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Xunan Feng
Southwestern University of Finance and Economics

Anders C. Johansson
Stockholm School of Economics

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Xunan Feng
Southwestern University of Finance and Economics

Anders C. Johansson[1]
Stockholm School of Economics

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[1] Corresponding author, Stockholm School of Economics, P.O. Box 6501, SE-113 83 Stockholm, Sweden. Phone: +46-8-736 9367. Fax: +46-8-31 30 17. Email: anders.johansson@hhs.se. Xunan Feng acknowledges financial support from National Natural Science Foundation of China (71672147). We thank Wang Ying, Chen Qiaoli and Hong Xiaoxiang for excellent research assistances. Comments from Michael Funke, Johanna Rickne and Tianyu Zhang are greatly appreciated. All remaining errors are our own.

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Abstract

Previous studies have linked personal characteristics of business leaders to corporate decisions. We analyze if the traumatic experience of the Chinese Famine had an impact on managerial decisions. Having lived through the famine is associated with more conservative financial, investment, and cash holding policies, a lower likelihood of unethical behavior, and better firm performance during economic downturns. By exploiting the exogenous variation in local severity of the famine, we establish a causal relationship between early-life experiences and corporate policies. Our findings thus provide evidence that momentous personal experiences can have important causal effects on managerial decisions.

JEL Classification: D03; D83; D84; G11; G31; G32; J24
Keywords: Managers; Corporate decisions; Fraud; Ethics; Corporate governance; China

1 Introduction

Do personal early-life experiences affect business executives' corporate decisions? Recent studies have suggested that early-life experiences can have significant effects on people's decisions later in life, especially if those early-life experiences involve some form of seismic event (e.g., Graham and Narasimhan, 2004; Malmendier and Nagel, 2011; Malmendier et al., 2011). In this paper, we aim to answer this question by looking at how business executives that lived through the Great Chinese Famine differ in their decision making compared to those who did not have to go through that devastating experience.

This study builds on a strand of literature in psychology which focuses on how personal experiences influence individuals' decision-making process (e.g., Barkan et al., 1998; Hertwig et al., 2004; Hertwig and Erev, 2009). Research on behavioral decision suggests that people tend to be oversensitive to rare events and that this can have a significant impact on their subsequent decisions (e.g., Lichtenstein et al., 1978; Yechiam et al., 2005). In addition, people tend to remember their experience of a rare event at its absolute worst (Redelmeier and Kahneman, 1996), suggesting that rare events can have dramatic effects on people's decision behavior later in life.

Studies on personal experiences have shown that individuals are affected the most by severe events if they occur early on in life (e.g., Elder, 1998; Malmendier et al., 2011). Based on this, our main premise is that experience of the Great Chinese Famine during one's younger years should be associated with a significant effect on his or her

decision-making process later in life. More specifically, we conjecture that those who were old enough to remember the experience but not yet adults at the time of the famine exhibit more conservative decisions later in life. To test this, we use a data set comprised of board chairs in all listed A-share firms in China. We find that board chairs who were between six and 18 years old at the time of the Great Chinese Famine are related to more conservative corporate financing policies, investment decisions, cash holding policies, and less unethical behavior.

While earlier studies such as those of Malmendier and Nagel (2011) and Benmelech and Frydman (2015) provide indicative proof of a positive relationship between personal experiences and decisions later in life, they do not pin down a causal transmission mechanism between them. To solve this, we exploit the exogenous variation in severity of the Great Famine across regions. We find that the variation of local severity of the famine affects the magnitude of the effect on managerial decisions later in life. Combining age cohorts and exogenous variation in local famine severity thus enables us to provide empirical evidence of transmission effects of early life experiences on managerial decisions.

We then show that that stronger control over the company as proxied by CEO-chair duality or family ownership amplifies the effect of early-life experience of the famine on managerial decisions. These findings further strengthen our results on the causal link between traumatic early-life experiences and managerial decisions. Finally, experience

of the famine is associated with better firm performance during economic downturns. Several robustness tests confirm our results.

This study ties into several different strands of research. First, it relates to a wider literature on how the personal characteristics of managers affect corporate decisions and performance (e.g., Rotemberg and Saloner, 2000; Bertrand and Schoar, 2003; Malmendier and Tate, 2005; Van den Steen, 2005; Bennedsen et al., 2006; Pérez-González, 2006; Hirshleifer et al., 2012; Kaplan et al., 2012; Quigley and Hambrick, 2015). In this literature, there is a small but growing number of studies that focus on how important personal experiences influence economic decisions. For example, Malmendier and Tate (2009) find that CEOs' elevation to superstar status is associated with worsening firm performance, more time spent on activities outside the firm, and an increase in earnings management. Schoar and Zuo (2011) show that CEOs who begin their careers during economic recessions are more conservative in their managerial decisions. In a related study, Malmendier and Nagel (2011) analyze the generation that experienced the Great Depression and show that such individuals tend to exhibit a lower willingness to take on financial risk and invest in financial markets. Similarly, Malmendier et al. (2011) demonstrate that CEOs who grew up during the Great Depression are more averse to letting firms under their management take on debt and instead rely more on internal finance and that CEOs with military backgrounds tend to pursue more aggressive corporate policies. Benmelech and Frydman (2015) study the relationship between CEOs' military background and managerial decisions,

financial policies, and corporate outcomes. Contrary to the findings in Malmendier et al. (2011), they find that military service is associated with more conservative firm policies and ethical behavior. We add to this literature by analyzing how an unusually extreme early-life event affects managerial decisions later in life. As opposed to other types of personal experiences such as military service which may be affected by self-selection, the Great Chinese Famine constitutes a strictly exogenous event. The devastating famine was largely unexpected, which significantly alleviates the risk of endogeneity. More importantly, by combining variation across regions with age cohorts, we can shed light on the causal impact of early-childhood trauma on managerial decisions, something earlier studies on U.S. data have had difficulty doing.

This study also relates to the literature on long-term effects of famine. For example, Stein et al. (1975), Ravelli et al., (1999), and Brown et al. (2000) analyze the effects of the Dutch famine in 1944-1945. Stanner et al. (1997) study survivors of the Leningrad siege in 1941-1944. Luo et al. (2006), Chen and Zhou (2007), Mu and Zhang (2008), Meng and Qian (2009), Almond et al. (2010), and Shi (2011) analyze different effects of the Great Chinese Famine. While a few previous studies look at economic effects of famine[2], to the best of our knowledge, this study is the first that links early-life experience of famine to managerial decisions.

The rest of the paper is organized as follows: Section 2 describes the Great Chinese Famine and briefly discusses potential reasons behind the famine as well as its

[2] For a more detailed discussion on economics and famines, see Ravallion (1997).

immediate and longer-term effects. Section 3 introduces the data, discusses the empirical methodology, and presents descriptive statistics of the key variables. Section 4 presents the results of the baseline estimations and Section 5 provides additional robustness checks. Section 6 analyzes the relationship between experience of the Great Chinese Famine and firm performance during economic downturns. Section 7 presents a complementary analysis that focuses on board chair power and the relationship between experience of the Great Chinese Famine and corporate policies. Finally, Section 8 concludes the study.

2 The Great Chinese Famine

Towards the end of the 1950s, the Chinese leadership with Mao Zedong at the helm initiated a new campaign with the aim of rapidly transforming the economy from a traditional agrarian to a fully socialistic society. Building on the initial Big Push strategy[3] that was implemented once the Communist Part of China (CPC) seized power, and with the goal of quickly surpassing the size of Great Britain's economy, the Great Leap Forward signified an intensive push for industrialization and collectivization.[4]

[3] After 1949, China followed a socialist economic strategy that prioritized heavy industry, commonly called a Big Push strategy. The government controlled most of the economy, kept consumption low and channelled capital to heavy industry, with consistent high investment levels share of national income as a result. For more details, see Naughton (2007, pp. 56-59).

[4] The leadership had initiated a widespread agricultural collectivization program in the early 1950s, which was then intensified in 1958.

Huge collectives were created on the countryside, all private ownership was eliminated, and free food was provided in commune mess halls (Shi, 2011). Initially, the campaign resulted in a surge in economic activity, as nearly 30 million workers were absorbed by the state sector in 1958 alone (Naughton, 2007, p. 70). However, the focus on industrialization combined with the belief that it was possible to increase agricultural productivity at an extreme pace soon resulted in a dramatic reduction in agricultural output. At the same time, grain procurement by the state increased rapidly. Food shortages and starvation were reported in 1959, but the CPC leadership did not change direction in their policies. The dramatic changes to farming coincided with unusually bad weather and in 1960, a full-blown nation-wide famine ensued. In the international literature, this tragic event has come to be called the Great Chinese Famine, while the CPC has referred to it as the Three Years of Natural Disasters (*Sannian ziran zaihai*), or the Difficult Three Year Period (*Sannian kunnan shiqi*).

As the effects of the food shortages became increasingly apparent also for the central leadership, policy reversals finally ensued. Communal kitchens were abolished, the procurement of grain was reduced, and the government began to import grain to make up for the production shortfalls in the agricultural sector (Johnson, 1998). Moreover, collectivization on the countryside was scaled back and peasants were given control of land again (Yang and Su, 1998). After the policy reversals, the decline in agricultural output stopped in 1962 and then increased moderately in the subsequent years.

The number of deaths during the Great Chinese Famine long remained a very sensitive topic in China, and local governments tried to hide the sheer size of the human tragedy by reducing death numbers. It is thus extremely difficult if not impossible to find complete and reliable information in archives. In addition, population statistics in China were not well regulated, and it is difficult to estimate the death number using the officially published population statistics. Consequently, there is no full consensus on the number of unnatural deaths during the famine. As per official government statistics, there were 15 million excess deaths during this period (Ó Gráda. 2010, p. 95). Scholars estimate the number of famine victimsto between 16.5 and 30 million (Li and Yang, 2005), approximately 30 million (Ashton et al., 1984; Sen, 1999), and even as high as 45 million (Dikötter, 2010). As a comparison, this is far more than the number of deaths during World War I, during which over nine million combatants and seven million civilians died as a result of the war. Nobel laureate Amartya Sen (1999) has argued that the Great Chinese Famine is "indeed the largest recorded famine in world history: Nearly 30 million people died in the famine of 1958-61, while faulty governmental policies remained uncorrected for three full years."

