes corresponded to reverse effects compared to the real earthquakes in our main results, which we interpret as possible time trends in spending patterns.

For the detailed procedure of selecting the placebo earthquakes as well as the estimation results, we refer the reader to Appendix D.

5.3 "Migration" at Birth

A large fraction of household heads in our sample were residents of the geographic area in question at birth, instead of being actual migrants. Since the mechanism of the effect of an earthquake on spending shares could be quite different for someone who experienced the earthquake as a toddler, compared to someone who experienced it as a teenager or young adult, as a robustness check, we implement the baseline model only on the subsample of households who began residency at birth.

These results are provided in Appendix F. The coefficients of interest tend to be statistically insignificant or in the reverse direction compared to the baseline results, implying that the effects found in the baseline specification were not driven by household heads who were migrants at birth.

If one believes that decision-makers need to be minimally mature and cognitively aware in order for first-hand experience to be influential, this tends to support our original hypothesis. The fact that actual migrants seem to drive the effect rather than 'birth migrants', helps to rule out other possible explanations such as intergenerational transmission of spending patterns through parents or earlier ancestors, through either migration mechanisms or much earlier similarly tragic disasters. Instead, the effect seems to take place on the individual level.

5.4 Other Robustness Checks: Affected Geographic Area, Earthquake Magnitude, and Shares of Disposable Income

Analogous regressions with shares of disposable income as the dependent variable, yielded highly similar results. This is intuitive given that we find no significant differences in savings rates between earthquake and non-earthquake households.

We also implemented the baseline specifications with different cutoffs for the magnitude of the significant earthquakes (specifically, a higher earthquake magnitude than 7.0), yielding similar patterns.

Finally, we checked the robustness of the results to the affected earthquake area in kilometers, specifically a 200km affected area. While the significance of some of the results were sensitive to the 200km affected area, the results tended to be stable in terms of direction of the coefficients. The overall qualitative picture of how the earthquake impacted expenditure shares in the affected area remained the same. We suspect that 200km may be too large of a radius for the geographic areas most impacted by the earthquakes.

We omit these robustness checks out of space considerations, however the results are available on request.

6. Conclusion

While economists are often concerned about whether individuals and households are allocating their resources appropriately for their long term interests, relatively little is known about the circumstances and significant events in peoples' lives which could make the idea of serving one's own "long-run" interest more difficult. In this paper we examine one type of life event which is out of the control of the individuals in our study: major earthquakes.

Given the destructive and fatal nature of earthquakes, it is understandable that individuals may change their outlook on life after experiencing one, which could have eventual consequences for the types of expenditures they make. We examine the spending, savings and investment behaviors of households in China who have experienced a major earthquake first-hand, compared to those who have not had direct experience of the earthquake. Our hypothesis is that first-hand earthquake experience is likely to shift households' expenditures of goods and services towards more presently-gratifying consumption. Having first-hand experience with an earthquake, compared to merely hearing about it or knowing about it second-hand, can cause individuals to develop a stronger belief about similar events happening in the future.

We find the following empirical results, which are robust to observable household characteristics and time trends: First, households whose head had begun residing in an affected area prior to a major earthquake, spent less on virtually all educational expenditures for the family, with the exception of adult education. Secondly, "earthquake-experienced" households tended to spend more as a fraction of their total expenditures on entertainment-related goods and experiences, conspicuous consumption items, health enhancements and domestic services. All of these categories are arguably presently gratifying in the context of the modern Chinese culture. Finally, the earthquake-experienced households showed no significant differences in savings rates, which implies that the main differences were in terms of which goods and services to spend their money on, rather than what fraction of their income to spend or save overall.

We emphasize that these effects were found for expenditures in the year of the UHS survey, which is typically decades after the major earthquake experienced by the respondent. Thus, it is not plausible that the differences are due to any immediate consumption needs generated by the earthquake itself. The results are also not due to time trends or other spurious factors, since placebo earthquakes did not generate similar results. Finally, the results are not consistent with the intuition regarding selection effects, suggesting that migrants moving to an area after a major earthquake are somehow more 'earthquake tolerant' or 'earthquake ready' in their preferences.

As a developing country where destructive earthquakes are not uncommon, we have focused our analysis on China, but future work should check the robustness of the effects of earthquakes on consumption patterns in other earthquake prone countries in the developed and developing categories. In addition, an open question is whether other types of disasters or traumatic personal experiences would have a similar effect, or whether there is something special about earthquakes which lead people to more drastically alter their life outlook and plan. Understanding the types of significant life events which orient people towards the present or the future can enhance our understanding of the mechanisms behind individuals' human capital accumulation and lifestyle choices.

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Appendix A: "World Significant Earthquakes" in geographic areas which overlap with household data

Table A1: Full Sample of "Significant Earthquakes" in relevant time and geographic areas

id	label	province	year	magnitude	intensity	damage	obs	proportion Of Heads Migrate/Born Within 5 Years Before The Earthquake	latitude	longitude
19	A	Sichuan	1928	6	7	2	32	28.1%	31.5	120.5
20	B	Jiangsu	1930	6	7	2	21	23.8%	32.2	119.4
21	C	Hubei	1932	6	8	3	11	27.3%	31.4	115
1	D	Sichuan	1933	8	10	4	25	56.0%	31.9	103.4
2	E	Sichuan	1933	5	6	3	2	100.0%	29.5	102.5
3	F	Sichuan	1935	6	8	1	9	88.9%	29.4	102.3
22	G	Sichuan	1935	6	8	3	27	44.4%	28.7	103.6
4	H	Gansu	1936	7	9	4	70	22.9%	35.4	103.4
6	I	Gansu	1936	6	8	4	15	33.3%	34.2	105.7
7	J	Liaoning	1940	6	8	4	122	48.4%	40.2	122
23	K	Inner Mongolia	1940	6		3	31	51.6%	42.7	121.3
24	L	Sichuan	1943	5	6	1	267	40.4%	30.6	104.1
26	M	Sichuan	1952	7	9	4	118	38.1%	28.3	102.2
27	N	Gansu	1954	7	10	3	10	10.0%	39	101.3
28	O	Anhui	1954	5	6	1	467	33.6%	31.6	116.6
29	P	Sichuan	1954	5	7	1	558	52.5%	29.4	104.8
25	A	Yunnan	1955	7	9	4	1	100.0%	26.6	101.8
31	B	Hebei	1956	5	6	1	5201	58.8%	40.5	115.5
32	C	Sichuan	1958	6	7	1	1018	64.9%	31.5	104
33	D	Henan	1959	5	6	1	57	63.2%	31.8	115.3
35	E	Gansu	1961	6	7	1	148	47.3%	34.33	104.78
34	F	Guangdong	1962	6	8	4	75	60.0%	23.72	114.67
36	G	Yunnan	1964	5	7	1	213	11.7%	26.1	101
37	H	Sichuan	1967	6	7	3	716	65.4%	30.2	104.1
17	I	Sichuan	1971	6	7	1	167	58.7%	28.9	103.7
18	J	Jiangsu	1974	6		2	201	100.0%	31.6	119.2
9	K	Liaoning	1975	7	10	4	523	58.1%	40.64	122.58
10	L	Jiangsu	1979	5	8	4	382	56.8%	31.452	119.241
11	M	Gansu	1995	5		4	107	69.2%	36.427	103.123
12	N	Yunnan	1995	6		4	105	68.6%	26.003	102.227
13	O	Gansu	2002	5		4	41	90.2%	39.736	97.443
14	P	Yunnan	2003	6		4	25	100.0%	25.975	101.29
16	Q	Sichuan	2008	8	9	4	30	100.0%	31.002	103.322

Appendix B: Baseline Results for Alternative and More Detailed Dependent Variables

Table B1: Dependent Variable: Investment as proportion of total expenditure

Model: Tobit Regression

Time Band: 5 years before and after the earthquake

DEPENDENT VARIABLES	**deposit (self-reported)**		
earthquake	-0.000867	-0.00221	-0.00186
	(0.00607)	(0.00713)	(0.00716)
gender	-0.0161	-0.0116	-0.0114
	(0.0107)	(0.0121)	(0.0120)
education	-0.00392**	-0.00529***	-0.00530***
	(0.00177)	(0.00183)	(0.00183)
age	0.00258**	0.00189***	0.00186***
	(0.00103)	(0.000529)	(0.000527)
log(household income)	0.293***	0.308***	0.308***
	(0.0110)	(0.0119)	(0.0121)
family members		-0.0381***	-0.0384***
		(0.0124)	(0.0123)
live with under 18		-0.00202	-0.00209
		(0.0130)	(0.0130)
live with over 60		0.00607	0.00629
		(0.0104)	(0.0103)
magnitude			0.00849
			(0.00827)
dist to center			-0.00499***
			(0.000401)
County FE	Y	Y	Y
Survey Year FE	Y	Y	Y
Earthquake Year FE	Y	Y	Y
Constant	-3.135***	-3.131***	-2.670***
	(0.157)	(0.127)	(0.104)
Observations	7,379	7,379	7,379

Standard errors clustered at the earthquake level; Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table B2a: Dependent Variable: Expenditure on entertainment as proportion of total expenditure

