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Title:
The Impact of Traumatic Memories on Family's Commercial Insurance Expenditure: Evidence from 1959-1961 Famine in China

Abstract:
Traumatic memories can have long-term or permanent effects on individuals. Taking the Great Famine in China from 1959 to 1961 as a natural experiment, this paper studies whether an individual's early traumatic memories will affect their family's commercial insurance expenditure. Based on the cross-section data of China Family Panel Studies (CFPS) in 2010, this paper intends to use the difference-in-difference (DID) strategy to verify the impact of early traumatic memories on one's family's commercial insurance expenditure and try to explain the impact path from two aspects: individual health status and risk aversion.

Motivation:
Commercial insurance, including commercial medical insurance, auto insurance, house and property insurance, commercial life insurance, etc., has increasingly become an important part of household expenditure in China. According to data from China Banking and Insurance Regulatory Commission, China's insurance depth (insurance income/GDP) increases year by year, from 2.939% in 2011 to 4.465% in 2020. Many factors can influence commercial insurance expenditure, including personal, family, and macroeconomic impacts. Focusing on the personal perspective, this paper intends to explore whether one's traumatic experience will affect a family's commercial insurance expenditure.

The Great Famine from 1959 to 1961 in China provides a good natural experiment in investigating how traumatic experiences will affect a family's commercial insurance expenditure. From 1959 to 1961, people in China experienced the worst famine, and grain production has decreased by more than 15% annually since 1959. The official mortality rate reached 2.54% in 1960, while the national mortality rate was only 1.14% before 1958. Nearly 30 million people died abnormally during the Great Famine in China (Chen & Zhou, 2007). Scholars have found that the Great Famine significantly affects the rural economic system and human health (Liu, 2016). Besides, according to vast literature in developmental psychology, early experiences shape psychological states. For example, Austrian psychologist Conrod Lorenz proposed the concept of critical periods, arguing that mental or physical development is particularly sensitive to specific environmental stimuli in these periods. Psychologist Freud stressed that early experiences are crucial to the formation of an adult personality (Freud, 1905). Based on psychologist research, traumatic memories can have long-term or permanent effects on people. In particular, the impact of the experience of the Great Famine will exist for a long time and may affect individuals' behaviors and choices today. Thus, our core question is whether the traumatic experience will affect the family's commercial insurance expenditure, using evidence from the Great Famine.

Literature Review:
Commercial insurance purchase is affected by many factors. Hopkins & Kidd (1996) found that

personal income, education and other factors affect commercial insurance expenditure. People with higher income are more able to buy commercial insurance, but at the same time, the impact of income growth on commercial insurance expenditure turns out to be S-shaped. In the early stage, due to lack of awareness, the demand for insurance grows slowly, and then financial ability allows individuals to increase insurance expenditure. When the need for risk protection is relatively satisfied, the growth of insurance expenditure is relatively slow (Ye Minghua, 2009). In addition, the more educated individuals are, the more conscious they are to buy commercial insurance. Shi & Xu (2021) found that the level of education has a positive impact on the purchase behavior of commercial insurance. Compared with those with lower education, people with higher education are more likely to buy commercial insurance and spend a more significant proportion on the purchase of commercial insurance. Furthermore, the availability and sufficiency of national or regional social security systems will also affect the choice of commercial insurance. For example, Cutler & Gruber (1995) believe that improving national social insurance will squeeze out the demand for commercial insurance, and commercial and social insurance can play a complementary role; however, no scholars have studied the impact of traumatic memories on family business insurance expenditure. According to psychologists' research, traumatic memory has a long-term or permanent impact on people. They have recognized the importance of childhood in people's growth, and the special experience in the early years will affect individual cognitive preferences. Based on these research and theories, this paper studies the impact of traumatic memories on an individual's family's commercial insurance expenditure.