Scholars have attempted to study potential factors behind the Great Chinese Famine, including the increased procurement by the state, weakened incentives in the agricultural sector because of the collectivization program, the massive shift of labor from agriculture into the industrial sector, delays in the response to local food shortages, and bad weather (e.g., Lin, 1990; Kueh, 1995; Yao, 1999; Lin and Yang, 2000; Kung

and Lin, 2003; Naughton, 2007, pp. 69-72). The relative importance of these factors has been debated in the literature (e.g., Chang and Wen, 1998; Johnson, 1998; Lin and Yang, 1998). As early as in 1962, even Liu Shaoqi, chairman of the People's Republic of China at the time, stated that the tragic famine was caused 30% by natural disasters and 70% by human error (Chang, 2003, p. 234).[5] Irrespective of the relative importance of potential factors behind the famine, the result was a very sharp decrease in grain production and a large number of unnatural deaths during 1959-1961.[6]

The Great Chinese Famine had very severe immediate and long-term effects. Due to data limitations, most empirical studies must rely on mortality figures from the China statistical yearbook to quantify what happened to the Chinese people during the famine (e.g., Lin and Yang, 2000; Li and Yang, 2005).[7] Table 1 presents the death rates across China's provinces over a period covering five years to five years after the famine period. Focusing on 1960 as that came to be the year during which the most severe direct effects

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[5] Liu Shaoqi was later denounced as a traitor during the Cultural Revolution.

[6] Chen and Zhou (2007) note that grain production decreased 15% in 1959 compared to the year before and in 1960, grain production only amounted to 70% of output in 1958.

[7] Riskin (1998) notes that the reliability of these statistics should be taken with a grain of salt, as the official statistical sources give very little information on how mortality has been calculated. In fact, the Chinese government did not produce any mortality figures for the Great Chinese Famine period for two decades. A complete time series of overall mortality rates only appeared in the Statistical Yearbook of China of 1983. For a detailed account of the Great Chinese Famine tragedy, see Yang (2012), who conducted comprehensive field research for over two decades to piece together birth and death statistics in several Chinese provinces.

of the famine were reported, the table shows an astounding increase in death rates for most provinces. Typical death rates across the country were between 0.5-1.5% for the pre- and post-famine years. During the famine, these numbers spiked with several provinces reporting death rates well above 4%. The worst cases were found in Anhui (6.9%), Sichuan (5.4%), and Guizhou (4.5%). The last column in the table shows our calculations for the estimated death rate, the proxy we use for the severity of the famine across provinces. Several previous studies on the famine study has calculated what is typically called the excess death rate, or the deviation from some form of baseline death rate. For example, Riskin (1990) define the "normal" level as the 1957 mortality rate, while Chen and Zhou (2007) calculate the excess death rate as the gap between the death rate in 1960 and the average death rate in the three years before 1959. Following these previous studies, we obtain measures for excess death rates by subtracting the average death rate during the 1956-1958 from the death rate in 1960. Again, Anhui (5.7%), Guizhou (3.5%) and Sichuan (3.8%) exhibit very large excess rate figures, but several other provinces also have excess date rates of 1-3%. It should be noted that the death rates related to the famine are likely to be underestimated. However, if significant and robust results can be found based on them, we can interpret the effects of the Great Chinese Famine as a lower bound.

The proportions of the tragic Great Chinese Famine and the way it occurred provide us with a rare opportunity to systematically study the long-term effects of early-life trauma on managerial decisions. First, it was difficult if not impossible for most

citizens to anticipate that such a tragedy would take place. It is therefore reasonable to assume that this traumatic event constituted a clear exogeneous shock. Second, the *hukou* system which determines where citizens can live puts severe limitations on mobility in China. Migration and relocation to other provinces was extremely rare at the time of the famine, resulting in people spending their whole childhood in their hometown.[8] This unique household registration system allows us to identify the severity of the great famine that individuals experienced based on birth place. The inability to migrate also alleviates the potential selection bias resulting from migration. Finally, the uniqueness of the Great Chinese Famine not only lies in its long time span, unprecedented severity and scope, but also in its substantial variation across regions. Thus, combining variation across regions and age cohorts, we can construct a difference-in-difference (DID) estimator that captures the causal effects of the famine.

[TABLE 1 HERE]

[8] People were allowed to move to other cities after the beginning of the reforms and opening up policy in 1978.

3 Data and Methodology

3.1 Data

To determine whether a traumatic early-life experience such as the Great Chinese Famine affects managerial decisions, we combine three different data sets. First, we construct a data set in which we identify the board chair for all A-share firms on China's stock exchanges.[9] We focus on the board chair rather than the CEO because contrary to the U.S. or Europe, in China it is typically the board chair that has most authority when it comes to making operational decisions (Kato and Long, 2006; Feng and Johansson, 2017). In fact, the board chair is often called *yi ba shou* (number one), while the CEO is *er ba shou* (number two). The influence that board chairs have in Chinese companies thus means that they play a crucial role for corporate policy.

We use several different databases to collect information on board chairs' place of birth, including ID information in the IPO prospectus, Genius Finance, Wisenews, GTA Financial News Database, and China Core Newspapers Full-text Database. If we

[9] Chinese firms have issued A- and B-shares since the Shanghai and Shenzhen stock exchanges were established in the early 1990s (Johansson and Ljungwall, 2009). Early on, only domestic investors could invest in A-shares. However, foreign investors are now allowed to invest in A-shares if they are part of the so-called Qualified Foreign Institutional Investor (QFII) scheme. For more information on China's share classes, see Chan et al. (2007, 2008).

are not able to identify place of birth using these sources, we do an additional search using Google and Baidu. If we are still unable to identify place of birth, we contact the firm in question and ask them to provide the information.

A second data set comes from the China Security Market and Accounting Research (CSMAR) database. CSMAR provides detailed financial information on all listed firms in China. We include all firms that are listed with A-shares on the Shenzhen and Shanghai stock exchanges in 2000-2014. We set 2000 as the first year because the CSRC requires that all listed firms disclose personal information (age, education, etc.) on their executive teams from 1999 and onwards. In addition, we collect all figures on R&D expenditures by hand, as information on R&D expenditures appears in different parts of annual reports in China.[10]

Finally, the third data set on excess death rate during the Great Chinese Famine comes from China's Bureau of Statistics (reproduced in Lin and Yang, 2005) and provides the death rates across China's provinces before, during and after the Great Chinese Famine. This data is essential when we analyze the causal effect of the great famine experience on managerial decisions.

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[10] R&D data appear as different items in three sections in Chinese annual reports: (i) items labelled "research and development expenses", "technology development", etc. in the notes to financial statements; (ii) labelled "development expenditures" in the notes to the balance sheet (including opening amount, closing amount, current increase, current decrease, research or development stage, etc.); (iii) information provided in the management discussion. We collect and combine all this information for each firm and year.

3.2 Methodology

To analyze the relationship between the early-life experience of having to live through a severe famine and managerial, we set up the following baseline regression model and run it using OLS as well as logistic regressions:

$$Y_{i,j,k,t} = \alpha + \beta_k + \sum \gamma\left(edr_j * birth_{i,k}\right) + \delta edr_j + X_{t-1}\lambda + \varepsilon_{i,j,k,t}, \qquad (1)$$

where $Y_{i,j,k}$ is firm *i*'s policy in year *t*. The board chair is born in region *j* and belongs to cohort *k*. β_k is the cohort fixed effect, and edr_j is the excess death rate in region *j* during the Great Chinese Famine. We calculate a measure for the excess death rate and use it as a proxy for the severity of the famine. As discussed in the previous section, the excess death rate in 1960 is calculated as the gap between the death rate in 1960 and the average death rate of the three years before 1959. $birth_{i,k}$ is a dummy variable that indicates whether firm *i*'s board chair was born in year *k*.

We also add a set of control variables denoted by *X* in Equation (1), all of which are measured in year *t-1*. These control variables are: *firm size*, measured as the natural logarithm of market capitalization; *Tobin's Q*, calculated as the ratio of total market valuation of equities to total book valuation of equities; *ROA*, the ratio of net income on total assets; *largest ownership*, the percentage ownership of the largest owner; *Private firm*, a dummy variable which equals one if the firm is ultimately controlled by an individual and zero otherwise. Year and industry dummies are included in all model specifications. Where appropriate, we also include province fixed effects. To control

for additional potential firm-specific effects, we also run regressions in which we add: *operating cash flow*, measured as ratio of cash flow from operations to total assets; *Delta NWC*, the change in net working capital over total assets; *board independence*, the ratio of independent directors over the board size; *institutional ownership*, the percentage ownership of the institutional investors such as mutual funds; *analyst following*, the natural logarithm of the number of analysts who cover the firm.

Finally, to control for individual characteristics of the board chair, we also take the following personal characteristics into account: *chair age*, the age of the board chair; *gender*, the gender of the board chair; *education*, an indicator for the board chair's educational attainment, where 1 = equal to or less than senior middle school; 2 = junior college degree; 3. Bachelor's degree; 4 = master's degree; 5 = doctoral degree; *tenure*, the number of years that the board chair has been in his or her position. All control variables are calculated for the end of each year. Detailed definitions of all variables in the empirical analysis can be found in Appendix 1.

3.3 Firm sample

Table 2 presents the firm sample. All listed A-share firms except for financial firms are included throughout the sample period.[11] As discussed above, to confirm the causal effect of the Great Chinese Famine on managerial decisions, we need to identify board chairs' place of birth for all firms. We accomplished this in most cases, but had

[11] Firms in the finance industry are excluded due to the specific regulations they follow.

to drop a small share of the firms in the final sample due to missing data. As Panel A shows, the average age of the board chair in the final sample is 51.1 years. An overwhelmingly share of the board chairs are male and the average educational attainment is between a bachelor's and master's degree. The original and final samples differ in terms of firm size, firm age, Tobin's Q, profitability, and financial leverage. Not surprisingly, it is easier to find more detailed information on the board chair for older and larger firms with better profitability. The ratio of smaller and more poorly performing firms to all sample firms is therefore reduced somewhat in the final sample. As can be seen in Panel A of Table 2, the final sample is comprised of 19,640 firm observations. This constitutes 78.4% of the initial sample and 84.3% of the total market capitalization in China. We can thus conclude that the final sample provides a sufficient representation of all listed firms in China.

Panel B in Table 2 provides information on the sample distribution for each year. Column 1 provides the total number of listed A-share firms. Column 2 displays the number of firms in the final sample, and Column 3 shows the share of the final sample firms to all listed firms in each year. The number of listed firms was on a steady increase throughout the sample, increasing from a mere 1,060 in 2000 to 2,594 in 2014. Column 3 shows that the our sample's share of all listed A-share firms is relatively stable throughout the sample period.

Finally, Panel C in Table 2 provides information on the distribution of firms across industries using China Securities Regulatory Commission's (CSRC) standard industry

classification. A large share of the final sample is made up by firms in the manufacturing sector. In manufacturing, all industries are represented, but most them are active within petrochemicals or machinery. All industries are represented in the sample, albeit some of them have relatively few firms.