Model: Tobit Regression; Time Band: 5 years before and after the earthquake

DEPENDENT VARIABLES	tvcost			audiocost			dvcost			cameracost			musicexp		
earthquake	0.00134	-0.00126	-0.00132***	-0.000461***	-0.000401***	-0.000401***	0.00449***	0.00536***	0.00536***	0.0106***	0.0106***	0.0106***	0.00389***	0.00523***	0.00523***
	(0.00426)	(0.00458)	(0.000214)	(8.26e-05)	(7.92e-05)	(7.15e-05)	(9.85e-05)	(8.33e-05)	(6.32e-05)	(7.39e-05)	(6.45e-05)	(5.77e-05)	(0.000131)	(8.99e-05)	(6.80e-05)
gender	-0.00683**	-0.00628**	-0.00634***	-0.000249***	-0.000536***	-0.000536***	-0.00221***	-0.00232***	-0.00232***	-0.00152***	-0.00141***	-0.00141***	0.00297***	0.00262***	0.00262***
	(0.00292)	(0.00279)	(0.000245)	(9.62e-05)	(7.36e-05)	(6.17e-05)	(0.000139)	(0.000156)	(0.000134)	(0.000114)	(7.40e-05)	(6.42e-05)	(0.000144)	(0.000149)	(0.000131)
education	5.71e-05	0.000300	0.000310***	0.000254***	0.000217***	0.000217***	0.000510***	0.000608***	0.000608***	0.00123***	0.00134***	0.00134***	0.00105***	0.00103***	0.00103***
	(0.000651)	(0.000665)	(1.66e-05)	(7.49e-06)	(5.72e-06)	(4.56e-06)	(9.70e-06)	(1.06e-05)	(8.47e-06)	(8.66e-06)	(5.01e-06)	(3.96e-06)	(1.25e-05)	(1.21e-05)	(9.89e-06)
age	0.000119	0.000211	0.000217***	-0.000171***	-3.81e-05***	-3.81e-05***	0.000253***	0.000109***	0.000109***	-0.000913***	-0.00102***	-0.00102***	-0.000269***	-0.000290***	-0.000290***
	(0.000501)	(0.000575)	(4.61e-06)	(2.03e-06)	(1.28e-06)	(1.02e-06)	(2.70e-06)	(2.99e-06)	(2.46e-06)	(2.59e-06)	(1.69e-06)	(1.39e-06)	(3.64e-06)	(2.81e-06)	(2.19e-06)
log(household income)	0.0254**	0.0238**	0.0239***	0.00677***	0.00703***	0.00703***	0.0108***	0.0100***	0.0100***	0.0169***	0.0159***	0.0159***	0.00426***	0.00416***	0.00416***
	(0.00996)	(0.0101)	(1.78e-05)	(8.96e-06)	(6.78e-06)	(5.48e-06)	(1.31e-05)	(1.40e-05)	(1.14e-05)	(1.16e-05)	(6.81e-06)	(5.40e-06)	(1.65e-05)	(1.50e-05)	(1.20e-05)
family members		0.00409***	0.00419***		-0.000509***	-0.000509***		0.00250***	0.00250***		0.00257***	0.00257***		0.000663***	0.000663***
		(0.00139)	(6.66e-05)		(2.24e-05)	(1.79e-05)		(5.56e-05)	(4.73e-05)		(3.35e-05)	(2.69e-05)		(6.17e-05)	(5.19e-05)
live with under 18		-0.0191***	-0.0191***		0.00438***	0.00438***		-0.000945***	-0.000945***		-0.00506***	-0.00506***		0.00769***	0.00769***
		(0.00507)	(0.000547)		(6.09e-05)	(6.47e-05)		(0.000108)	(0.000101)		(0.000129)	(0.000123)		(0.000185)	(0.000177)
live with over 60		-0.00243	-0.00252***		-0.00171***	-0.00171***		0.00216***	0.00216***		0.00151***	0.00151***		0.000421***	0.000421***
		(0.00354)	(0.000109)		(4.35e-05)	(4.01e-05)		(3.89e-05)	(3.37e-05)		(3.91e-05)	(3.61e-05)		(8.25e-05)	(7.41e-05)
magnitude			-0.0496***			-0.0631***			-0.0199***			-0.104***			-0.100***
			(4.91e-05)			(1.40e-05)			(2.70e-05)			(1.53e-05)			(3.05e-05)
dist to center			0.0104***			0.00335***			0.00472***			8.87e-05***			0.00480***
			(2.02e-06)			(6.20e-07)			(1.38e-06)			(6.65e-07)			(1.46e-06)
County FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Survey Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Earthquake Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Constant	-0.383***	-0.378***	-1.167***	-0.103***	-0.111***	-0.131***	-0.401***	-0.394***	-0.735***	-0.256***	-0.249***	0.262***	-0.130***	-0.134***	-0.112***
	(0.127)	(0.123)	(0.000238)	(0.000109)	(8.47e-05)	(7.01e-05)	(0.000157)	(0.000166)	(0.000136)	(0.000140)	(8.96e-05)	(7.38e-05)	(0.000196)	(0.000182)	(0.000150)
Observations	8,168	8,168	8,168	8,169	8,169	8,169	8,169	8,169	8,169	8,169	8,169	8,169	8,169	8,169	8,169

Standard errors clustered at the earthquake level; Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table B2b: Dependent Variable: Expenditure on entertainment as proportion of total expenditure (continued)

Model: Tobit Regression

Time Band: 5 years before and after the earthquake

DEPENDENT VARIABLES	tourcost (local attractions, parks, etc.)			tripcost (travel outside of hometown)			otheractcost		
earthquake	0.00201***	0.00257***	0.00258***	-0.00314***	-0.00276***	-0.00274***	0.000644*	0.000990***	0.00103***
	(0.000599)	(0.000601)	(1.67e-05)	(9.93e-05)	(9.96e-05)	(8.76e-05)	(0.000374)	(0.000363)	(0.000355)
gender	-0.000981**	-0.00110***	-0.00109***	-0.00530***	-0.00508***	-0.00507***	-0.00145***	-0.00144***	-0.00141***
	(0.000418)	(0.000422)	(2.45e-05)	(5.42e-05)	(3.81e-05)	(3.41e-05)	(0.000326)	(0.000329)	(0.000344)
education	0.000691***	0.000662***	0.000661***	0.00212***	0.00205***	0.00205***	0.000342***	0.000325***	0.000323***
	(8.94e-05)	(9.39e-05)	(1.44e-06)	(4.72e-06)	(3.21e-06)	(2.63e-06)	(6.87e-05)	(7.32e-05)	(7.34e-05)
age	0.000134	0.000109	0.000108***	0.000134***	6.36e-06***	5.56e-06***	9.54e-05**	2.60e-05	2.10e-05
	(8.25e-05)	(0.000107)	(5.69e-07)	(1.55e-06)	(1.04e-06)	(9.32e-07)	(4.81e-05)	(5.67e-05)	(5.85e-05)
log(household income)	0.00158	0.00166	0.00165***	0.0478***	0.0484***	0.0484***	-0.00186***	-0.00183***	-0.00185***
	(0.00281)	(0.00283)	(2.28e-06)	(6.73e-06)	(4.52e-06)	(3.70e-06)	(0.000624)	(0.000645)	(0.000637)
family members		-0.000194	-0.000206***		-0.00165***	-0.00168***		-0.000144	-0.000180
		(0.000370)	(6.59e-06)		(1.81e-05)	(1.54e-05)		(0.000598)	(0.000590)
live with under 18		0.00246***	0.00245***		8.93e-05	8.68e-05		0.000526	0.000522
		(0.000572)	(2.14e-05)		(0.000205)	(0.000203)		(0.000902)	(0.000906)
live with over 60		0.000665	0.000671***		0.00179***	0.00179***		0.00116***	0.00120***
		(0.000703)	(6.20e-06)		(2.70e-05)	(2.57e-05)		(0.000350)	(0.000359)
magnitude			0.0116***			-0.00161***			-0.00199***
			(7.08e-06)			(9.28e-06)			(0.000497)
dist to center			-0.00310***			-0.000551***			-0.000719***
			(2.51e-07)			(4.31e-07)			(2.38e-05)
County FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Survey Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Earthquake Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Constant	-0.0303	-0.0303	0.222***	-0.582***	-0.577***	-0.513***	0.0168***	0.0199***	0.102***
	(0.0267)	(0.0263)	(3.33e-05)	(8.67e-05)	(5.63e-05)	(4.65e-05)	(0.00506)	(0.00519)	(0.00804)
Observations	8,168	8,168	8,168	8,164	8,164	8,164	8,167	8,167	8,167

Standard errors clustered at the earthquake level; Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table B3: Dependent Variable: Expenditure on status goods as proportion of total expenditure

Model: Tobit Regression; Time Band: 5 years before and after the earthquake

DEPENDENT VARIABLES	clothexp			jewelry			watch		
earthquake	0.00552***	0.00434***	0.00441***	0.00230	0.00117	0.00123***	-0.000257***	0.000334***	0.000356***
	(0.00131)	(0.000915)	(0.000925)	(0.00223)	(0.00259)	(5.49e-05)	(7.24e-05)	(7.83e-05)	(6.85e-05)
gender	-0.00635***	-0.00675***	-0.00671***	-0.00311***	-0.00307***	-0.00303***	0.000574***	0.000198***	0.000212***
	(0.00123)	(0.00119)	(0.00121)	(0.000959)	(0.000876)	(9.80e-05)	(7.96e-05)	(5.64e-05)	(4.61e-05)
education	0.00201***	0.00211***	0.00211***	0.000441	0.000412*	0.000409***	0.000231***	0.000198***	0.000196***
	(0.000234)	(0.000349)	(0.000350)	(0.000303)	(0.000245)	(5.91e-06)	(7.31e-06)	(5.38e-06)	(4.28e-06)
age	-0.00130***	-0.000912***	-0.000919***	-0.000320***	-9.58e-05	-0.000103***	-0.000209***	-0.000142***	-0.000146***
	(0.000112)	(0.000192)	(0.000195)	(0.000114)	(0.000181)	(1.82e-06)	(2.03e-06)	(1.78e-06)	(1.51e-06)
log(household income)	-0.0137*	-0.0141	-0.0141	0.0172***	0.0177***	0.0177***	0.00199***	0.00210***	0.00210***
	(0.00769)	(0.00909)	(0.00906)	(0.00300)	(0.00361)	(8.69e-06)	(9.83e-06)	(7.80e-06)	(6.35e-06)
family members		0.00147	0.00140		-0.00130	-0.00140***		-0.000105***	-0.000131***
		(0.00440)	(0.00442)		(0.00211)	(3.22e-05)		(2.39e-05)	(1.92e-05)
live with under 18		0.000921	0.000878		-8.51e-05	-0.000136***		0.00485***	0.00484***
		(0.00457)	(0.00454)		(0.00212)	(3.72e-05)		(3.63e-05)	(3.02e-05)
live with over 60		-0.00589***	-0.00583***		-0.00374***	-0.00365***		-0.000375***	-0.000344***
		(0.00132)	(0.00133)		(0.00138)	(4.50e-05)		(3.92e-05)	(3.55e-05)
magnitude			-0.00208			0.0454***			-0.0291***
			(0.00249)			(2.08e-05)			(1.44e-05)
dist to center			-0.00112***			-0.00667***			-0.00260***
			(8.04e-05)			(1.01e-06)			(6.76e-07)
County FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Survey Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Earthquake Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Constant	0.272***	0.253***	0.377***	-0.213***	-0.224***	0.217***	-0.0328***	-0.0385***	0.367***
	(0.0742)	(0.0745)	(0.0904)	(0.0367)	(0.0370)	(0.000108)	(0.000111)	(8.89e-05)	(7.36e-05)
Observations	8,134	8,134	8,134	8,169	8,169	8,169	8,169	8,169	8,169