We take the Great Famine that occurred in China from 1959 to 1961 as a natural experiment to study the impact of traumatic memories of experiencing the famine on an individual's household commercial insurance spending behavior. Scholars agree that the famine was a sudden and natural shock. Also, since China's long-standing household registration system restricts the free movement of people between regions, it is difficult for people to escape this disaster by moving across provinces (Xiaoquan Wang et al., 2015). Therefore, using the experience of the Great Famine between 1959 and 1961 as an exogenous shock can resolve the endogeneity problem well, which may be caused by direct research on the impact of traumatic memories on a family's commercial insurance expenditure. Many scholars have studied the long-term effects of the Great Famine on those individuals who experienced it. The experience of the Great Famine may affect the health status of individuals, their career choice, charitable donations, savings, etc. Chen & Zhou (2007) found that the group's average height born in 1959, the first year of the famine, was 3.03 cm lower than the normal people who did not experience the famine. Guangrong Ma (2011) found that the average height of adults who had experienced the famine when they were less than 1-year-old decreased with the severity of the famine, and the probability of obesity increased with the severity of the famine. Similarly, Meng & Qian (2015) found that famine experience had a negative impact on individual height and health. Xiaoquan Wang et al. (2015) found that famine experience in childhood affects the risk appetite of this generation, which in turn affects their career choices in adulthood, leading individuals who experienced famine in their childhood reluctant to choose to be self-employed. Nianxing Xu and Zhe Li (2016) found that charitable donations are also higher in companies whose CEOs experienced famine during childhood. Lingguo Cheng and Ye Zhang (2011) found that for every 1% increase in the severity of the famine, the savings rate of an individual in adulthood increases by 23%-26%. Yinan Yang et al. (2018) found that farmers who experienced the famine also had higher pay grades for the "New Rural Insurance". Based on these scholars' research on the impact of the Great Famine, we raised a new question: will the traumatic memories produced by the Great Famine affect a family's commercial insurance expenditure? Focusing on this core issue, this paper innovatively explores the impact of the Great Famine on a family's commercial insurance expenditures.

According to the Adverse Selection Theory of Information Economics, due to market inefficiency caused by information asymmetry, those with higher risk are more willing to buy insurance, so traumatic memories may affect an individual's risk preference and then affect the family's commercial insurance expenditures. Some scholars have studied how traumatic memories affect an individual's household insurance expenditures. Wolfe and Goddeeris (1991) found that the higher the personal health risk, the more likely they are to buy health insurance. Moreover, using US federal medical data, he found that the more medical expenses the elderly spent in the previous period, the greater the probability of purchasing supplementary medical insurance in the next period. In addition, personal preferences can also impact commercial insurance spending. Turnbull (1983) found that the more risk-averse an individual is, the more likely he is to be insured, and the deductible will be lower if he insures more types of insurance. Also, personal preferences are not static but will change with a series of factors; for example, natural disasters will affect personal endogenous preferences. Ulrike & Stefan (2011) believe that the Great Depression affected the risk preferences of those who experienced it at that time, making them more risk-averse. Based on previous research, the second half of this paper will verify the paths through which famine experience affects a family's commercial insurance expenditures from two aspects: individual health status and risk aversion.

Research Design:

We will use the cross-section data of China Family Panel Studies (CFPS) of 2010, which surveys about 14,000 families from 25 provinces in China. We use this dataset because people who experienced famine were still in need of commercial insurance when they were surveyed in 2010. The core dependent variable we focus on is the expenditure of commercial insurance, which is depicted by "your family's expenditure on commercial insurance in the past year" in this survey. In addition, the core dependent variable is the severity of the famine. Referring to other researchers, we use the excess mortality rate of each province to measure the severity of famine in that province (Chen and Zhou, 2007).

To further describe the impact of famine experience at different ages, we divided the heads of households into five groups according to the age at the time of famine: unborn (Cohort1), infantile (Cohort2:0-3 years old), early childhood (Cohort3: 3 to 12 years old), youth (Cohort4:13 to 18 years old), and adult (Cohort5: more than 18 years old). Those who were not born at the time of famine (Cohort1) are used as a reference for comparison with those who experienced famine.

As for empirical strategy, we will use the difference-in-difference strategy to study the impact of traumatic memories on an individual's family's commercial insurance expenditure. The detailed model is constructed as follows.

$$expense_{ijt} = \alpha + \beta death\_rate_j + \gamma \sum_{2}^{5} D_{it} + \delta \sum_{2}^{5} D_{it} * death\_rate_j + \mu X_i + \epsilon_{ijt}$$

In this model, $\mathrm{expense}_{\mathrm{ijt}}$ is the amount of household commercial insurance expenditures in the survey year. The intercept term α represents the fixed effect of the unborn birth cohort (Cohort1). $\mathrm{death\_rate}_{\mathrm{j}}$ is the excess mortality rate in each province during the famine, which measures the severity of the famine in that province. D_{it} is a dummy variable representing whether individual i is in a particular (infantile, early childhood, youth, and adult) birth cohort. $\mathrm{D}_{\mathrm{it}} * \mathrm{death\_rate}_{\mathrm{j}}$ is the interaction term between D_{it} and $\mathrm{death\_rate}_{\mathrm{j}}$, and its coefficient represents the long-term effect of famine. X_{i} are other control variables, including income, gender, years of education, number of household members, etc. The subscripts i, j, and t represent individual i in province j of birth cohort t.

Outline:

4/1 – 4/6: write literature review and establish basic methodology

4/7 – 4.17: data process and estimate model

4/18 – 4/30: write-up; complete the project

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