[TABLE 2 HERE]

3.4 Key Dependent and Firm Variables

Table 3 presents summary statistics for all key dependent variables. They can be separated into corporate financing policies, investment decisions, cash holding policies, and ethical behavior. To analyze corporate financing policies, we focus on the two traditional variables: *financial leverage*, the ratio of the sum of long-term and short-term debt to total assets, and *long-debt leverage*, the ratio of long-term debt to total assets. For investment decisions, we look at: *investments*, defined as the ratio of total investment over the total assets; *R&D*, the ratio of total R&D expenditures to total sales; *M&A*, the ratio of the total value of M&A transactions over firm's market capitalization. A new regulation requires Chinese firms to disclose their R&D expenditures from 2007 and onwards. Our sample size therefore shrinks quite considerably when we analyze effects on R&D investment decisions. For corporate cash holding policy, we focus on: *cash holdings*, the ratio of the sum of cash and cash equivalent to total assets. For ethical behavior, we analyze: *corporate fraud*, a dummy variable which equals one if a firm is

investigated for corporate fraud and zero otherwise; *earnings management*, a proxy based on a modified version of the Jones (1991) model (Dechow et al., 1995), which estimates discretionary accruals[12] from cross-sectional regressions of total accruals on changes in sales and on property, plant, and equipment (PPE) within industries for each year (for more details, see Appendix 2). Table 3 also displays firm and board chair variables that are included in all regression specifications. The variables are defined in Section 3.2. For brevity, we do not discuss them further here.

[TABLE 3 HERE]

3.5 Board Chair Summary Statistics

Table 4 displays summary statistics for the board chairs in the sample. Panel A divides the whole sample into cohorts based on board chair's date of birth. The number of cohorts is six, five of which include board chairs who experienced the Great Chinese Famine at a certain stage of their life.[13] The first cohort is made up of individuals who were 19 years or older at the time when the famine was at its worst, i.e. in 1960. The

[12] Discretionary accruals are relatively easy to manipulate.

[13] There are alternative ways of dividing the sample into groups based on age. For example, each cohort could correspond to a year before and during the Great Chinese Famine. When we use alternative cohort sizes, our main results remain qualitatively unchanged. For brevity, only results using six cohorts are presented.

next two cohorts are comprised of individuals who were 6-12 and 13-18 years old, respectively, at the time of the famine. The following two include individuals who were 0-2 or 3-5 years old at the time. The final cohort is made up by individuals who were born after the famine.

Panel B in Table 4 provides information on board chairs' place of birth. We divide the board chair sample based on the province in which they were born. All provinces in China except Tibet are represented in the sample. However, most of the board chairs were born in coastal provinces, and the Yangzi River Delta is especially well represented in the sample with 2,283 board chair observations are from Zhejiang, 2,021 from Jiangsu, and 1,061 from Shanghai. Other coastal provinces with a large number board chair observations are Guangdong (1,778), and Shandong (1,585). This is not unexpected as it is commonly argued that people in these areas trace their entrepreneurial skills back to as early as the late Qing dynasty period. Sichuan is the inner province with most observations in the sample (1,148).[14]

[TABLE 4 HERE]

[14] Chongqing was part of Sichuan province during the Greater Chinese Famine. It became a province-level municipality in 1997.

4 Early-Life Experiences and Managerial Decisions

4.1 Effects of Experiencing the Great Chinese Famine on Managerial Decisions

We begin the empirical analysis by running panel regressions in which we focus on the relationship between having lived through the Great Chinese Famine and the corporate outcomes described in Section 3.4. Table 5 displays the regression results for each of the managerial decisions using different model specifications. For simplification, we leave out explanatory models that are not the focus of our analysis in the table. All models are estimated using OLS, except for Column 7, in which we estimate corporate fraud using a logistic regression. *T*-statistics (Wald Chi-Square statistics in column 7) are provided in parentheses and computed using heteroskedasticity-robust standard errors clustered by firm and year (Petersen, 2009; Thompson, 2011).

As noted by Benmelech and Frydman (2015), an important concern when estimating this type of relationships is that correlation between personal experiences and firm outcomes may be driven by omitted personal characteristics. They also note that age may be of particular importance. In an earlier study by Bertrand and Schoar (2003), the authors also argue that managerial styles are closely associated to age. To separate the effect of having experienced the famine from a pure age effect, we therefore include board chair age as a control variable in each of the regressions. The results of these regressions are presented in Panel A of Table 5. To further control for other personal characteristics that may drive the results, we also include other personal

characteristics (gender, education, and tenure) in Panel B. Following previous studies on the dependent variables, we also include additional control variables where needed (operating cash flow, delta NWC, institutional ownership, analyst following).

We begin by relating experience of having lived through the Great Chinese Famine to different forms of corporate policies. Columns 1 and 2 of Table 5 provide information on the relationship between experience of the Great Chinese Famine and financial and long-term debt leverage. Firms controlled by board chairs who were infants or over 19 years old at the time of the famine do not exhibit a significant relationship between experience of the famine and leverage or cash holdings. However, firms managed by board chairs who were between 6 and 18 years old at the time of the famine exhibit a significant and negative relationship between experience of the famine and financial leverage as well as long-term debt leverage. These findings corroborate our hypothesis that board chairs who experienced the Great Chinese Famine during their younger years tend to make more conservative financing policy decisions. Columns 3 to 5 display information on the relationship between experience of the Great Chinese Famine and investment policies. Similar to financial policies, firms managed by board chairs who were infants or above 19 years old at the time of the famine exhibit a non-significant relationship between experience of the Great Chinese Famine and the three different investment policies: investment, R&D, and M&A. The only exception is a modestly significant relationship between experience of the Great Chinese Famine and R&D expenditures for firms managed by board chairs who were between 3-5 years

old at the time of the famine. On the other hand, for firms managed by board chairs who experienced the famine during their younger years, we find a significant and negative correlation between experience of the famine and investment policies. Board chairs who lived through the famine during their younger years are thus less likely to carry out general investments, investments in R&D, or M&A deals.

Column 6 of Table 5 presents the estimation for cash holding policy. The results suggest that firms managed by board chairs who were between 6 and 18 years old at the time of the famine exhibit more cash holdings, which signifies a conservative corporate policy. In addition, we also find the coefficient of $Famine^{>19}$ is significantly related with cash holdings at 5 percentage level, indicating that firms managed by board chairs who were older than 19 years when they experienced the famine also prefer more cash holdings.

Moving on to ethical behavior, Columns 7 and 8 of Table 5 provide the results for regressions with proxies for corporate fraud and earnings management as dependent variables. We find that firms managed by board chairs who experienced the Great Chinese Famine are less likely to engage in fraudulent activities or earnings management. Once again, this relationship is only significant for firms managed by board chairs who experienced the Great Chinese Famine while they were between 6 and eighteen years old. Having lived through a devastating experience such as a severe famine during one's younger years thus seem to affect individuals' value systems. Our results suggest that such an experience promotes integrity and ethical behavior, a

finding that resembles what Benmelech and Frydman (2015) find for business leaders with military experience in the U.S.

To sum up, we find significant correlations between experience of the Great Chinese Famine during one's younger years and all corporate policy variables. Firms' financing, investment, cash holdings and ethical decisions are all associated with board chairs' experience of the famine. Since the Great Chinese Famine happened several decades ago, the concerns for reverse causality should be limited. However, potentially omitted variables is still a valid concern. For example, firms characterized by an overall more conservative corporate culture may hire board chairs who experienced the Great Chinese Famine and then carry out conservative policies. While this is a valid concern, the unique Chinese setting once more helps us alleviate it. Overall, the Chinese managerial labor market is still undeveloped. Listed firms on the Chinese stock market are dominated by state-controlled and family firms. For state-controlled firms, it is typically the government that appoint the board chair, who is most often a quasi-government official (Fan et al., 2007). The selection of a new board chair is primarily out of political rather than economic considerations. For family firms, the founding entrepreneur or his or her descendant typically act as board chair (Cao et al., 2015). The control rights are often in the hand of the founders or his or her descendants (Fan et al., 2012). A direct implication of this is that board chairs in family firms seldom are recruited from the external labor market.

[TABLE 5 HERE]

4.2 Local Severity of the Famine

The main idea behind the analysis in the previous section is that board chairs who were born after the Great Chinese Famine were not be affected by it, while those experiencing the famine at the age of 6-18 were. While the results and the reasoning behind them are plausible, the effects of the Great Chinese Famine experience may be confounded with other cohort factors. In other words, the observed difference across birth cohorts may reflect general cohort effects that do not relate to exposure to the famine. To reduce these concerns, we controlled for board chair age in the previous section. While controlling for age may alleviate some of these concerns, it is not enough to conclude that we have found a causal effect of the traumatic early-life experience of the Chinese Great Famine on managerial decisions. However, if we can control the same set of cohorts with provinces which are characterized by variation in exposure to the famine, we believe it would be reasonable to attribute the observed effects on managerial decisions to board chairs who experienced the famine.

Table 1 depicts the severity of the Great Chinese Famine using death rates across provinces. As mentioned earlier, while the famine struck the whole country, its severity varied quite significantly across provinces. This provides us with a rare opportunity to establish a causal relationship between early life experience and managerial decision in later years. To do this, we rely on Difference-in-difference (DID) estimations.

To analyze how the severity of the famine affect the long-term relationship between personal experience of the Great Chinese Famine and managerial decisions later in life, we introduce the estimated death rate, the proxy for severity of the famine we defined in Section 2, as well as interaction variables of the estimated death rate and the cohort dummies instead of the regular cohort dummies in the previous regressions. This will help confirm the casual effect of having experienced the Great Chinese Famine on managerial decisions by exploiting the exogenous variation resulting from combining the regional disparity in famine severity and age cohorts.

Table 6 presents the results. Note that the dummy variables for birth cohorts are included in the regressions, but are not reported for the sake of brevity. We instead focus on the coefficients of interaction terms between excess death rate and birth cohorts, which measure the estimated effects of having experienced the Great Chinese Famine on managerial decision. As the table shows, the excess death rate variable on its own is not significant. However, the interaction variable for the excess death rate and the cohorts for board chairs being between 6-12 and 13-18 years old during the famine are significant for all managerial decision variables. The interaction variables for the excess death rate and the remaining cohorts are all insignificant. The only exception is the interaction variable that includes board chairs who were 19 years or older during the famine, which is significant in the regressions for investment and cash holdings. All coefficients for the interaction between the excess death rate and the cohorts with board chairs who live through the famine during their younger years have

the expected signs. These results confirm that a devastating early-life experience such as a severe famine causes more conservative financial and investment, and cash holding policies and a lower likelihood of unethical practice. Looking at the results, this is especially true for board chairs who were 6-12 years old during the Great Chinese Famine period.