Standard errors clustered at the earthquake level; Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table B4: Dependent Variable: Expenditure on status goods as proportion of total expenditure

Model: Tobit Regression; Time Band: 5 years before and after the earthquake

DEPENDENT VARIABLE	hairdress			makeup			beautyser		
earthquake	0.000117	0.000223*	0.000227*	0.000573**	0.000343	0.000354	0.000806	0.00107*	0.00108*
	(0.000149)	(0.000132)	(0.000133)	(0.000223)	(0.000402)	(0.000407)	(0.000496)	(0.000587)	(0.000585)
gender	-0.000129	-0.000100	-9.71e-05	-0.00146***	-0.00150***	-0.00149***	-0.000911***	-0.000912***	-0.000905***
	(0.000182)	(0.000198)	(0.000199)	(0.000219)	(0.000216)	(0.000214)	(0.000293)	(0.000288)	(0.000291)
education	3.41e-05	2.99e-05	2.97e-05	0.000242***	0.000266***	0.000265***	0.000381***	0.000408***	0.000408***
	(3.34e-05)	(3.43e-05)	(3.43e-05)	(9.35e-05)	(9.76e-05)	(9.79e-05)	(6.95e-05)	(7.19e-05)	(7.16e-05)
age	2.45e-05	-1.18e-05	-1.23e-05	-0.000290***	-0.000241***	-0.000242***	-0.000240***	-0.000315***	-0.000316***
	(3.80e-05)	(3.65e-05)	(3.68e-05)	(2.45e-05)	(5.26e-05)	(5.30e-05)	(1.99e-05)	(4.16e-05)	(4.13e-05)
log(household income)	-0.00148*	-0.00150	-0.00150	-0.00209	-0.00222	-0.00223	0.00640***	0.00608***	0.00607***
	(0.000781)	(0.000925)	(0.000926)	(0.00215)	(0.00217)	(0.00216)	(0.000838)	(0.000801)	(0.000798)
family members		-6.28e-06	-1.14e-05		0.000430**	0.000414**		0.000842***	0.000824***
		(0.000479)	(0.000477)		(0.000210)	(0.000210)		(0.000210)	(0.000209)
live with under 18		-0.000196	-0.000199		-0.000464	-0.000473		-0.000800	-0.000811
		(0.000464)	(0.000466)		(0.000353)	(0.000347)		(0.000551)	(0.000554)
live with over 60		0.000557***	0.000561***		-0.000808*	-0.000796*		0.00119**	0.00120**
		(0.000174)	(0.000173)		(0.000439)	(0.000440)		(0.000572)	(0.000571)
magnitude			0.00101**			0.000507			-0.000112
			(0.000431)			(0.000670)			(0.000558)
dist to center			-7.34e-05***			-0.000244***			-0.000448***
			(1.66e-05)			(3.77e-05)			(3.34e-05)
County FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Survey Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Earthquake Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Constant	0.0136*	0.0154*	0.0178*	0.0436**	0.0415**	0.0636**	-0.0722***	-0.0681***	-0.0226*
	(0.00820)	(0.00825)	(0.00985)	(0.0208)	(0.0195)	(0.0262)	(0.00756)	(0.00866)	(0.0134)
Observations	8,169	8,169	8,169	8,167	8,167	8,167	8,168	8,168	8,168

Table B5: Dependent Variable: Expenditure on healthy goods as proportion of total expenditure

Model: Tobit Regression; Time Band: 5 years before and after the earthquake

DEPENDENT VARIABLES	**healthequipexp**			**healthfoodexp**		
earthquake	0.00106***	0.00203***	0.00203***	0.00166***	0.00263***	0.00258***
	(3.29e-05)	(3.42e-05)	(2.79e-05)	(0.000462)	(0.000763)	(0.000777)
gender	0.00310***	0.00314***	0.00314***	-0.00278***	-0.00242***	-0.00245***
	(5.88e-05)	(5.36e-05)	(4.48e-05)	(0.000941)	(0.000881)	(0.000899)
education	0.000517***	0.000430***	0.000430***	0.00152***	0.00140***	0.00140***
	(5.44e-06)	(5.42e-06)	(4.42e-06)	(0.000119)	(0.000129)	(0.000129)
age	0.000637***	0.000505***	0.000505***	0.000890***	0.000617***	0.000624***
	(1.27e-06)	(1.59e-06)	(1.40e-06)	(0.000173)	(0.000161)	(0.000157)
log(household income)	0.0101***	0.0106***	0.0106***	0.00271	0.00338	0.00341
	(6.51e-06)	(6.37e-06)	(5.20e-06)	(0.00320)	(0.00325)	(0.00328)
family members		-0.00155***	-0.00155***		-0.00224***	-0.00219***
		(2.13e-05)	(1.79e-05)		(0.000819)	(0.000805)
live with under 18		0.00313***	0.00313***		0.000679	0.000710
		(5.09e-05)	(4.64e-05)		(0.00104)	(0.00103)
live with over 60		0.00212***	0.00212***		0.00402***	0.00399***
		(1.92e-05)	(1.66e-05)		(0.00116)	(0.00116)
magnitude			0.000585***			-0.0146***
			(1.20e-05)			(0.00196)
dist to center			0.000312***			0.00121***
			(5.73e-07)			(3.04e-05)
County FE	Y	Y	Y	Y	Y	Y
Survey Year FE	Y	Y	Y	Y	Y	Y
Earthquake Year FE	Y	Y	Y	Y	Y	Y
Constant	-0.193***	-0.188***	-0.222***	-0.0857***	-0.0731***	-0.122***
	(7.51e-05)	(7.27e-05)	(6.00e-05)	(0.0254)	(0.0266)	(0.0361)
Observations	8,168	8,168	8,168	8,168	8,168	8,168

Standard errors clustered at the earthquake level; Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Appendix C: One to Five Year Window Robustness Check

Table C1: Dependent Variable: Investment as proportion of total expenditure

Model: Tobit Regression; Time Band: 1 to 5 years before and after the earthquake

DEPENDENT VARIABLES	saving		
earthquake	-0.00406	-0.00771	-0.00741
	(0.00623)	(0.00641)	(0.00631)
gender	-0.0130***	-0.00896**	-0.00886**
	(0.00405)	(0.00411)	(0.00405)
education	-0.00404**	-0.00531***	-0.00532***
	(0.00160)	(0.00124)	(0.00124)
age	0.00247***	0.00208***	0.00204***
	(0.000636)	(0.000675)	(0.000677)
log(household income)	0.122***	0.138***	0.138***
	(0.0140)	(0.0102)	(0.0102)
family members		-0.0329***	-0.0332***
		(0.00753)	(0.00752)
live with under 18		-0.0114	-0.0113
		(0.00929)	(0.00928)
live with over 60		-0.000875	-0.000630
		(0.0116)	(0.0115)
magnitude			0.00130
			(0.00710)
dist to center			-0.00310***
			(0.000315)
County FE	Y	Y	Y
Survey Year FE	Y	Y	Y
Earthquake Year FE	Y	Y	Y
Constant	-1.059***	-1.089***	-0.780***
	(0.150)	(0.123)	(0.144)
Observations	5,058	5,058	5,058

Standard errors clustered at the earthquake level; Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table C2: Dependent Variable: Investment in human capital as proportion of total expenditure

Model: Tobit Regression; Time Band: 1 to 5 years before and after the earthquake

DEPENDENT VARIABLES	**raiseeducost**			**eduexp**		
earthquake	-0.0153	-0.0432*	-0.0436*	-0.0221**	-0.0131*	-0.0130*
	(0.0283)	(0.0238)	(0.0240)	(0.0101)	(0.00751)	(0.00756)
gender	-0.00669	0.0178	0.0178	0.0163***	0.00804	0.00811
	(0.0210)	(0.0183)	(0.0183)	(0.00592)	(0.00580)	(0.00577)
education	0.00812***	0.00745***	0.00754***	0.00270***	0.00293***	0.00292***
	(0.00193)	(0.00222)	(0.00222)	(0.000817)	(0.000572)	(0.000577)
age	-0.00482**	-0.00694**	-0.00690*	-0.00390***	-0.00233***	-0.00234***
	(0.00234)	(0.00354)	(0.00355)	(0.000299)	(0.000608)	(0.000606)
log(household income)	0.0303***	0.0459***	0.0463***	-4.00e-05	-0.00489**	-0.00492**
	(0.00835)	(0.0149)	(0.0150)	(0.00212)	(0.00202)	(0.00202)
family members		-0.0430**	-0.0427**		0.0186**	0.0185**
		(0.0211)	(0.0212)		(0.00762)	(0.00767)
live with under 18		-0.213***	-0.213***		0.0731***	0.0731***
		(0.0584)	(0.0585)		(0.0146)	(0.0146)
live with over 60		-0.0125	-0.0127		-0.0116**	-0.0115**
		(0.0287)	(0.0288)		(0.00471)	(0.00473)
magnitude			-0.124***			0.0141***
			(0.0238)			(0.00447)
dist to center			0.0111***			-0.00138***
			(0.00107)			(0.000201)
County FE	Y	Y	Y	Y	Y	Y
Survey Year FE	Y	Y	Y	Y	Y	Y
Earthquake Year FE	Y	Y	Y	Y	Y	Y
Constant	-0.737***	-0.564***	-1.061***	0.242***	0.136***	0.204***
	(0.134)	(0.150)	(0.151)	(0.0309)	(0.0276)	(0.0323)
Observations	7,383	7,383	7,383	7,381	7,381	7,381

Standard errors clustered at the earthquake level; Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table C3: Dependent Variable: Expenditure on food as proportion of total expenditure

Model: Tobit Regression; Time Band: 1 to 5 years before and after the earthquake

DEPENDENT VARIABLES	**drinkcost**			**diningratio2**		
earthquake	0.000772*	0.00117*	0.00117*	-0.104	-0.130	-0.128
	(0.000436)	(0.000598)	(0.000602)	(0.120)	(0.120)	(0.122)
gender	-0.00102	-0.00124*	-0.00124*	-0.0531	-0.0255	-0.0247
	(0.000700)	(0.000737)	(0.000735)	(0.141)	(0.150)	(0.151)
education	0.000268**	0.000333**	0.000333**	0.143***	0.131***	0.131***
	(0.000131)	(0.000152)	(0.000151)	(0.0293)	(0.0229)	(0.0228)
age	-7.26e-06	-6.08e-05**	-6.06e-05**	-0.0908***	-0.0862**	-0.0863**
	(2.71e-05)	(2.64e-05)	(2.64e-05)	(0.0267)	(0.0390)	(0.0391)
log(household income)	-0.0113**	-0.0121***	-0.0121***	1.883***	2.009***	2.008***
	(0.00446)	(0.00468)	(0.00468)	(0.258)	(0.307)	(0.306)
family members		0.00229**	0.00229**		-0.358**	-0.360**
		(0.00100)	(0.000997)		(0.140)	(0.141)
live with under 18		-0.000263	-0.000263		0.161	0.161
		(0.000715)	(0.000716)		(0.209)	(0.209)
live with over 60		0.00116***	0.00116***		-0.102	-0.101
		(0.000299)	(0.000301)		(0.222)	(0.223)
magnitude			-0.000773			-0.206
			(0.000567)			(0.466)
dist to center			1.45e-05			-0.0220
			(4.75e-05)			(0.0161)
County FE	Y	Y	Y	Y	Y	Y
Survey Year FE	Y	Y	Y	Y	Y	Y
Earthquake Year FE	Y	Y	Y	Y	Y	Y
Constant	0.131***	0.135***	0.137***	(1.869)	(1.646)	(2.282)
	(0.0452)	(0.0450)	(0.0523)	-13.63***	-14.01***	-10.76***
Observations	7,384	7,384	7,384	7,382	7,382	7,382

Standard errors clustered at the earthquake level; Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table C4: Dependent Variable: Expenditure on entertainment as proportion of total expenditure

Model: Tobit Regression; Time Band: 1 to 5 years before and after the earthquake

DEPENDENT VARIABLES	entercost			entergoodexp			entercost2		
earthquake	0.00379**	0.00443*	0.00449*	0.00309***	0.00378**	0.00383**	0.00139**	0.00228***	0.00236***
	(0.00173)	(0.00245)	(0.00243)	(0.00109)	(0.00161)	(0.00159)	(0.000558)	(0.000877)	(0.000838)
gender	-0.00453***	-0.00455***	-0.00451***	-0.000450	-0.000748	-0.000727	-0.00394***	-0.00379***	-0.00375**
	(0.00150)	(0.00154)	(0.00156)	(0.000695)	(0.000652)	(0.000657)	(0.00138)	(0.00146)	(0.00149)
education	0.00237***	0.00239***	0.00239***	0.00143***	0.00152***	0.00151***	0.00117***	0.00108***	0.00108***
	(0.000370)	(0.000389)	(0.000391)	(0.000252)	(0.000258)	(0.000259)	(0.000166)	(0.000174)	(0.000175)
age	3.65e-05	-0.000110	-0.000117	-0.000268**	-0.000360*	-0.000365*	0.000353**	0.000177	0.000168
	(9.83e-05)	(0.000143)	(0.000142)	(0.000115)	(0.000206)	(0.000206)	(0.000177)	(0.000149)	(0.000152)
log(household income)	0.00681	0.00635	0.00632	0.00501	0.00393	0.00391	0.00834***	0.00885***	0.00882***
	(0.00515)	(0.00553)	(0.00552)	(0.00575)	(0.00595)	(0.00595)	(0.00111)	(0.00114)	(0.00112)
family members		0.00104	0.000990		0.00297***	0.00293***		-0.00159*	-0.00165*
		(0.00163)	(0.00163)		(0.00113)	(0.00113)		(0.000858)	(0.000849)
live with under 18		-0.000427	-0.000434		0.000124	0.000120		0.00174	0.00175
		(0.00102)	(0.00103)		(0.00102)	(0.00102)		(0.00144)	(0.00145)
live with over 60		0.00246	0.00252		0.00194	0.00198		0.00285***	0.00292***
		(0.00185)	(0.00184)		(0.00150)	(0.00149)		(0.000747)	(0.000743)
magnitude			0.000217			0.00329**			-0.00150
			(0.00153)			(0.00163)			(0.00153)
dist to center			-0.000780***			-0.000520***			-0.00108***
			(0.000136)			(0.000130)			(8.17e-05)
County FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Survey Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Earthquake Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Constant	-0.0165	-0.00859	0.0691	-0.00385	0.00146	0.0376	-0.0908***	-0.0835***	0.0326*
	(0.0472)	(0.0512)	(0.0630)	(0.0608)	(0.0637)	(0.0711)	(0.00987)	(0.0101)	(0.0168)
Observations	7,371	7,371	7,371	7,378	7,378	7,378	7,378	7,378	7,378

Standard errors clustered at the earthquake level; Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table C5: Dependent Variable: Expenditure on status goods as proportion of total expenditure

Model: Tobit Regression; Time Band: 1 to 5 years before and after the earthquake

DEPENDENT VARIABLES	**showcost**		
earthquake	0.00657***	0.00528***	0.00535***
	(0.00109)	(0.00130)	(0.00132)
gender	-0.00757***	-0.00805***	-0.00800***
	(0.00148)	(0.00138)	(0.00140)
education	0.00182***	0.00191***	0.00191***
	(0.000231)	(0.000352)	(0.000353)
age	-0.00132***	-0.000916***	-0.000925***
	(0.000133)	(0.000208)	(0.000211)
log(household income)	-0.0128	-0.0131	-0.0132
	(0.00789)	(0.00924)	(0.00921)
family members		0.00165	0.00157
		(0.00455)	(0.00456)
live with under 18		0.00126	0.00124
		(0.00463)	(0.00462)
live with over 60		-0.00603***	-0.00595***
		(0.00155)	(0.00155)
magnitude			0.000955
			(0.00292)
dist to center			-0.00108***
			(7.79e-05)
County FE	Y	Y	Y
Survey Year FE	Y	Y	Y
Earthquake Year FE	Y	Y	Y
Constant	0.271***	0.251***	0.356***
	(0.0762)	(0.0763)	(0.0935)
Observations	7,351	7,351	7,351

Standard errors clustered at the earthquake level; Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table C6: Dependent Variable: Expenditure on healthy goods as proportion of total expenditure

Model: Tobit Regression; Time Band: 1 to 5 years before and after the earthquake

DEPENDENT VARIABLES	**healthexp**		
earthquake	0.00225***	0.00341***	0.00336***
	(0.000681)	(0.000698)	(0.000694)
gender	-0.00233*	-0.00195	-0.00198
	(0.00130)	(0.00121)	(0.00123)
education	0.00163***	0.00150***	0.00151***
	(0.000129)	(0.000138)	(0.000139)
age	0.000998***	0.000713***	0.000721***
	(0.000195)	(0.000196)	(0.000193)
log(household income)	0.00319	0.00393	0.00396
	(0.00364)	(0.00368)	(0.00370)
family members		-0.00255**	-0.00250**
		(0.00103)	(0.00101)
live with under 18		0.00116	0.00118
		(0.00114)	(0.00113)
live with over 60		0.00425***	0.00421***
		(0.00119)	(0.00118)
magnitude			-0.0134***
			(0.00228)
dist to center			0.00109***
			(2.85e-05)
County FE	Y	Y	Y
Survey Year FE	Y	Y	Y
Earthquake Year FE	Y	Y	Y
Constant	-0.0954***	-0.0822***	-0.125***
	(0.0297)	(0.0301)	(0.0420)
Observations	7,383	7,383	7,383

Standard errors clustered at the earthquake level; Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table C7: Dependent Variable: Expenditure on other goods as proportion of total expenditure

Model: Tobit Regression for housesercoset and Probit Regression for carluxury

Time Band: 1 to 5 years before and after the earthquake

DEPENDENT VARIABLES	**housesercost**			**carluxury**		
earthquake	0.000990	0.00308***	0.00308***	0.173**	0.0277	0.0277
	(0.000727)	(0.00103)	(0.00103)	(0.0695)	(0.0421)	(0.0421)
gender	-0.000217	-2.00e-05	-1.61e-05	0.0490	0.0341	0.0341
	(0.00163)	(0.00152)	(0.00152)	(0.0463)	(0.0291)	(0.0291)
education	0.00110***	0.000960***	0.000959***	0.0145	0.0230**	0.0230**
	(0.000117)	(0.000148)	(0.000148)	(0.00918)	(0.0102)	(0.0102)
age	0.000743***	0.000384**	0.000383**	-0.0327***	-0.00968***	-0.00968***
	(0.000204)	(0.000150)	(0.000151)	(6.55e-05)	(0.00349)	(0.00349)
log(household income)	0.00381*	0.00439*	0.00438*	0.939***	0.912***	0.912***
	(0.00224)	(0.00241)	(0.00240)	(0.00639)	(0.00133)	(0.00133)
family members		-0.00211	-0.00212		0.112***	0.112***
		(0.00164)	(0.00164)		(0.0403)	(0.0403)
live with under 18		0.00401***	0.00401***		-0.213	-0.213
		(0.00142)	(0.00142)		(0.330)	(0.330)
live with over 60		0.00559***	0.00559***		-0.406***	-0.406***
		(0.000943)	(0.000943)		(0.0835)	(0.0835)
magnitude			-0.00621***			0.0396
			(0.00181)			(0.237)
dist to center			-0.000188**			-0.0183***
			(7.46e-05)			(0.00102)
County FE	Y	Y	Y	Y	Y	Y
Survey Year FE	Y	Y	Y	Y	Y	Y
Earthquake Year FE	Y	Y	Y	Y	Y	Y
Constant	-0.102***	-0.0865***	-0.0365	-11.33***	-12.40***	-10.76***
	(0.0156)	(0.0186)	(0.0299)	(0.0873)	(0.405)	(0.883)
Observations	7,385	7,385	7,385	4,322	4,322	4,322

Standard errors clustered at the earthquake level; Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Appendix D: Falsification Test

Description on how the placebo earthquakes are created:

1) Main criteria are to avoid real earthquakes: choose the time period (+- 5 years) where no real earthquakes happened in the area;
2) Including Sichuan and Gansu where most real earthquakes happened to avoid provincial selection; also include other provinces to ensure the representativeness of the sample;
3) The earthquakes center is chosen randomly (randomly click a point on Google Map). Meanwhile, to include enough observations, the point chosen shall not be too far away from big cities included in the household sample;