[TABLE 6 HERE]

5 Robustness Checks

5.1 Controlling for Potential Bias in the Difference-in-Difference Estimator

In the previous sections, we use a DID strategy to identify the causal effects of the great famine experience on managerial decisions. For the DID estimator to remain free from bias, changes in the excess death rate should not be systematically related to other omitted factors that also affect managerial decisions.

To control for this, we use an approach similar to that of Chen and Zhou (2007). The experience hypothesis put forward in this paper states that individuals who experienced the Great Chinese Famine during their younger years are more prone to make more conservative financial, investment and cash holding decisions and less prone to engage in unethical behavior. To analyze if omitted factors are causing a spurious correlation between personal experience and managerial decisions, we use a sub-sample of board chairs who were born after the Great Chinese Famine. Since none

of these chairs were ever directly exposed to the famine, we expect that the famine will not produce systematic and consistent effects on managerial decisions.

As discussed above, substantial variation across regions in excess death rate during the great famine period is critical for causality reference. If it is related with omitted variables that may affect managerial decisions, it will have a systematic effect on managerial decisions. Here, we focus on the period surrounding another key event, namely that of the beginning of the economic reforms in 1978. We create five new cohorts for board chairs based on the years they were born: 1962-1965 (13-16 years old at the time of the reforms), 1966-1972 (6-12 years old), 1973-1975 (3-5 years old), 1976-1978 (0-2 years old), and born after 1978. We then run new baseline regressions including these cohorts.

The results in Table 9 show that the strong relationship between personal experience and the estimated death rate is no longer significant in most cases. In the few cases of modest significance, the coefficient has the wrong sign. No clear pattern is thus discernable. These findings lend strong support to the argument that our DID estimator in Table 6 captures what we intend for it to do, rather than being driven by omitted variables.

[TABLE 7 HERE]

5.2 Controlling for Potential Bias Due to Local Variation - Urban Versus Rural Locality

It could be argued that the Great Chinese Famine primarily took place in rural areas and that this in turn may affect our findings. However, if this argument holds, the bias would actually work against our findings. If board chairs born in urban areas are less affected by the Great Chinese Famine, we would not be able to find the effect of having lived through the famine in the previous sections. To further deal with this issue, we attempt to identify whether the board chair was born in a rural or urban area. However, it is challenging to identify whether an individual was born in a rural or urban area. While it is possible to contact each company directly, it is hard to verify the information we would receive. We therefore only use information on place of birth that we obtain from news sources. Having done our utmost to identify rural/urban place of birth, we are only able to do so for 17.65% of the total sample. Due to these data limitations, we are only able to run estimations excluding observations for board chairs born in urban areas. These estimations represent our first attempt to reduce concerns related to urban versus rural areas. In addition, metropolitan areas were less affected by the Great Chinese Famine. Political or economic centers such as Beijing, Shanghai, and Tianjin were likely supplied with more grain to maintain social stability. As a result, people living in these areas were less affected by the famine. We therefore exclude board chairs born in these three municipalities in our second set of regressions.

The results are presented in Table 10. Panel A shows the regressions for the sample in which we drop all board chairs that we have identified as being born in urban areas. The results clearly show that the initial baseline results hold up, with a significant relationship between managerial decisions, the excess death rate, and experience of the famine during one's younger years. The only change is a modest significance for personal experience of the famine and long-term debt leverage for board chairs experiencing the famine when they were 3-5 years old, and investments in the form of M&A deals for board chairs who were older than 18 at the time of the famine. Panel B displays the results for the sample in which we drop all board chairs that we identified as being born in metropolitan areas. Again, the results lend strong support for our initial findings, with a significant relationship between personal experience and managerial decisions for those board chairs who were between 6-18 years old at the time of the famine. Here, the only exception is a modest significance in the relationship between personal experience, the excess death rate and cash holdings for board chairs who were 3-5 years old at the time of the famine. While mostly suggestive due to the data limitations discussed earlier, these findings support the experience hypothesis and the baseline results in Section 4.2.

[TABLE 8 HERE]

5.3 Controlling for Unobserved Firm Characteristics: Board Chair Changes

A final possible concern is that our results may be driven by unobserved firm characteristics that are relatively constant over time but difficult to measure. As discussed above, corporate culture is such a factor. To alleviate some of these concerns, we run new tests on a subset of the sample in which we focus on firms with changes to the position of the board. For this sample, we thus require that the board chair is changed and that the person in question holds the position for at least three years. The number of firms that fulfill these criteria is 648, and we end up with a total of 7,661 observations. We then add a firm-fixed effect to control for the unobserved firm characteristics.

Table 11 reports the results. We once more find that experience of the Great Chinese Famine during one's early years are associated with more conservative financial and investment policies, as well as less likelihood of unethical behavior. To sum up, these findings show that the baseline results are robust to unobserved firm characteristics, thus lending further support to the experience hypothesis.

[TABLE 9 HERE]

6 Effects of Experiencing the Great Chinese Famine on Firm Performance during Economic Downturns

Previous research has shown the relationship between personal experiences and managerial behavior influences firm performance. In this research, it has been

highlighted that certain managerial personal experiences may have an important impact on firm performance during periods of economic distress. For example, Benmelech and Frydman (2015) find that CEOs with a military background tend to handle crisis situations better. In a similar vein, we hypothesize that board chairs who experienced the Great Chinese Famine during their younger years perform better than other board chairs during periods of economic downturns. To test this, we first need to identify economic downturns. To this end, we use two alternative measures. First, we simply gauge macroeconomic conditions by looking at GDP growth. We define a year as a period of economic downturn if GDP growth for that year is below the sample 25th percentile. Second, we use the CEMAC-Goldman Sachs Leading Indicator[15] and define a year as a period of economic downturn if the indicator is below the sample 25th percentile. In Panel A of Table 10, we thus refine our analysis by including an interaction term for economic downturns and experience of the Great Chinese Famine. To analyze the effect on firm performance, we use two alternative performance measures: return on assets (ROA) in Columns 1 and 2, and Tobin's Q in Columns 3 and 4. As before, we include a battery of firm- and board chair-specific variables.

As seen in the table, the interaction between economic downturn and experience of the Great Chinese Famine are associated with better performance. This result holds regardless of which proxy for economic downturn and measure for firm performance

[15] China Economic Monitoring and Analysis Center (CEMAC), and affiliate of the National Bureau of Statistics, and Goldman Sachs together provide the indicator to track real economic activity.

we use. However, and more importantly, the relation is only significant for firms managed by board chairs who experienced the Great Chinese Famine during their younger years (6-18 years old). Board chairs with experience of the Great Chinese Famine during their younger years thus perform better than their peers during times of economic downturns. Board chairs who have been through the famine during their younger years are clearly able to offset the negative effects of a general downturn in the economy. One potential reason for this finding is that these board chairs, having experienced a truly traumatic and stressful event in their early life are better equipped to make decisions necessary to deal with a significant deterioration in the economy. Another potential explanation is that their more conservative approach to financial and investment decisions serves them well during periods of lower economic activity.

In Panel B of Table 7, we show the results for a specification in which we instead use interaction variables for economic downturns, experience of the Great Chinese Famine, and the local excess death rate analyzed in Section 4.2. The coefficient for the interaction variable is once more positive across the sample. However, it is only significant for firms managed by board chairs who experienced the Great Chinese Famine during their younger years. Supporting the findings in Section 4.2, this suggests that not only the experience itself but also the severity of it affect managerial decisions and, subsequently, firm performance during periods of economic downturn.

[TABLE 10 HERE]

7 Further Analysis: Board Chair Power

The previous sections have shown that having lived through the Great Chinese Famine experience has a significant effect on managerial decisions by business leaders. However, the presence of this effect does not tell us anything about specific characteristics of firms that leads to chairs being able imprint the early life experience more significantly. To shed light on this, we focus on board chair power. We hypothesize that when the board chair wields more power over the firm, his or her early life experiences will have a stronger effect on managerial decisions. It should be noted that the concept of power has different dimensions to it, not all of which are easily observed and measured (e.g., Finkelstein, 1992). Here, we stay close to a big strand of literature on managerial power, which typically focuses on CEO-Chair duality or founder status.

Previous research has argued that when a board chair also takes the position of CEO, he or she may end up with more influence over the firm. Along these lines, agency theory suggests that splitting up the two enables better monitoring and control (e.g., Fama and Jensen, 1983; Rechner and Dalton, 1991). On the other hand, the stewardship theory suggests that Chair-CEO duality facilitates a clearer leadership and command

(e.g., Donaldson and Davis, 1991).[16] Our first proxy for board chair power is therefore duality, a dummy variable which equals one when the board chair and CEO is the same person, and zero otherwise. As a second proxy for power wielded by the board chair, we focus on family control. As mentioned earlier, the board chair in Chinese family firms is typically the founder or his or her descendant. Previous research has argued that business executives who are also the founders of the firms they manage are more influential (e.g., Donaldson and Lorch, 1983; Finkelstein, 1992; Daily and Johnson, 1997). In Chinese family firms, it is also often the case that it is the founder and thus the board chair who has the largest ownership, further boosting his or her influence over the firm. We can therefore assume that board chairs in Chinese family firms on average are more powerful, irrespective of ownership power, expert power or prestige power. To sum up, this study does not attempt to provide evidence that all forms of board chair power are related with managerial decisions. Instead, due to data availability, we limit our analysis to two distinct possible firm characteristics that may strengthen the influence of board chairs in China: CEO-Chair duality and family ownership. This analysis can also strengthen the argument for causality of early-life experience on managerial decisions. When the board chair wields more power, he or she can more easily exert his or her will on corporate policies, which is consistent with the experience hypothesis.

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[16] Peng et al. (2007) provide empirical evidence in favor of the stewardship theory in the case of Chinese listed companies.

Table 8 provides results for the regressions on corporate policies. To analyze how CEO-chair duality and family control affect the relationships we found in Section 4.2, we create new interaction variables with each of the two firm control variables, the excess death rate, and age cohort. Panel A shows that CEO-chair duality drives the effect of board chairs' experience of the Great Chinese Famine on corporate decisions. Similarly, Panel B shows that family control of a firm drives the effect of board chairs having experienced the famine on corporate decisions. In line with our previous results, the interaction variable for firm control in the form of CEO-chair duality, the excess death rate, and board chair cohort is primarily significant for board chairs that experienced the famine when they were between six and 18 years old. We can therefore conclude that tighter control over the firm by the board chair is associated with even more conservative financial, investment, and cash holding policies and an even lower likelihood of unethical practice. As argued earlier, these findings provide further evidence on the causal inference in the previous sections.