Figure D1: Placebo Earthquakes

Table D1: Summary Statistics for placebo earthquakes

id	label	province	year	obs	proportion Of Heads Migrate/Born Within 5 Years Before The Earthquake	latitude	longitude
f05	A	Shaanxi	1955	1280	40.8%	34.83184	109.1208
f02	B	Anhui	1955	664	54.4%	32.19399	117.099
f04	C	Gansu	1960	1238	51.0%	38.11938	101.8221
f03	D	Guangdong	1970	384	60.2%	22.75529	113.3616
f01	E	Sichuan	1980	503	53.3%	30.66863	104.4331

Table D1: Dependent Variable: Saving as proportion of household disposable income (falsification test)

Model: Tobit Regression; Time Band: 5 years before and after the earthquake

DEPENDENT VARIABLE	**saving**		
earthquake	0.00473	0.00182	0.00182
	(0.00642)	(0.00598)	(0.00598)
gender	-0.0104	-0.00370	-0.00370
	(0.00821)	(0.00823)	(0.00823)
education	-0.000229	-0.00183	-0.00183
	(0.00141)	(0.00143)	(0.00143)
age	0.00168**	0.000917	0.000917
	(0.000738)	(0.00117)	(0.00117)
log(household income)	0.109***	0.121***	0.121***
	(0.0116)	(0.0116)	(0.0116)
family members		-0.0266***	-0.0266***
		(0.00162)	(0.00162)
live with under 18		-0.0161*	-0.0161*
		(0.00975)	(0.00975)
live with over 60		0.00429	0.00429
		(0.00862)	(0.00862)
magnitude			0.00142***
			(0.000249)
dist to center			
Survey Year Fixed Effects			
County FE			
Survey Year FE	-0.920***	-0.899***	-0.963***
Earthquake Year FE	(0.140)	(0.154)	(0.164)
Constant	3,072	3,072	3,072

Standard errors clustered at the earthquake level; Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table D2: Dependent Variable: Investment in human capital as proportion of total expenditure (falsification test)

Model: Tobit Regression; Time Band: 5 years before and after the earthquake

DEPENDENT VARIABLE	raiseeducost			eduexp		
earthquake	0.0464	-0.00435	-0.00435	-0.0194*	-0.0130	-0.0130
	(0.0579)	(0.0453)	(0.0453)	(0.0103)	(0.0103)	(0.0103)
gender	0.00252	0.0239*	0.0239*	0.0163**	0.00487	0.00487
	(0.00850)	(0.0143)	(0.0143)	(0.00681)	(0.00689)	(0.00689)
education	0.0119***	0.00816***	0.00816***	0.00120	0.00303***	0.00303***
	(0.00342)	(0.00265)	(0.00265)	(0.000862)	(0.000971)	(0.000971)
age	-0.00397	-0.00106	-0.00106	-0.00440***	-0.00196	-0.00196
	(0.00254)	(0.00246)	(0.00246)	(0.000907)	(0.00139)	(0.00139)
log(household income)	0.0506***	0.0687***	0.0687***	0.00516	-0.00151	-0.00151
	(0.0185)	(0.0242)	(0.0242)	(0.00937)	(0.00836)	(0.00836)
family members		-0.0518	-0.0518		0.0191**	0.0191**
		(0.0330)	(0.0330)		(0.00760)	(0.00760)
live with under 18		-0.121***	-0.121***		0.0525***	0.0525***
		(0.0281)	(0.0281)		(0.0147)	(0.0147)
live with over 60		-0.105***	-0.105***		-0.0304***	-0.0304***
		(0.0271)	(0.0271)		(0.00805)	(0.00805)
magnitude			0.000828***			0.000271**
			(0.000198)			(0.000109)
dist to center	Y	Y	Y	Y	Y	Y
Survey Year Fixed Effects	Y	Y	Y	Y	Y	Y
County FE	Y	Y	Y	Y	Y	Y
Survey Year FE	-0.719***	-0.709***	-0.747***	0.168**	0.0179	0.00571
Earthquake Year FE	(0.276)	(0.264)	(0.267)	(0.0726)	(0.0860)	(0.0878)
Constant	4,067	4,067	4,067	4,066	4,066	4,066

Standard errors clustered at the earthquake level; Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table D3: Dependent Variable: Investment in human capital as proportion of total expenditure (falsification test)

Model: Tobit Regression; Time Band: 5 years before and after the earthquake

	nonprieducost			adulteducost			tutorcost			traincost		
earthquake	-0.00275	-0.0131	-0.0131	0.00776***	0.00465	0.00465	-0.00755**	-0.00165	-0.00165	-0.00824***	-0.00353***	-0.00353***
	(0.0182)	(0.0179)	(0.0179)	(0.00285)	(0.00409)	(0.00409)	(0.00343)	(0.00265)	(0.00265)	(0.00240)	(0.00131)	(0.00131)
gender	0.0126	0.00513	0.00513	-0.0152*	-0.0154*	-0.0154*	0.00108	-0.00149	-0.00149	0.00150	-0.00270	-0.00270
	(0.0105)	(0.0110)	(0.0110)	(0.00803)	(0.00829)	(0.00829)	(0.00429)	(0.00502)	(0.00502)	(0.00238)	(0.00177)	(0.00177)
education	0.00112	0.00232**	0.00232**	0.00238**	0.00264**	0.00264**	-0.000863*	-0.000760*	-0.000760*	0.00134**	0.00177***	0.00177***
	(0.000947)	(0.00111)	(0.00111)	(0.00111)	(0.00121)	(0.00121)	(0.000455)	(0.000439)	(0.000439)	(0.000524)	(0.000446)	(0.000446)
age	-0.00503**	-0.00170	-0.00170	-0.000809**	-0.000621	-0.000621	-0.00178**	-0.00135**	-0.00135**	-0.00107***	-0.000564**	-0.000564**
	(0.00207)	(0.00252)	(0.00252)	(0.000374)	(0.000566)	(0.000566)	(0.000724)	(0.000580)	(0.000580)	(0.000209)	(0.000248)	(0.000248)
log(household income)	0.0194	0.0137	0.0137	0.0278***	0.0260***	0.0260***	0.0189***	0.0185***	0.0185***	0.0141***	0.0127***	0.0127***
	(0.0124)	(0.0116)	(0.0116)	(0.00627)	(0.00524)	(0.00524)	(0.00523)	(0.00459)	(0.00459)	(0.00457)	(0.00317)	(0.00317)
family members		0.0277**	0.0277**		0.00740	0.00740		-0.00208	-0.00208		0.00310*	0.00310*
		(0.0116)	(0.0116)		(0.00507)	(0.00507)		(0.00231)	(0.00231)		(0.00169)	(0.00169)
live with under 18		-0.00178	-0.00178		-0.0127	-0.0127		0.0266***	0.0266***		0.0266***	0.0266***
		(0.0129)	(0.0129)		(0.00874)	(0.00874)		(0.00484)	(0.00484)		(0.00534)	(0.00534)
live with over 60		-0.0655***	-0.0655***		-0.00683	-0.00683		0.000356	0.000356		-0.00306	-0.00306
		(0.0196)	(0.0196)		(0.00490)	(0.00490)		(0.00456)	(0.00456)		(0.00219)	(0.00219)
magnitude			-0.000341			0.00188***			0.000810***			-0.000434***
			(0.000220)			(0.000225)			(0.000185)			(0.000115)
dist to center	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Survey Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
County FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Survey Year FE	-0.0507	-0.219	-0.204	-0.393***	-0.398***	-0.482***	-0.157***	-0.190***	-0.226***	-0.141***	-0.182***	-0.163***
Earthquake Year FE	(0.143)	(0.161)	(0.157)	(0.0779)	(0.0796)	(0.0815)	(0.0375)	(0.0462)	(0.0540)	(0.0496)	(0.0437)	(0.0389)
Constant	4,066	4,066	4,066	4,069	4,069	4,069	4,069	4,069	4,069	4,069	4,069	4,069

Standard errors clustered at the earthquake level; Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table D4: Dependent Variable: Expenditure on food and drink as proportion of total expenditure (falsification test)

Model: Tobit Regression; Time Band: 5 years before and after the earthquake

DEPENDENT VARIABLE	drinkcost			diningexp			diningratio2		
earthquake	-0.000352	-0.000150	-0.000150	0.00300*	0.00186	0.00186	0.168	0.124	0.124
	(0.000775)	(0.000782)	(0.000782)	(0.00168)	(0.00346)	(0.00346)	(0.147)	(0.155)	(0.155)
gender	0.00113***	0.00107***	0.00107***	0.00215	0.00172	0.00172	-0.639	-0.503	-0.503
	(0.000327)	(0.000275)	(0.000275)	(0.00236)	(0.00261)	(0.00261)	(0.422)	(0.403)	(0.403)
education	8.38e-05	9.37e-05	9.37e-05	0.00125**	0.00131**	0.00131**	0.181**	0.151**	0.151**
	(7.89e-05)	(9.47e-05)	(9.47e-05)	(0.000575)	(0.000517)	(0.000517)	(0.0783)	(0.0704)	(0.0704)
age	-2.55e-05	-4.40e-05	-4.40e-05	-0.00116***	-0.000808**	-0.000808**	-0.132***	-0.139*	-0.139*
	(3.31e-05)	(4.80e-05)	(4.80e-05)	(0.000183)	(0.000367)	(0.000367)	(0.0502)	(0.0784)	(0.0784)
log(household income)	-0.00431**	-0.00438**	-0.00438**	0.00643***	0.00630**	0.00630**	2.812***	3.020***	3.020***
	(0.00178)	(0.00185)	(0.00185)	(0.00236)	(0.00294)	(0.00294)	(0.891)	(0.919)	(0.919)
family members		7.11e-05	7.11e-05		0.00114	0.00114		-0.600***	-0.600***
		(0.000345)	(0.000345)		(0.00322)	(0.00322)		(0.225)	(0.225)
live with under 18		0.000542**	0.000542**		-0.000138	-0.000138		-0.0939	-0.0939
		(0.000238)	(0.000238)		(0.00531)	(0.00531)		(0.361)	(0.361)
live with over 60		0.000496	0.000496		-0.00624	-0.00624		-0.0110	-0.0110
		(0.000562)	(0.000562)		(0.00393)	(0.00393)		(0.512)	(0.512)
magnitude			-0.000164***			0.000762***			0.0680***
			(5.12e-06)			(3.74e-05)			(0.0242)
dist to center	Y	Y	Y	Y	Y	Y	Y	Y	Y
Survey Year Fixed Effects	Y	Y	Y	Y	Y	Y	Y	Y	Y
County FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Survey Year FE	0.0543***	0.0550***	0.0624***	0.0138	-0.00273	-0.0370**	-22.51***	-22.13**	-25.19***
Earthquake Year FE	(0.0176)	(0.0170)	(0.0171)	(0.0248)	(0.0177)	(0.0187)	(8.471)	(8.743)	(8.940)
Constant	4,069	4,069	4,069	4,063	4,063	4,063	4,069	4,069	4,069