[TABLE 11 HERE]

8 Conclusion

Our results show that experience of the Great Chinese Famine have a significant effect on managerial decisions by board chairs in Chinese firms. Firms managed by board chairs who experienced the famine during their younger years exhibit more

conservative financial, investment and cash holding decisions and are less likely to engage in unethical behavior. To strengthen the causal inference, we investigate the casual effect of having experienced the Great Chinese Famine on managerial decisions by exploiting the exogenous variation in famine severity across provinces and age cohorts. By doing this, we find that the severity of the famine influences the causal effect of having experienced it with managerial decisions. Our results still hold when we control for potential bias due to local variation by identifying rural and urban place of birth and using a subsample characterized by board chair change. We also provide evidence that firms managed by board chairs who were between six and 18 years old when they experienced the Great Chinese Famine perform significantly better than peer firms during economic downturns and that the power of board chairs drives the causal effect of having lived through the famine and managerial decisions later in life.

Our findings are important for the understanding of how early-life experiences affect the decision-making process of business leaders later in life. We show that financial, investment, cash holding, and ethical decisions are all affected by important personal experiences and that this ultimately has a direct effect on firm performance. In addition, our results highlight how the decision-making process among leaders who manage many of the largest and most important companies in China vary based on important personal experiences. Our findings are particularly important as the companies under the leadership of these individuals continue to grow in importance, both domestically and internationally.

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Table 1. Death rates across provinces (unit: 0.1%)

Province	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	EDR
Anhui	16.6	11.8	14.3	9.1	12.3	16.7	68.6	8.1	8.2	7.9	8.6	7.2	7.1	56.7
Beijing	8.6	9.5	7.7	8.2	8.1	9.7	9.1	10.8	8.8	8.1	8.3	6.8	7.2	1.1
Fujian	10.9	8.9	8.4	7.9	7.5	7.9	15.3	11.9	8.3	7.4	8.6	7.3	7.1	7.4
Gansu	11.6	11.9	10.8	11.3	21.1	17.4	41.3	11.5	8.3	10.4	15.6	12.3	11.5	26.9
Guangdong	11.2	10.6	11.1	8.4	9.2	11.1	15.2	10.8	9.4	7.6	8.3	6.8	6.4	5.6
Guangxi	15.2	14.6	12.5	12.4	11.7	17.5	29.5	19.5	10.3	10.1	10.6	9.0	7.5	17.3
Guizhou	8.8	8.1	7.5	8.8	13.7	16.2	45.4	17.7	10.4	9.4	10.5	8.4	9.2	35.4
Hebei	12.1	11.6	11.3	11.3	10.9	12.3	15.8	13.6	9.1	11.2	10.9	8.7	8.7	4.6
Heilongjiang	11.1	11.3	10.1	10.5	9.2	12.8	10.6	11.1	8.6	8.6	11.5	8.0	7.4	0.7
Henan	13.3	11.8	14.0	11.8	12.7	14.1	39.6	10.2	8.0	9.4	10.6	8.5	8.2	26.8
Hubei	15.9	11.6	10.8	9.6	9.6	14.5	21.2	9.1	8.8	9.8	10.9	10.0	9.7	11.2
Hunan	17.5	16.4	11.5	10.4	11.7	13.0	29.4	17.5	10.2	10.3	12.9	11.2	10.2	18.2
Jiangsu	12.2	11.8	13.0	10.3	9.4	14.6	18.4	13.4	10.4	9.0	10.1	9.5	8.1	7.5
Jiangxi	14.2	16.2	12.5	11.5	11.3	13.0	16.1	11.5	11	9.8	10.9	9.4	8.5	4.3
Jilin	10.4	9.9	7.5	9.1	9.1	13.4	10.1	12	10	9.4	12.6	9.7	8.6	1.5
Liaoning	8.6	9.4	6.6	9.4	6.6	11.8	11.5	17.5	8.5	7.9	9.3	7.1	6.2	4.0
Inner Mongolia	20.9	11.4	7.9	10.5	7.9	11.0	9.4	8.8	9.0	8.5	11.8	9.3	8.1	0.6
Ningxia	13.1	10.2	10.6	11.1	15.0	15.8	13.9	10.7	8.5	10.2	13.4	9.3	9.4	1.7
Qinghai	13.3	14.1	9.4	10.4	13.0	16.6	40.7	11.7	5.4	8.4	15.5	9.1	9.8	29.8
Shaanxi	11.0	10.5	9.9	10.3	11.0	12.7	12.3	8.8	9.4	10.6	15.6	13.0	12.9	1.9
Shandong	11.7	13.7	12.1	12.1	12.8	18.2	23.6	18.4	12.4	11.8	12	10.2	9.9	11.3
Shanghai	7.1	8.1	6.8	6.0	5.9	6.9	6.8	7.7	7.3	7.0	6.1	5.7	5.3	0.6
Shanxi	14.7	12.9	11.6	12.7	11.7	12.8	14.2	12.2	11.3	11.4	14.0	10.4	10.3	2.2
Sichuan	8.4	9.2	10.4	12.1	25.2	47.0	54.0	29.4	14.6	12.8	13.9	11.5	10.8	38.1
Tianjin	9.3	9.9	8.8	9.4	8.7	9.9	10.3	9.9	7.4	7.3	7.8	6.2	6.9	1.3
Xinjiang	16.8	14.4	14.2	14.0	13.0	18.8	15.7	11.7	9.7	9.4	16.3	11.1	9.4	2.0
Yunnan	16.7	13.7	15.2	16.3	21.6	18	26.3	11.8	10.9	14.1	15.2	13.0	10.8	8.6
Zhejiang	13.4	12.6	9.5	9.3	9.2	10.8	11.9	9.8	8.6	7.9	9.2	8.1	7.1	2.6
Nation	13.2	12.3	11.4	10.8	12.0	14.6	25.4	14.2	10.0	10.0	11.5	9.5	8.8	14.0

Source: National Bureau of Statics. Reprinted in Lin and Yang (2000).

Table 2. Sample overview

Panel A. Sample and variable overview

This sample presents an overview of the initial and final samples. The sample period is 2000-2014. Column 1 reports information on the initial sample for which we could obtain information on firm and most chair characteristics. Column 2 reports information on the final sample, which is obtained after deleting firms without information about the birth place of the board chair. Column 3 reports a simple test for differences between the two sample group variables. Variables are defined in Appendix 1. All continuous variables are winsorized at the top and bottom 1%. *** ,** and * denote significance for the difference between column 2 and 3 at 1%, 5%, and 10% respectively.

	Initial sample	The sample with place of birth	Difference (*T*-test)
Firm size	21.900	21.950	5.18***
Firm age	2.238	2.322	2.97***
Tobin's Q	3.635	3.492	4.57***
ROA	0.028	0.033	9.12***
Financial Leverage	0.194	0.190	2.74***
Chair Age	50.555	51.130	5.20***
Gender	0.955	0.959	1.29
Education	3.584	3.597	1.41
Observations	25054	19640	
Sample percentage		78.391%	

Table 2. Sample overview

Panel B: Sample distribution by year

This panel presents the sample distribution by year. The sample period is 2000-2014.

Year	Number of all listed A-share firms	The Sample	
		Number	As percentage of all listed A-share firms (%)
2000	1060	731	68.962%
2001	1136	826	72.711%
2002	1200	907	75.583%
2003	1263	992	78.543%
2004	1353	1046	77.310%
2005	1358	1067	78.571%
2006	1411	1091	77.321%
2007	1527	1183	77.472%
2008	1602	1239	77.341%
2009	1696	1325	78.125%
2010	2041	1613	79.030%
2011	2320	1828	78.793%
2012	2473	1924	77.800%
2013	2468	1923	77.917%
2014	2594	1945	74.981%

Table 2. Sample overview

Panel C: Sample distribution by industry

This panel presents the sample distribution by industry using China Security Regulatory Commission (CSRC) standard industry classification. The sample period is 2000-2014.

CSRC Industry Classification	The Sample	
	Number	Percentage
Agriculture, Forestry, farming & fishery	434	2.210%
Mining	385	1.960%
Manufacturing		
Food & Beverage	848	4.318%
Textiles & Apparel	884	4.501%
Timber & Furnishings	81	0.412%
Paper & Printing	444	2.261%
Petrochemicals	2235	11.380%
Electronics	960	4.888%
Metals & Non-metals	1811	9.221%
Machinery	3579	18.223%
Pharmaceuticals	1307	6.655%
Other manufacturing	283	1.441%
Utilities	695	3.539%
Construction	371	1.889%
Transportation	728	3.707%
Information Technology	1359	6.920%
Whole sale & Retail Trade	1034	5.265%
Real estate	587	2.989%
Social Services	627	3.192%
Communication & Culture	167	0.850%
Conglomerate	821	4.180%

Table 3. Summary statistics

This table presents the summary statistics for the firm variables used in the study. Variable definitions are found Appendix 1. All continuous variables are winsorized at the top and bottom 1%.

	Mean	Median	STD	Min	Max
Financial Leverage	0.190	0.173	0.154	0.000	0.642
Long-debt Leverage	0.053	0.028	0.084	0.000	0.394
Investment	0.071	0.047	0.079	0.002	0.420
R&D	0.005	0.000	0.019	0.000	0.226
M&A	0.049	0.003	0.118	0.000	0.796
Cash Holding	0.175	0.133	0.144	0.004	0.698
Corporate Fraud	0.152	0.000	0.359	0.000	1.000
Earnings Management	0.081	0.063	0.106	0.001	1.254
Firm size	21.950	21.836	1.014	19.944	25.040
Tobin's Q	3.492	2.646	2.927	0.896	18.639
ROA	0.033	0.035	0.059	-0.058	0.190
Largest Ownership	0.372	0.351	0.161	0.144	0.656
Private firm	0.458	0.000	0.498	0.000	1.000
Chair Age	51.130	51.000	7.191	34.000	69.000
Gender	0.959	1.000	0.196	0.000	1.000
Education	3.597	4.000	0.804	1.000	5.000
Duality	0.186	0.000	0.389	0.000	1.000
Tenure	3.591	4.000	3.757	0.000	14.000
Board independent	0.332	0.333	0.107	0.000	0.800

Table 4. Information on board chairs

This table reports information on board chairs. Panel A presents the frequency of the six birth cohorts. Panel B presents number of board chairs by place of birth.