Standard errors clustered at the earthquake level; Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table D5: Dependent Variable: Expenditure on travel and entertainment as proportion of total expenditure (falsification test)

Model: Tobit Regression; Time Band: 5 years before and after the earthquake

	entercost			entergoodexp			enterserexp			entercost2		
earthquake	-0.000937	0.00101	0.00101	-0.000532	0.00133	0.00133	-0.000765	-0.000203	-0.000203	-0.000338	0.000187	0.000187
	(0.00179)	(0.00188)	(0.00188)	(0.00141)	(0.00148)	(0.00148)	(0.00115)	(0.00127)	(0.00127)	(0.00121)	(0.00121)	(0.00121)
gender	-0.00170	-0.00154	-0.00154	-0.000727	-0.000822	-0.000822	-0.00118	-0.000991	-0.000991	-0.00152	-0.00127	-0.00127
	(0.00259)	(0.00240)	(0.00240)	(0.00191)	(0.00176)	(0.00176)	(0.00120)	(0.00120)	(0.00120)	(0.00108)	(0.000965)	(0.000965)
education	0.00124***	0.00117***	0.00117***	0.000338	0.000293	0.000293	0.000802*	0.000779*	0.000779*	0.000881	0.000868*	0.000868*
	(0.000416)	(0.000373)	(0.000373)	(0.000227)	(0.000274)	(0.000274)	(0.000469)	(0.000440)	(0.000440)	(0.000539)	(0.000519)	(0.000519)
age	0.000297***	1.45e-05	1.45e-05	3.31e-05	-0.000116	-0.000116	0.000238***	4.96e-05	4.96e-05	0.000201***	-5.00e-05	-5.00e-05
	(0.000113)	(0.000195)	(0.000195)	(7.60e-05)	(8.95e-05)	(8.95e-05)	(5.61e-05)	(0.000139)	(0.000139)	(6.74e-05)	(0.000152)	(0.000152)
log(household	0.0168***	0.0172***	0.0172***	0.0147***	0.0153***	0.0153***	0.00901***	0.00898***	0.00898***	0.00849**	0.00825**	0.00825**
income)	(0.00405)	(0.00410)	(0.00410)	(0.00296)	(0.00333)	(0.00333)	(0.00329)	(0.00310)	(0.00310)	(0.00394)	(0.00385)	(0.00385)
family members		-0.00271	-0.00271		-0.00267*	-0.00267*		-0.000278	-0.000278		0.000365	0.000365
		(0.00179)	(0.00179)		(0.00148)	(0.00148)		(0.000963)	(0.000963)		(0.00120)	(0.00120)
live with under		0.00492**	0.00492**		0.00640***	0.00640***		-0.000179	-0.000179		-0.00134	-0.00134
18		(0.00195)	(0.00195)		(0.00142)	(0.00142)		(0.00159)	(0.00159)		(0.00234)	(0.00234)
live with over 60		0.00596**	0.00596**		0.00394***	0.00394***		0.00332*	0.00332*		0.00426**	0.00426**
		(0.00280)	(0.00280)		(0.00134)	(0.00134)		(0.00188)	(0.00188)		(0.00189)	(0.00189)
magnitude			0.000346***			0.000319***			0.000175***			0.000207***
			(7.20e-05)			(3.63e-05)			(5.61e-05)			(6.99e-05)
dist to center	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Survey Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
County FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Survey Year FE	-0.171***	-0.160***	-0.175***	-0.140***	-0.137***	-0.151***	-0.110***	-0.101***	-0.109***	-0.108***	-0.0958**	-0.105***
Earthquake												
Year FE	(0.0416)	(0.0385)	(0.0405)	(0.0278)	(0.0293)	(0.0305)	(0.0334)	(0.0330)	(0.0334)	(0.0378)	(0.0388)	(0.0379)
Constant	4,066	4,066	4,066	4,068	4,068	4,068	4,067	4,067	4,067	4,069	4,069	4,069

Standard errors clustered at the earthquake level; Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table D6: Dependent Variable: Expenditure on status goods as proportion of total expenditure (falsification test)

Model: Tobit Regression; Time Band: 5 years before and after the earthquake

DEPENDENT VARIABLE	showcost			beautycost		
earthquake	-0.000843	-0.00137	-0.00137	0.000386	0.000289	0.000289
	(0.00379)	(0.00453)	(0.00453)	(0.000286)	(0.000392)	(0.000392)
gender	-0.00264	-0.00353	-0.00353	-0.00141	-0.00150	-0.00150
	(0.00240)	(0.00272)	(0.00272)	(0.00119)	(0.00121)	(0.00121)
education	0.00166***	0.00176***	0.00176***	0.000590**	0.000618**	0.000618**
	(0.000459)	(0.000480)	(0.000480)	(0.000292)	(0.000294)	(0.000294)
age	-0.00150***	-0.00101***	-0.00101***	-0.000140***	-0.000140***	-0.000140***
	(0.000113)	(0.000251)	(0.000251)	(3.57e-05)	(2.50e-05)	(2.50e-05)
log(household income)	-0.00579	-0.00586	-0.00586	-0.00608**	-0.00632**	-0.00632**
	(0.00951)	(0.00962)	(0.00962)	(0.00286)	(0.00297)	(0.00297)
family members		0.000641	0.000641		0.000784**	0.000784**
		(0.00252)	(0.00252)		(0.000376)	(0.000376)
live with under 18		0.00442**	0.00442**		-0.000622**	-0.000622**
		(0.00218)	(0.00218)		(0.000253)	(0.000253)
live with over 60		-0.00755**	-0.00755**		-2.58e-05	-2.58e-05
		(0.00352)	(0.00352)		(0.000475)	(0.000475)
magnitude			0.000108			-7.02e-05***
			(7.24e-05)			(1.64e-05)
dist to center	Y	Y	Y	Y	Y	Y
Survey Year Fixed Effects	Y	Y	Y	Y	Y	Y
County FE	Y	Y	Y	Y	Y	Y
Survey Year FE	0.195**	0.170*	0.165*	0.0733***	0.0735***	0.0767***
Earthquake Year FE	(0.0968)	(0.0888)	(0.0904)	(0.0264)	(0.0270)	(0.0275)
Constant	4,058	4,058	4,058	4,068	4,068	4,068

Standard errors clustered at the earthquake level; Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table D7: Dependent Variable: Expenditure on health and convenience as proportion of total expenditure (falsification test)

Model: Tobit Regression; Time Band: 5 years before and after the earthquake

DEPENDENT VARIABLE	healthexp			housesercost		
earthquake	-0.00267***	-0.00214**	-0.00214**	2.62e-05	0.000655	0.000655
	(0.000818)	(0.000969)	(0.000969)	(0.00145)	(0.00154)	(0.00154)
gender	-0.00533	-0.00495	-0.00495	0.00127	0.00140	0.00140
	(0.00344)	(0.00330)	(0.00330)	(0.00120)	(0.00117)	(0.00117)
education	0.000363	0.000258	0.000258	8.03e-05	4.23e-05	4.23e-05
	(0.000307)	(0.000278)	(0.000278)	(0.000275)	(0.000281)	(0.000281)
age	0.000516***	0.000440***	0.000440***	0.000113	1.29e-05	1.29e-05
	(0.000107)	(8.02e-05)	(8.02e-05)	(7.09e-05)	(9.81e-05)	(9.81e-05)
log(household income)	0.00716***	0.00799***	0.00799***	0.00587***	0.00610***	0.00610***
	(0.00215)	(0.00236)	(0.00236)	(0.00144)	(0.00145)	(0.00145)
family members		-0.00264***	-0.00264***		-0.00115***	-0.00115***
		(0.000790)	(0.000790)		(0.000292)	(0.000292)
live with under 18		0.00191	0.00191		0.00132**	0.00132**
		(0.00195)	(0.00195)		(0.000600)	(0.000600)
live with over 60		0.00141*	0.00141*		0.00191**	0.00191**
		(0.000822)	(0.000822)		(0.000912)	(0.000912)
magnitude			0.000403***			0.000299***
			(7.77e-05)			(4.02e-05)
dist to center	Y	Y	Y	Y	Y	Y
	Y	Y	Y	Y	Y	Y
County FE	Y	Y	Y	Y	Y	Y
Survey Year FE	-0.128***	-0.126***	-0.144***	-0.0907***	-0.0862***	-0.0996***
Earthquake Year FE	(0.0284)	(0.0295)	(0.0318)	(0.0198)	(0.0185)	(0.0193)
Constant	4,069	4,069	4,069	4,069	4,069	4,069
	-0.00267***	-0.00214**	-0.00214**	2.62e-05	0.000655	0.000655
Observations	(0.000818)	(0.000969)	(0.000969)	(0.00145)	(0.00154)	(0.00154)