Panel A. The frequency of birth cohort in the sample

		The Sample	
Birth Cohort	Dummy	Frequency	Percentage
<=1941	$Famine^{>19}$	511	2.602%
1942---1947	$Famine^{13\text{-}18}$	1690	8.605%
1948---1954	$Famine^{6\text{-}12}$	4391	22.357%
1955---1957	$Famine^{3\text{-}5}$	2955	15.046%
1958---1961	$Famine^{0\text{-}2}$	2626	13.371%
1962<=	*Others*	7467	38.019%

Panel B. Chair by place of birth

Province	Chairs	Province	Chairs
Anhui	929	Jiangxi	440
Beijing	529	Jilin	342
Fujian	765	Liaoning	805
Gansu	228	Ningxia	76
Guangdong	1778	Qinghai	58
Guangxi	259	Shaanxi	503
Guizhou	179	Shandong	1585
Hebei	591	Shanghai	1061
Heilongjiang	388	Shanxi	452
Henan	718	Sichuan	1148
Hubei	961	Tianjin	224
Hunan	688	Xinjiang	166
Inner Mongolia	202	Yunnan	261
Jiangsu	2021	Zhejiang	2283

Table 5. Experience of the Great Chinese Famine and corporate policies

This table examine the effect of having experienced the Great Chinese Famine on corporate policies. A pooled OLS estimation is used in Columns (1)-(6) and (8), while a logistic estimation is used in Column (7). Variable definitions are provided in Appendix 1. All regression specifications include controls for *Firm size, Tobin's Q, ROA, Largest ownership, Private firm,* province, year and industry dummies. Columns (3)-(5) also include control for *Operating cash flow*, Column (6) also include control for *Delta NWC*, Column (7) also include a control for *board independence*, Column (8) also include controls for *institutional ownership* and *analyst following*. Panel A includes *Chair age* to control for the general cohort. Panel B also includes other personal characteristics including *Gender, Education* and *Tenure.* All continuous variables are winsorized at the top and bottom 1%. *T*-statistics (Wald Chi-Square statistics in column 7) are provided in parentheses and computed using heteroskedasticity-robust standard errors clustered by firm and year (Petersen, 2009; Thompson, 2011). ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

	Financial Leverage	Long-debt Leverage	Investment	R&D	M&A	Cash Holdings	Corporate Fraud	Earnings Management
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A. Controlling for *Chair age*								
$Famine^{0-2}$	-0.008	0.001	-0.002	-0.001	-0.002	0.003	-0.100	-0.000
	(-0.85)	(0.13)	(-0.51)	(-0.89)	(-0.83)	(0.78)	(1.31)	(-0.16)
$Famine^{3-5}$	-0.029	-0.008	0.004	-0.001*	0.006	0.002	-0.104	0.002
	(-0.64)	(-1.35)	(0.82)	(-1.72)	(0.25)	(0.62)	(1.23)	(0.86)
$Famine^{6-12}$	-0.027***	-0.006*	-0.011	-0.001***	-0.008***	0.002***	-0.106*	-0.008**
	(-6.92)	(-1.86)	(-1.54)	(-5.04)	(-4.84)	(7.38)	(3.45)	(-2.56)
$Famine^{13-18}$	-0.035***	-0.011***	-0.020***	-0.002**	-0.012***	0.004***	-0.081***	-0.006**
	(-9.48)	(-5.08)	(-8.72)	(-2.13)	(-6.04)	(5.07)	(8.64)	(-2.18)
$Famine^{>19}$	-0.016	0.002	-0.012*	-0.006	-0.004	0.003**	-0.043	-0.010
	(-1.24)	(0.43)	(-1.87)	(-0.54)	(-0.75)	(2.55)	(1.37)	(-1.54)
Obs.	19640	19640	19640	16721	19640	19640	19640	19640

Adjusted R^2	0.228	0.169	0.092	0.085	0.073	0.188	0.195	0.113
Panel B. Controlling for *chair age* controls other personal characteristics								
Famine$^{0-2}$	-0.001	0.000	-0.002	-0.001	-0.002	0.003	-0.102	-0.000
	(-0.27)	(0.20)	(-1.28)	(-0.34)	(-0.76)	(0.89)	(1.41)	(-0.12)
Famine$^{3-5}$	-0.030	-0.010	-0.004	-0.001*	0.006	0.002	-0.100	0.002
	(-0.48)	(-0.59)	(-0.91)	(-1.92)	(0.18)	(0.67)	(0.68)	(0.84)
Famine$^{6-12}$	-0.029***	-0.007***	-0.010	-0.001***	-0.008***	0.003***	-0.079*	-0.009**
	(-6.59)	(-2.62)	(-1.53)	(-3.27)	(-3.28)	(7.62)	(3.08)	(-2.57)
Famine$^{13-18}$	-0.043***	-0.015***	-0.011***	-0.002***	-0.010***	0.005***	-0.057***	-0.006**
	(-4.90)	(-6.07)	(-5.71)	(-5.71)	(-6.56)	(5.87)	(7.75)	(-2.14)
Famine$^{>19}$	-0.015	0.003	-0.012*	-0.005	-0.009	0.002**	-0.034	-0.010
	(-1.02)	(0.41)	(-1.88)	(-0.84)	(-1.35)	(2.23)	(1.13)	(-1.53)
Obs.	19640	19640	19640	16721	19640	19640	19640	19640
Adjusted R^2	0.231	0.171	0.093	0.094	0.073	0.189	0.198	0.114

Table 6. Experience of the Great Chinese Famine and corporate policies: Influence of local famine severity

This table presents the effect of having experienced the Great Chinese Famine and famine severity on corporate policies. A pooled OLS estimation is used in columns (1)-(6) and (8), while a logistic estimation is used in column (7). Variable definitions are provided in Appendix 1. All regression specifications include controls for *Firm size, Tobin's Q, ROA, Largest ownership, Private firm,* year and industry dummies. *Chair age* is included to control for general cohort effect. In addition, other personal characteristics such as *Gender, Education* and *Tenure* are also included in all specifications. $Famine^{0\text{-}2}$, $Famine^{3\text{-}5}$, $Famine^{6\text{-}12}$, $Famine^{13\text{-}18}$, $Famine^{>19}$ are all included but not reported for brevity. Columns (3)-(5) include a control for *Operating cash flow*, Column (6) includes a control for *Delta NWC*, Column (7) includes a control for *board independence*, and Column (8) include controls for *institutional ownership* and *analyst following*. All continuous variables are winsorized at the top and bottom 1%. *T*-statistics (Wald Chi-Square statistics in Column 7) are provided in parentheses and computed using heteroskedasticity-robust standard errors clustered by firm and year (Petersen, 2009; Thompson, 2011). ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

	Financial Leverage	Long- debt Leverage	Investment	R&D	M&A	Cash Holdings	Corporate Fraud	Earnings Management
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Excess Death	-0.110	-0.007	-0.072	-0.007	0.004	0.398	-0.507	0.058
Rate (EDR)	(-1.26)	(-0.54)	(-1.22)	(-0.45)	(0.89)	(0.90)	(1.27)	(0.35)
$EDR*Famine^{0\text{-}2}$	-0.030	-0.016	0.005	-0.011	-0.003	0.062	-0.517	-0.020
	(-1.28)	(-1.28)	(0.70)	(-1.25)	(-1.08)	(0.74)	(1.36)	(-0.12)
$EDR*Famine^{3\text{-}5}$	0.068	-0.023	-0.012	-0.016*	-0.018	0.047	-0.803	-0.051
	(0.73)	(-0.92)	(-0.27)	(-1.78)	(-0.34)	(0.23)	(1.81)	(-0.32)
$EDR*Famine^{6\text{-}12}$	-0.116**	-0.030*	-0.037**	-0.023*	-0.082**	0.129***	-1.173*	-0.143**
	(-2.20)	(-1.74)	(-2.45)	(-1.74)	(-2.32)	(2.75)	(3.49)	(-2.05)
$EDR*Famine^{13\text{-}18}$	-0.187***	-0.048***	-0.062***	-0.026**	-0.036***	0.158***	-1.009**	-0.138*
	(-3.64)	(-3.90)	(-3.05)	(-2.48)	(-4.27)	(3.78)	(4.67)	(-1.71)
$EDR*Famine^{>19}$	-0.131	0.082	-0.118*	-0.019	0.024	0.141***	-1.467	-0.078
	(-0.70)	(0.29)	(-1.71)	(-1.20)	(0.83)	(3.03)	(1.26)	(-1.23)
Obs.	19640	19640	19640	16721	19640	19640	19640	19640

Adjusted R^2	0.233	0.189	0.095	0.097	0.075	0.191	0.207	0.117

Table 7. Testing the assumption behind the difference-in-differences estimation

This table test the assumption behind the difference-in-differences estimation. For the DID estimator to remain free from bias, changes in the excess death rate should not be systematically related to other omitted factors that also affect corporate policies. A sub-sample of board chairs who were born after the Great Chinese Famine is used in this table. The beginning of the economic reforms in 1978 is used as another key event. We create five new cohorts for board chairs based on the years they were born: 1962-1965 (*Reform* $^{13\text{-}16}$,13-16 years old at the time of the reforms), 1966-1972 (*Reform* $^{6\text{-}12}$, 6-12 years old), 1973-1975 (*Reform* $^{3\text{-}5}$, 3-5 years old), 1976-1978 (*Reform* $^{0\text{-}2}$,0-2 years old), and born after 1978. A pooled OLS estimation is used in Columns (1)-(6) and (8), while a logistic estimation is used in Column (7). Definitions of the remaining variables are provided in Appendix 1. All regression specifications include controls for *Firm size, Tobin's Q, ROA, Largest ownership, Private firm,* year and industry dummies. *Chair age* is included to control for the general cohort effect. In addition, other personal characteristics such as *Gender, Education* and *Tenure* are also included in all specifications. In addition, Columns (3)-(5) include a control for *Operating cash flow*, Column (6) includes a control for *Delta NWC*, Column (7) includes a control for *board independence*, and Column (8) include controls for *institutional ownership* and *analyst following*. All continuous variables are winsorized at the top and bottom 1%. *T*-statistics (Wald Chi-Square statistics in column 7) are provided in parentheses and computed using heteroskedasticity-robust standard errors clustered by firm and year (Petersen, 2009; Thompson, 2011). ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

	Financial Leverage	Long- debt Leverage	Investment	R&D	M&A	Cash Holdings	Corporate Fraud	Earnings Management
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Excess Death Rate (EDR)	0.308	1.914	-1.149	-0.058	-2.142*	3.913	9.180	0.019
	(0.67)	(0.71)	(-1.49)	(-0.30)	(-1.82)	(0.88)	(1.26)	(0.54)
EDR Reform* $^{0\text{-}2}$	0.073	0.739	0.829	0.884*	1.992	-2.615*	-2.740	0.991*
	(0.45)	(0.91)	(1.13)	(1.92)	(1.51)	(-1.72)	(0.69)	(1.78)
*EDR*Reform* $^{3\text{-}5}$	0.864*	0.280	1.103	0.140	2.005	-3.630	-2.124	1.042
	(1.74)	(0.53)	(1.42)	(0.71)	(0.69)	(-0.64)	(1.13)	(0.67)

EDR Reform* $_{6\text{-}12}$	0.949	0.836	1.364*	0.070	1.928	-3.769	-2.366	0.637
	(0.81)	(0.25)	(1.77)	(0.36)	(1.13)	(-0.76)	(1.17)	(0.41)
EDR Reform* $_{13\text{-}16}$	0.816	-0.893	1.266	0.077	2.111	-3.640	-2.671	0.751
	(0.73)	(-0.32)	(0.64)	(0.40)	(0.79)	(0.52)	(1.12)	(0.49)
Obs.	7470	7470	7470	5804	7470	7470	7470	19640
Adjusted R^2	0.182	0.076	0.047	0.016	0.018	0.109	0.108	0.072

Table 8. Robustness check: Testing for variation across rural and urban areas

This table presents the regression results when taking rural and urban location into account. Panel A presents the results when board chairs who were born in rural areas are excluded. Panel B presents the results when board chairs who were born in metropolitan areas such as Beijing, Shanghai and Tianjin are excluded. A pooled OLS estimation is used in Columns (1)-(6) and (8), while a logistic estimation is used in Column (7). Variable definitions are provided in Appendix 1. All regression specifications include controls for *Firm size, Tobin's Q, ROA, Largest ownership, Private firm,* year and industry dummies. *Chair age* is included to control for the general cohort effect. Other personal characteristics such as *Gender, Education* and *Tenure* are also included in all specifications. $Famine^{0\text{-}2}$, $Famine^{3\text{-}5}$, $Famine^{6\text{-}12}$, $Famine^{13\text{-}18}$, $Famine^{>19}$ are all included but not reported for brevity. In addition, Columns (3)-(5) include a control for *Operating cash flow*, Column (6) include a control for *Delta NWC*, Column (7) includes a control for *board independence*, and Column (8) includes controls for *institutional ownership* and *analyst following*. All continuous variables are winsorized at the top and bottom 1%. *T*-statistics (Wald Chi-Square statistics in column 7) are provided in parentheses and computed using heteroskedasticity-robust standard errors clustered by firm and year (Petersen, 2009; Thompson, 2011). ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

	Financial Leverage	Long- debt Leverage	Investment	R&D	M&A	Cash Holdings	Corporate Fraud	Earnings Management
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A. Excluding board chairs who were born in rural areas								
Excess Death	-0.138	-0.004	-0.041	-0.004	0.003	0.024	-0.482	-0.058
Rate (EDR)	(-1.45)	(-0.54)	(-0.94)	(-0.26)	(0.74)	(1.32)	(1.41)	(-0.95)
$EDR*Famine^{0\text{-}2}$	0.041	-0.036	-0.003	-0.006	-0.004	0.075	-0.309	0.020
	(0.46)	(-0.51)	(-0.52)	(-1.12)	(-0.87)	(0.86)	(1.15)	(0.12)
$EDR*Famine^{3\text{-}5}$	-0.072	-0.014*	0.021	-0.010	-0.013	0.053	-0.754	-0.051
	(-1.31)	(-1.73)	(0.58)	(-1.06)	(-0.29)	(0.96)	(1.94)	(-0.32)
$EDR*Famine^{6\text{-}12}$	-0.142***	-0.042****	-0.041***	-0.025***	-0.076**	0.202***	-1.087*	-0.143**
	(-2.94)	(-2.68)	(-8.61)	(-2.89)	(-2.01)	(2.86)	(3.57)	(-2.05)
$EDR*Famine^{13\text{-}18}$	-0.152***	-0.053***	-0.070***	-0.031**	-0.043***	0.134***	-1.375**	-0.138*
	(-5.82)	(-4.06)	(-5.24)	(-5.65)	(-8.76)	(2.95)	(4.86)	(-1.71)

*EDR*Famine$^{>19}$*	-0.113	-0.061	-0.076**	-0.008	-0.032*	0.102	-1.056	-0.078*
	(-0.61)	(-0.87)	(-2.37)	(-0.74)	(-1.79)	(1.27)	(1.54)	(-1.83)
Obs.	16175	16175	16175	12974	16175	16175	16175	16175
Adjusted R^2	0.187	0.085	0.063	0.018	0.016	0.115	0.113	0.072
Panel A. Excluding board chairs who were born in metropolitan areas (Beijing, Shanghai and Tianjin)								
Excess Death	-0.167	-0.005	-0.051	0.012	-0.006	0.314	-0.207	-0.053
Rate (EDR)	(-1.05)	(-0.37)	(-0.96)	(0.75)	(-0.47)	(0.83)	(0.76)	(-0.61)
*EDR*Famine$^{0-2}$*	-0.064	0.021	-0.007	-0.008	-0.005	0.021	-0.425	-0.014
	(-0.98)	(0.75)	(-0.82)	(-1.07)	(-1.21)	(0.62)	(1.06)	(-0.58)
*EDR*Famine$^{3-5}$*	-0.021	-0.017	-0.015	-0.016	-0.011	0.031*	-0.641	-0.026
	(-0.75)	(-1.35)	(-0.42)	(-1.25)	(-0.53)	(1.76)	(1.25)	(-0.75)
*EDR*Famine$^{6-12}$*	-0.125***	-0.042***	-0.041**	-0.031**	-0.074***	0.086***	-1.002*	-0.161*
	(-4.58)	(-3.85)	(-2.25)	(-2.36)	(-3.12)	(4.31)	(3.05)	(-1.74)
*EDR*Famine$^{13-18}$*	-0.126***	-0.054***	-0.053***	-0.021***	-0.031**	0.102***	-1.124***	-0.152***
	(-6.54)	(-7.78)	(-4.16)	(-2.84)	(-2.06)	(2.91)	(8.59)	(-3.89)
*EDR*Famine$^{>19}$*	-0.127	-0.041*	-0.095	0.012	-0.031	0.103**	-1.061	-0.053*
	(-0.46)	(-1.82)	(-1.43)	(1.04)	(-0.62)	(2.25)	(0.93)	(-1.81)
Obs.	16116	16116	16116	12264	16116	16116	16116	16116
Adjusted R^2	0.221	0.179	0.091	0.093	0.071	0.184	0.212	0.108

Table 9. Experience of the Great Chinese Famine, local severity, and corporate policies: Board chair changes

This table presents regression results when considering firm fixed effects. A Board Chair change takes place when the new person holds the position for at least three years. A pooled OLS estimation is used in Columns (1)-(6) and (8), while a logistic estimation is used in Column (7). Variable definitions are provided in Appendix 1. All regression specifications include controls for *Firm size, Tobin's Q, ROA, and Largest ownership*. *Chair age* is included to control for the general cohort effect. Other personal characteristics such as *Gender, Education* and *Tenure* are also included in all specifications. $Famine^{0\text{-}2}$, $Famine^{3\text{-}5}$, $Famine^{6\text{-}12}$, $Famine^{13\text{-}18}$, $Famine^{>19}$ are all included but not reported for brevity. In addition, Columns (3)-(5) include a control for *Operating cash flow*, Column (6) includes a control for *Delta NWC*, Column (7) include a control for *board independence*, and Column (8) includes controls for *institutional ownership* and *analyst following*. All continuous variables are winsorized at the top and bottom 1%. *T*-statistics (Wald Chi-Square statistics in column 7) are provided in parentheses and computed using heteroskedasticity-robust standard errors clustered by firm and year (Petersen, 2009; Thompson, 2011). ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

	Financial Leverage	Long- debt Leverage	Investment	R&D	M&A	Cash Holdings	Corporate Fraud	Earnings Management
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Excess Death	-0.064	-0.128	-0.160	0.017	-0.180	0.179	-3.671	-0.061
Rate (EDR)	(-1.10)	(-1.20)	(-0.73)	(0.83)	(-1.12)	(0.94)	(1.18)	(-0.32)
$EDR*Famine^{0\text{-}2}$	-0.420	0.365	-0.798	-0.036	-0.223	0.021	-1.257	-0.111
	(-1.06)	(0.54)	(-1.46)	(-0.79)	(-0.62)	(0.53)	(1.32)	(-0.26)
$EDR*Famine^{3\text{-}5}$	-0.478	-0.224*	-0.256	-0.024	-0.410	0.030	-3.524	0.214
	(-1.41)	(-1.80)	(-1.38)	(-0.61)	(-1.34)	(0.86)	(0.79)	(0.59)
$EDR*Famine^{6\text{-}12}$	-0.337***	-0.290*	-0.340***	-0.062*	-0.184	0.189***	-1.842***	-0.409**
	(-7.40)	(-1.67)	(-3.87)	(-1.71)	(-0.70)	(6.74)	(9.59)	(-2.31)
$EDR*Famine^{13\text{-}18}$	-0.309***	-0.118***	-0.206**	-0.345***	-0.205**	0.206***	-1.578**	-0.247*
	(-28.31)	(-9.74)	(-2.25)	(-5.66)	(-2.51)	(4.38)	(5.78)	(-1.95)
$EDR*Famine^{>19}$	0.540	-0.704	-0.421	-0.621***	-0.455	0.076	-1.108*	-1.450
	(0.78)	(-1.07)	(-1.17)	(-3.86)	(-0.72)	(0.98)	(3.01)	(-1.48)

Obs.	7661	7661	7661	4572	7661	7661	7661	7661
Adjusted R^2	0.464	0.449	0.331	0.384	0.352	0.384	0.418	0.396

Table 10. Firm performance during economic downturns

This table reports the effect of having experienced the Great Chinese Famine on firm performance during economic downturns. Panel A presents the baseline, while the estimations in Panel B also include the severity of the famine. In column (1) and (2), the dependent variable is *ROA*; In column (3) and (4), the dependent variable is *Tobin's Q.* In column (1) and (3), *Downturn* is defined as an indicator for years in which the GDP growth is below the sample 25th percentile during 2000-2014. In column (2) and (4), *Downturn* is defined as an indicator for years in which CEMAC-Goldman Sachs indicator is below the sample 25th percentile during 2000-2014. Definitions of the other variables can be found in Appendix 1. All specifications control for *Firm size, Financial Leverage, Largest ownership, Private firm, Chair Age, Gender, Education, Tenure,* as well as year and industry dummies. All continuous variables are winsorized at the top and bottom 1%. *T*-statistics are provided in parentheses and computed using heteroskedasticity-robust standard errors clustered by firm and year (Petersen, 2009; Thompson, 2011). ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Panel A. Firm performance during economic downturns