Standard errors clustered at the earthquake level; Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Appendix E: Longer and Shorter Year Windows (3 years, 8 years)

present at earthquake	saving			raiseeducost			eduexp		
3 years	-0.00285	-0.00373	-0.00400	0.00484***	-0.00807***	-0.0109***	-0.00918	-0.00458	-0.00506
	(0.00591)	(0.00551)	(0.00555)	(0.000466)	(0.000426)	(0.000340)	(0.00890)	(0.00705)	(0.00674)
8 years	0.00441	0.000941	0.000678	-0.00229	-0.0325*	-0.0332*	-0.0268***	-0.0144**	-0.0143**
	(0.00306)	(0.00236)	(0.00239)	(0.0220)	(0.0176)	(0.0175)	(0.00923)	(0.00635)	(0.00639)

present at earthquake	nonprieducost			adulteducost			tutorcost			traincost		
3 years	-0.00961	-0.0110	-0.0119	0.00274	0.000847	0.000894	-0.00526	-0.00197	-0.00192	-0.00753***	-0.00125	-0.00122
	(0.0143)	(0.0147)	(0.0140)	(0.00280)	(0.00321)	(0.00327)	(0.00405)	(0.00221)	(0.00222)	(0.00281)	(0.00216)	(0.00216)
8 years	-0.0221***	-0.0215***	-0.0214***	0.00748***	0.00225	0.00225***	-0.0126***	-0.00573***	-0.00572***	-0.0159**	-0.00352***	-0.00352***
	(0.000583)	(0.000445)	(0.000406)	(0.00186)	(0.00297)	(0.000113)	(0.00396)	(0.00151)	(0.00151)	(0.00791)	(0.00124)	(0.00124)

present at earthquake	drinkcost			diningexp		
3 years	-0.000113	0.000203	0.000229	-0.00114	-0.00129	-0.00114
	(0.000396)	(0.000489)	(0.000477)	(0.00238)	(0.00254)	(0.00247)
8 years	0.000194	0.000529	0.000532	-0.00127	-0.00124	-0.00118
	(0.000467)	(0.000458)	(0.000459)	(0.00114)	(0.00139)	(0.00137)

present at earthquake	entercost			entergoodexp			entercost2		
3 years	0.00173	0.00235	0.00235	0.00347***	0.00402***	0.00401***	-0.000862	-0.000421	-0.000365
	(0.00221)	(0.00273)	(0.00275)	(0.00109)	(0.00139)	(0.00141)	(0.00150)	(0.00184)	(0.00184)
8 years	0.00375***	0.00408**	0.00413**	0.00355***	0.00390***	0.00390***	0.000174	0.00106	0.00118
	(0.00145)	(0.00167)	(0.00164)	(0.00108)	(0.00108)	(0.00108)	(0.000629)	(0.000811)	(0.000750)

present at earthquake	showcost			beautycost		
3 years	0.000745	-0.000295	-0.000159	-0.00115**	-0.00113*	-0.00110*
	(0.00213)	(0.00209)	(0.00213)	(0.000494)	(0.000581)	(0.000587)
8 years	0.00556***	0.00356**	0.00365**	0.000418	0.000471	0.000484
	(0.000888)	(0.00171)	(0.00175)	(0.000387)	(0.000519)	(0.000518)

present at earthquake	healthexp			housesercost		
3 years	0.00130**	0.00189**	0.00191***	0.000500	0.00150	0.00168
	(0.000604)	(0.000744)	(0.000719)	(0.00101)	(0.00152)	(0.00146)
8 years	-0.000460	0.00145	0.00140	0.000334	0.00258***	0.00261***
	(0.000900)	(0.000928)	(0.000940)	(0.000762)	(0.000668)	(0.000659)

Appendix F: Subsample using "born at local" individuals only

Table F1: Dependent Variable: Savings to disposable income ratio *(born local subsample)*

Model: Tobit Regression; Time Band: 5 years before and after the earthquake

	Saving		
earthquake	-0.00140	-0.00259	-0.00279
	(0.00643)	(0.00610)	(0.00601)
gender	-0.0136***	-0.0100**	-0.0101**
	(0.00391)	(0.00501)	(0.00500)
education	-0.00159	-0.00267***	-0.00268***
	(0.00137)	(0.000881)	(0.000880)
age	0.00378**	0.00278	0.00282
	(0.00168)	(0.00174)	(0.00172)
log(household income)	0.108***	0.120***	0.120***
	(0.0172)	(0.0121)	(0.0121)
family members		-0.0333***	-0.0332***
		(0.0126)	(0.0126)
live with under 18		-0.00803	-0.00784
		(0.00595)	(0.00591)
live with over 60		0.00309	0.00281
		(0.0149)	(0.0150)
magnitude			-0.0760***
			(0.0211)
dist to center			0.00237***
			(0.000540)
County FE	Y	Y	Y
Survey Year FE	Y	Y	Y
Earthquake Year FE	Y	Y	Y
Constant	-1.052***	-1.013***	-0.873***
	(0.211)	(0.208)	(0.286)
Observations	4,678	4,678	4,678

Standard errors clustered at the earthquake level; Robust standard errors in parentheses;
**** p<0.01, ** p<0.05, * p<0.1*

Table F2-1: Dependent Variable: Investment in human capital as proportion of total expenditure *(born local subsample) Model: Tobit Regression; Time Band: 5 years before and after the earthquake*

	raiseeducost			eduexp		
earthquake	0.00156*	0.0163***	0.0163***	0.00927	0.0105*	0.0107**
	(0.000885)	(0.00119)	(0.00121)	(0.00628)	(0.00544)	(0.00543)
gender	0.00776***	0.0503***	0.0503***	0.0225***	0.0146***	0.0146***
	(0.000468)	(0.000953)	(0.000895)	(0.00400)	(0.00355)	(0.00352)
education	0.00888***	0.00534***	0.00534***	0.00317***	0.00332***	0.00332***
	(4.12e-05)	(5.24e-05)	(4.54e-05)	(0.000755)	(0.000571)	(0.000573)
age	-0.00729***	-0.0242***	-0.0242***	-0.0117***	-0.00807***	-0.00810***
	(1.28e-05)	(1.08e-05)	(8.91e-06)	(0.00164)	(0.00190)	(0.00188)
log(household income)	0.0332***	0.0631***	0.0631***	0.000128	-0.00367*	-0.00368*
	(6.12e-05)	(5.87e-05)	(4.87e-05)	(0.00264)	(0.00204)	(0.00205)
family members		-0.0970***	-0.0970***		0.0180*	0.0179*
		(0.000281)	(0.000249)		(0.00984)	(0.00988)
live with under 18		-0.251***	-0.251***		0.0680***	0.0679***
		(0.00203)	(0.00204)		(0.0190)	(0.0190)
live with over 60		0.0610***	0.0610***		-0.00814	-0.00806
		(0.000365)	(0.000318)		(0.0108)	(0.0108)
magnitude			-0.0988***			-0.0339
			(0.000108)			(0.0273)
dist to center			0.00913***			-0.00119***
			(5.02e-06)			(0.000123)
County FE	Y	Y	Y	Y	Y	Y
Survey Year FE	Y	Y	Y	Y	Y	Y
Earthquake Year FE	Y	Y	Y	Y	Y	Y
Constant	-0.674***	0.233***	-0.186***	0.599***	0.388***	0.678***
	(0.000642)	(0.000620)	(0.000513)	(0.0580)	(0.0649)	(0.195)
Observations	6,207	6,207	6,207	6,205	6,205	6,205

Standard errors clustered at the earthquake level; Robust standard errors in parentheses;
**** p<0.01, ** p<0.05, * p<0.1*

Table F2-2: Dependent Variable: Investment in human capital as proportion of total expenditure (continued) *(born local subsample)*

Model: Tobit Regression; Time Band: 5 years before and after the earthquake

	nonprieducost			adulteducost			tutorcost			traincost		
earthquake	0.00495	0.00514	0.00554***	0.00672***	0.00662***	0.00662***	-0.000329***	-0.00112***	-0.000714***	0.00259	0.00379	0.00393
	(0.00653)	(0.00614)	(0.000454)	(9.08e-05)	(9.96e-05)	(9.81e-05)	(0.000120)	(9.45e-05)	(8.11e-05)	(0.00275)	(0.00255)	(0.00248)
gender	0.0229***	0.0183***	0.0185***	0.00477***	0.00436***	0.00436***	0.00672***	0.00274***	0.00290***	0.00589***	0.00115	0.00118
	(0.00548)	(0.00582)	(0.000327)	(0.000117)	(9.04e-05)	(7.72e-05)	(5.55e-05)	(9.62e-05)	(8.50e-05)	(0.00210)	(0.00134)	(0.00133)
education	0.00251***	0.00295***	0.00296***	0.00204***	0.00277***	0.00277***	0.000721***	0.000555***	0.000561***	0.00207***	0.00183***	0.00183***
	(0.000621)	(0.000725)	(2.82e-05)	(9.72e-06)	(8.99e-06)	(7.47e-06)	(3.91e-06)	(8.47e-06)	(7.03e-06)	(0.000775)	(0.000382)	(0.000380)
age	-0.0123***	-0.0107***	-0.0108***	-0.000872***	-0.00128***	-0.00128***	-0.00451***	-0.00190***	-0.00197***	-0.00488***	-0.00221***	-0.00224***
	(0.00253)	(0.00316)	(1.00e-05)	(3.56e-06)	(3.17e-06)	(2.78e-06)	(1.57e-06)	(2.44e-06)	(2.02e-06)	(0.00101)	(0.000460)	(0.000447)
log(household income)	0.00399	-0.000935	-0.00106***	0.0269***	0.0218***	0.0218***	0.0129***	0.0135***	0.0135***	0.0119***	0.0118***	0.0118***
	(0.00333)	(0.00440)	(4.01e-05)	(1.50e-05)	(1.27e-05)	(1.04e-05)	(7.20e-06)	(1.15e-05)	(9.51e-06)	(0.00237)	(0.00264)	(0.00262)
family members		0.0244**	0.0241***		0.0200***	0.0200***		0.00159***	0.00125***		0.00391*	0.00383*
		(0.0124)	(0.000144)		(4.59e-05)	(3.87e-05)		(4.09e-05)	(3.51e-05)		(0.00223)	(0.00230)
with under 18		0.0214	0.0209***		-0.0186***	-0.0186***		0.0447***	0.0444***		0.0481***	0.0480***
		(0.0232)	(0.000975)		(0.000159)	(0.000157)		(0.000103)	(0.000111)		(0.00704)	(0.00708)
with over 60		-0.0236**	-0.0239***		-0.0101***	-0.0101***		-0.00176***	-0.00150***		-0.000918	-0.000842
		(0.0105)	(0.000250)		(7.84e-05)	(7.62e-05)		(0.000111)	(4.59e-05)		(0.00415)	(0.00420)
magnitude			0.0491***			0.244***			0.155***			-0.00209
			(8.64e-05)			(2.43e-05)			(2.01e-05)			(0.00435)
dist to center			-0.0266***			0.00282***			-0.00633***			-0.000828***
			(4.10e-06)			(1.03e-06)			(1.09e-06)			(5.19e-05)
County FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Survey Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Earthquake Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Constant	0.472***	0.363**	2.790***	-0.309***	-0.297***	-1.799***	-0.00106***	-0.150***	-0.287***	0.0447	-0.107***	-0.0122
	(0.114)	(0.143)	(0.000440)	(0.000173)	(0.000146)	(0.000122)	(7.94e-05)	(0.000123)	(0.000104)	(0.0518)	(0.0266)	(0.0386)
Observations	6,209	6,209	6,209	6,209	6,209	6,209	6,209	6,209	6,209	6,209	6,209	6,209