	ROA		*Tobin's Q*	
	(1) GDP Growth	(2) CEMAC-Goldman Sachs indicator	(3) GDP Growth	(4) CEMAC-Goldman Sachs indicator
*Downturn*Famine$^{0\text{-}2}$*	0.003	0.001	0.324	0.355
	(0.71)	(0.42)	(0.75)	(0.38)
*Downturn*Famine$^{3\text{-}5}$*	0.005	0.006	0.554	0.245
	(0.59)	(0.38)	(0.60)	(1.04)
*Downturn*Famine$^{6\text{-}12}$*	0.005***	0.007**	0.361***	0.414***
	(3.67)	(2.25)	(4.55)	(4.64)
*Downturn*Famine$^{13\text{-}18}$*	0.009***	0.008***	0.463*	0.357**
	(6.36)	(2.72)	(1.85)	(1.99)
*Downturn*Famine$^{>19}$*	0.004	0.003	0.705	0.509
	(1.16)	(1.53)	(1.27)	(0.93)
Obs.	19640	19640	19640	19640
Adjusted R^2	0.142	0.142	0.192	0.191

Table 10. Firm performance during economic downturns (Continued)

Panel B. The influence of local famine severity

	ROA		*Tobin's Q*	
	(1) GDPPC Growth	(2) CEMAC-Goldman Sachs indicator	(3) GDPPC Growth	(4) CEMAC-Goldman Sachs indicator
*Downturn*EDR*Famine*$^{0-2}$	0.054	0.063	0.259	0.133
	(1.09)	(0.37)	(1.07)	(0.91)
*Downturn*EDR*Famine*$^{3-5}$	0.069	0.026	0.453	0.394
	(1.22)	(1.29)	(0.97)	(0.64)
*Downturn*EDR*Famine*$^{6-12}$	0.061**	0.062*	0.722*	0.840**
	(2.21)	(1.82)	(1.74)	(2.26)
*Downturn*EDR*Famine*$^{13-18}$	0.016***	0.023**	0.753***	0.428**
	(2.61)	(2.48)	(3.39)	(2.07)
*Downturn*EDR*Famine*$^{>19}$	0.015	0.017*	0.531	0.446
	(0.56)	(1.77)	(1.44)	(1.45)
Obs.	19640	19640	19640	19640
Adjusted R^2	0.143	0.142	0.193	0.191

Table 11. Experience of the Great Chinese Famine, local severity, and corporate policies: Board chair power

This table presents the effect of board chair power. In Panel A, duality is a dummy variable which equals one if the board chair and CEO is the same person, and zero otherwise. In Panel B, family is a dummy variable which equals one when the firm is ultimately controlled by individuals or families, and zero otherwise. A pooled OLS estimation is used in Columns (1)-(6) and (8), while a logistic estimation is used in Column (7). Variable definitions are provided in Appendix 1. All regression specifications include controls for *Firm size, Tobin's Q, ROA, Largest ownership, Private firm,* year and industry dummies. *Chair age* is included to control for the general cohort effect. Other personal characteristics such as *Gender, Education* and *Tenure* are also included in all specifications. $Famine^{0\text{-}2}$, $Famine^{3\text{-}5}$, $Famine^{6\text{-}12}$, $Famine^{13\text{-}18}$, $Famine^{>19}$ are all included but not reported for brevity. In addition, Columns (3)-(5) include a control for *Operating cash flow*, Column (6) include a control for *Delta NWC*, Column (7) include a control for *board independence*, and Column (8) includes controls for *institutional ownership* and *analyst following*. All continuous variables are winsorized at the top and bottom 1%. *T*-statistics (Wald Chi-Square statistics in column 7) are provided in parentheses and computed using heteroskedasticity-robust standard errors clustered by firm and year (Petersen, 2009; Thompson, 2011). ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

	Financial Leverage	Long-debt Leverage	Investment	R&D	M&A	Cash Holdings	Corporate Fraud	Earnings Management
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A. Chair-CEO Duality								
*Duality**	0.132	-0.144	-0.664	-0.030	-0.501	0.002	-1.802	0.622
$EDR*Famine^{0\text{-}2}$	(0.26)	(-0.94)	(-1.22)	(-0.48)	(-1.49)	(0.27)	(0.71)	(0.44)
*Duality**	-0.590	-0.471	0.035	-0.027	-0.514*	-0.035	-1.503	-0.536
$EDR*Famine^{3\text{-}5}$	(-1.46)	(-0.65)	(0.15)	(-0.42)	(-1.89)	(-0.12)	(1.93)	(-1.20)
*Duality**	-0.437***	-0.090**	-0.157***	-0.076***	-0.243*	0.184**	-1.744	-0.372**
$EDR*Famine^{6\text{-}12}$	(-7.32)	(-2.46)	(-3.05)	(-3.22)	(-1.81)	(2.05)	(2.31)	(-2.40)
*Duality**	-0.436**	-0.379***	-0.164*	-0.097***	-0.494***	0.207*	-1.163**	-0.577*
$EDR*Famine^{13\text{-}18}$	(-1.98)	(-6.73)	(-1.77)	(-4.82)	(-4.38)	(1.94)	(6.34)	(-1.72)
*Duality**	-0.812	-0.213**	-0.033	-0.085*	0.115	0.143	-0.936*	-0.366
$EDR*Famine^{>19}$	(-0.63)	(-2.05)	(-1.05)	(1.76)	(0.79)	(0.69)	(3.24)	(-0.96)

Obs.	19640	19640	19640	16721	19640	19640	19640	19640
Adjusted R^2	0.234	0.174	0.196	0.157	0.144	0.182	0.229	0.183
Panel B. Family Firm								
Family *	-0.589	1.033	-0.069	-0.024	-0.482	0.207	-2.319	0.218
*EDR*Famine$^{0-2}$*	(-1.33)	(0.72)	(-1.18)	(-0.43)	(-1.42)	(0.14)	(1.28)	(1.13)
Family *	-0.099*	-0.250	-0.278	0.148	0.858	0.082	-2.959	-0.498
*EDR*Famine$^{3-5}$*	(-1.68)	(-1.35)	(-0.35)	(0.91)	(0.82)	(0.37)	(1.60)	(-0.56)
Family *	-0.355*	-0.146	-0.103***	-0.044***	-0.330*	0.093**	-3.681***	-0.268**
*EDR*Famine$^{6-12}$*	(-1.76)	(-5.17)	(-4.03)	(-2.64)	(-1.81)	(2.41)	(7.96)	(-2.44)
Family *	-0.301***	-0.673***	-0.111**	-0.208***	-0.010***	0.104***	-2.936***	-0.045***
*EDR*Famine$^{13-18}$*	(-4.64)	(-2.96)	(-2.48)	(-4.58)	(-3.05)	(6.72)	(8.66)	(-6.41)
Family *	-0.658	-0.490	-0.308	0.115	-0.504	0.054	-3.070*	0.457
*EDR*Famine$^{>19}$*	(-0.75)	(-0.42)	(-1.31)	(0.85)	(-1.63)	(1.30)	(3.16)	(0.99)
Obs.	19640	19640	19640	16721	19640	19640	19640	19640
Adjusted R^2	0.229	0.178	0.198	0.181	0.145	0.172	0.231	0.182

Appendix 1. Definition of variables

Variable	Definition
Financial Leverage	The ratio of the sum of long-term and short-term debt to total assets at the end of each year
Long- debt leverage	The ratio of long-term debt to total assets at the end of each year
Investment	The ratio of total investment to total assets at the end of each year.
R&D	The ratio of total R&D over total sales at the end of each year
M&A	The ratio of total value of transactions that firms make in M&A deals over market capitalization at the end of each year
Cash Holdings	The ratio of the sum of cash and cash equivalent to total assets at the end of each year
Corporate Fraud	A dummy variable which equals one if a firm is investigated for corporate fraud (as reported by the China Security Regulatory Commission, CSRC, or one of the stock exchanges) and zero otherwise
Earnings Management	A proxy for earnings management (for more details, see the estimation procedure in Appendix 2)
Firm size	The natural logarithm of market capitalization at the end of each year.
Firm age	The natural logarithm of the number of years since the firm was founded at the end of each year
Tobin's Q	The ratio of total market value of equity to total book value of equity at the end of each year
ROA	The ratio of net income to total assets at the end of each year
Largest ownership	The percentage ownership of the largest shareholder
Private firm	A dummy variable which equals one if the firm is ultimately controlled by a person and zero otherwise
Chair Age	The age of the board chair at the end of each year
Gender	The gender of the chair of the board.
Education	An indicator for the board chair's educational attainment, where 1 = equal to or less than senior middle school; 2 = junior college degree; 3. bachelor's degree; 4 = master's degree; 5 = doctoral degree.
Tenure	The number of years that the board chair has taken up his or her position at the end of each year
Operating cash flow	The ratio of cash flow from operations to total assets at the end of each year
Delta NWC	The change in net working capital over total assets at the end of each year
Board Independence	The ratio of independent directors to the number of directs on the board at the end of each year
Institutional ownership	The percentage ownership of institutional owners at the end of each year
Analyst following	The natural logarithm of the number of analysts who cover the firm at the end of each year.

Appendix 2. Estimating earnings management

To calculate a proxy for earnings management, we use the modifed Jones (1991) model.

To determine the discretionary accruals, we first run the following cross-sectional OLS regression by CSRC industrial classification to estimate the coefficients:

$$\frac{TA_{it}}{A_{it-1}} = \alpha_1 \frac{1}{A_{it-1}} + \alpha_2 \frac{\Delta Sales}{A_{it-1}} + \alpha_2 \frac{PPE_{it}}{A_{it-1}} + \varepsilon_{it},$$

where *i* indicates year, *t* indicates time, TA_{it} is net income minus cash flow from operation, $\Delta Sales$ is the change in sales, and PPE_{it} is gross property, plant and equipment. All variables are scaled by total assets at the beginning of the year. We estimate these models separately for each combination based on year and industry. We then use the estimated coefficients $\hat{\alpha}_1$, $\hat{\alpha}_2$, and $\hat{\alpha}_2$ to calculate the nondiscretionary accruals as follows:

$$NDA_{it} = \hat{\alpha}_1 \frac{1}{A_{it-1}} + \hat{\alpha}_2 \left(\frac{\Delta Sales}{A_{it-1}} - \frac{\Delta AR_{it}}{A_{it-1}}\right) + \hat{\alpha}_3 \frac{PPE_{it}}{A_{it-1}}.$$

where ΔAR_{it} is the change in account receivables. Finally, we calculate discretionary accruals as:

$$DA_{it} = \frac{TA_{it}}{A_{it-1}} - NDA_{it}.$$

Since all the variables are scaled by total assets at the beginning of the year, the magnitude of a firm's discretionary accruals is indicated as a percentage of a firm's total assets.