*Standard errors clustered at the earthquake level; Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1*

Table F3: Dependent Variable: Expenditure on food as proportion of total expenditure *(born local subsample)*
Model: Tobit Regression; Time Band: 5 years before and after the earthquake

	drinkcost			diningexp		
earthquake	-0.00186***	-0.00186***	-0.00188***	0.00539**	0.00539**	0.00546**
	(0.000518)	(0.000503)	(0.000494)	(0.00226)	(0.00224)	(0.00224)
gender	-0.000797	-0.000902	-0.000908	-0.00300***	-0.00301***	-0.00298***
	(0.000673)	(0.000704)	(0.000700)	(0.000978)	(0.00101)	(0.00100)
education	0.000412***	0.000467***	0.000467***	0.00223***	0.00234***	0.00234***
	(0.000133)	(0.000150)	(0.000150)	(0.000190)	(0.000213)	(0.000214)
age	0.000475**	0.000502**	0.000505**	-0.00146***	-0.00157***	-0.00158***
	(0.000185)	(0.000201)	(0.000198)	(0.000357)	(0.000351)	(0.000356)
log(household income)	-0.0128***	-0.0134***	-0.0134***	-0.00966	-0.0106	-0.0106
	(0.00467)	(0.00478)	(0.00479)	(0.00836)	(0.00852)	(0.00852)
family members		0.00180**	0.00181**		0.00291**	0.00285**
		(0.000773)	(0.000768)		(0.00142)	(0.00144)
live with under 18		-4.70e-05	-3.66e-05		-0.00412	-0.00416
		(0.000491)	(0.000493)		(0.00340)	(0.00340)
live with over 60		0.00238***	0.00237***		-0.000981	-0.000946
		(0.000351)	(0.000353)		(0.00156)	(0.00157)
magnitude			0.0119***			0.0124***
			(0.00316)			(0.00439)
dist to center			0.000120***			-0.000612***
			(2.10e-05)			(0.000106)
County FE	Y	Y	Y	Y	Y	Y
Survey Year FE	Y	Y	Y	Y	Y	Y
Earthquake Year FE	Y	Y	Y	Y	Y	Y
Constant	0.125***	0.124***	0.0527*	0.226***	0.232***	0.232**
	(0.0402)	(0.0384)	(0.0277)	(0.0838)	(0.0881)	(0.0917)
Observations	6,210	6,210	6,210	6,192	6,192	6,192

Standard errors clustered at the earthquake level; Robust standard errors in parentheses;
**** p<0.01, ** p<0.05, * p<0.1*

Table F4: Dependent Variable: Expenditure on entertainment as proportion of total expenditure *(born local subsample)*

Model: Tobit Regression; Time Band: 5 years before and after the earthquake

	entercost			entergoodexp			entercost2		
earthquake	0.00131	0.00126	0.00127	0.00419***	0.00418***	0.00417***	-0.00200***	-0.00201***	-0.00197***
	(0.00128)	(0.00139)	(0.00138)	(0.00154)	(0.00160)	(0.00161)	(0.000650)	(0.000633)	(0.000626)
gender	-0.00376***	-0.00354***	-0.00354***	-0.000794	-0.000915	-0.000917	-0.00300***	-0.00275***	-0.00274***
	(0.000585)	(0.000619)	(0.000623)	(0.000874)	(0.000820)	(0.000822)	(0.000689)	(0.000822)	(0.000832)
education	0.00242***	0.00239***	0.00239***	0.00163***	0.00168***	0.00168***	0.000811***	0.000692***	0.000691***
	(0.000393)	(0.000421)	(0.000421)	(0.000253)	(0.000259)	(0.000258)	(0.000146)	(0.000126)	(0.000127)
age	0.000638**	0.000611*	0.000609*	-0.000416	-0.000363	-0.000361	0.000991***	0.000998***	0.000990***
	(0.000281)	(0.000329)	(0.000330)	(0.000347)	(0.000319)	(0.000320)	(0.000292)	(0.000364)	(0.000369)
log(household income)	0.00762	0.00783	0.00783	0.00670	0.00609	0.00609	0.00830***	0.00931***	0.00931***
	(0.00610)	(0.00666)	(0.00666)	(0.00605)	(0.00629)	(0.00629)	(0.00118)	(0.00132)	(0.00131)
family members		-0.00112	-0.00113		0.00167	0.00168		-0.00344***	-0.00347***
		(0.00238)	(0.00239)		(0.00134)	(0.00134)		(0.000952)	(0.000954)
with under 18		0.000382	0.000374		0.000626	0.000630		0.00244	0.00242
		(0.00158)	(0.00158)		(0.000883)	(0.000883)		(0.00168)	(0.00169)
with over 60		0.00382***	0.00383***		0.00315**	0.00314**		0.00290**	0.00292**
		(0.00138)	(0.00138)		(0.00123)	(0.00123)		(0.00117)	(0.00118)
magnitude			0.0271***			0.00977***			0.0236***
			(0.00475)			(0.00310)			(0.00451)
dist to center			-0.000107**			5.40e-05			-0.000471***
			(5.32e-05)			(5.44e-05)			(4.02e-05)
County FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Survey Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Earthquake Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Constant	-0.0556	-0.0532	-0.178***	-0.0188	-0.0211	-0.0754	-0.115***	-0.116***	-0.186***
	(0.0530)	(0.0484)	(0.0362)	(0.0721)	(0.0698)	(0.0821)	(0.00768)	(0.0101)	(0.0277)
Observations	6,201	6,201	6,201	6,204	6,204	6,204	6,207	6,207	6,207

*Standard errors clustered at the earthquake level; Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1*

Table F5: Dependent Variable: Expenditure on status goods as proportion of total expenditure *(born local subsample) Model: Tobit Regression; Time Band: 5 years before and after the earthquake*

	showcost			beautycost		
earthquake	-0.00353**	-0.00353**	-0.00337*	-0.00213*	-0.00217*	-0.00208*
	(0.00159)	(0.00173)	(0.00184)	(0.00117)	(0.00116)	(0.00123)
gender	-0.00780***	-0.00753***	-0.00747***	-0.00181***	-0.00164***	-0.00161***
	(0.00182)	(0.00177)	(0.00180)	(0.000377)	(0.000390)	(0.000401)
education	0.00288***	0.00280***	0.00279***	0.000608***	0.000618***	0.000616***
	(0.000343)	(0.000470)	(0.000471)	(0.000197)	(0.000199)	(0.000200)
age	0.000718	0.000611*	0.000577	0.000192	0.000119	0.000100
	(0.000484)	(0.000363)	(0.000387)	(0.000190)	(0.000185)	(0.000200)
log(household income)	-0.0135*	-0.0124	-0.0125	-0.00573**	-0.00582**	-0.00584**
	(0.00766)	(0.00935)	(0.00933)	(0.00240)	(0.00240)	(0.00239)
family members		-0.00289	-0.00302		4.82e-05	-2.46e-05
		(0.00535)	(0.00537)		(0.000630)	(0.000628)
live with under 18		-0.00140	-0.00153		-0.00154***	-0.00160***
		(0.00522)	(0.00518)		(0.000549)	(0.000573)
live with over 60		-0.00432**	-0.00423**		0.00149	0.00154
		(0.00213)	(0.00212)		(0.00117)	(0.00114)
magnitude			0.0316***			0.0139***
			(0.00460)			(0.00351)
dist to center			-0.00135***			-0.000769***
			(8.37e-05)			(3.31e-05)
County FE	Y	Y	Y	Y	Y	Y
Survey Year FE	Y	Y	Y	Y	Y	Y
Earthquake Year FE	Y	Y	Y	Y	Y	Y
Constant	0.173***	0.177***	0.157***	0.0616***	0.0661***	0.0747***
	(0.0608)	(0.0687)	(0.0571)	(0.0199)	(0.0206)	(0.0225)
Observations	6,180	6,180	6,180	6,207	6,207	6,207

Standard errors clustered at the earthquake level; Robust standard errors in parentheses;
**** p<0.01, ** p<0.05, * p<0.1*

Table F6: Dependent Variable: Expenditure on healthy goods as proportion of total expenditure *(born local subsample) Model: Tobit Regression; Time Band: 5 years before and after the earthquake*

	healthexp			housesercost		
earthquake	-0.00149	-0.00151	-0.00162	0.00254	0.00247	0.00250
	(0.00100)	(0.00107)	(0.00107)	(0.00159)	(0.00176)	(0.00175)
gender	-0.00161	-0.00143	-0.00147	-0.000475	-0.000325	-0.000317
	(0.00105)	(0.000998)	(0.00102)	(0.000895)	(0.000948)	(0.000945)
education	0.00108***	0.00103***	0.00103***	0.000187	0.000144	0.000143
	(0.000205)	(0.000209)	(0.000212)	(0.000128)	(0.000155)	(0.000155)
age	0.00146***	0.00145***	0.00148***	-0.000333	-0.000283	-0.000289
	(0.000124)	(0.000137)	(0.000129)	(0.000209)	(0.000190)	(0.000189)
log(household income)	0.00313	0.00351*	0.00352*	0.00504***	0.00524***	0.00523***
	(0.00217)	(0.00210)	(0.00211)	(0.00112)	(0.00123)	(0.00122)
family members		-0.00159*	-0.00151*		-0.00115	-0.00117
		(0.000815)	(0.000823)		(0.000781)	(0.000784)
live with under 18		0.00111	0.00120		0.00191	0.00189
		(0.00135)	(0.00132)		(0.00134)	(0.00134)
live with over 60		0.00292**	0.00288**		0.00380	0.00380
		(0.00134)	(0.00133)		(0.00235)	(0.00235)
magnitude			0.00958***			-0.00770***
			(0.00200)			(0.00184)
dist to center			0.00116***			-0.000373***
			(3.19e-05)			(7.31e-05)
County FE	Y	Y	Y	Y	Y	Y
Survey Year FE	Y	Y	Y	Y	Y	Y
Earthquake Year FE	Y	Y	Y	Y	Y	Y
Constant	-0.108***	-0.107***	-0.272***	-0.0471***	-0.0486***	0.0277
	(0.0218)	(0.0201)	(0.0196)	(0.0160)	(0.0149)	(0.0259)
Observations	6,209	6,209	6,209	6,210	6,210	6,210

Standard errors clustered at the earthquake level; Robust standard errors in parentheses;
**** p<0.01, ** p<0.05, * p<0.1*