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# Culture and Firms

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April 2022

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## Abstract

We study how societal culture shapes business activities and corporate behavior by leveraging data on the locations of Confucian schools in Ancient China. The number of historic Confucian schools surrounding a current firm's location proxies for the firm's exposure to Confucianism, the dominant culture in China over the last two thousand years, and is immune to the subjectivity and selection problems of most culture measures. We find systematic differences in corporate behavior across regions based on their varying exposure to Confucianism. Listed companies more exposed Confucianism make greater social contributions, provide greater employee protection, and have higher entertainment expenses, more patents, and more trade credits. We argue that these corporate attributes match the five basic virtues of Confucianism: benevolence (Ren), righteousness (Yi), courteousness (Li), wisdom (Zhi), and trustworthiness (Xin). Our results cannot be explained by other cultural traits and are robust to various checks, including using the number of renowned Confucian scholars in the Ming Dynasty and the regional death rate in the Taiping Rebellion as instrumental variables. The effects are weaker in cities with Mao-indoctrinated leaders (whose ideology suppresses Confucianism) and high levels of market-orientation and in firms with non-Chinese directors on board. Stronger Confucianism is associated with greater profitability and growth.



Keywords: Culture, Corporate behavior, Confucianism, Firm Value

JEL Classifications: G30, L11, L21, M14, N15



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We study how societal culture shapes business activities and corporate behavior by leveraging data on the locations of Confucian schools in Ancient China. The number of historic Confucian schools surrounding a current firm's location proxies for the firm's exposure to Confucianism, the dominant culture in China over the last two thousand years, and is immune to the subjectivity and selection problems of most culture measures. We find systematic differences in corporate behavior across regions based on their varying exposure to Confucianism. Listed companies more exposed Confucianism make greater social contributions, provide greater employee protection, and have higher entertainment expenses, more patents, and more trade credits. We argue that these corporate attributes match the five basic virtues of Confucianism: benevolence (*Ren*), righteousness (*Yi*), courteousness (*Li*), wisdom (*Zhi*), and trustworthiness (*Xin*). Our results cannot be explained by other cultural traits and are robust to various checks, including using the number of *renowned Confucian scholars* in the Ming Dynasty and the regional death rate in the Taiping Rebellion as instrumental variables. The effects are weaker in cities with Mao-indoctrinated leaders (whose ideology suppresses Confucianism) and high levels of market-orientation and in firms with non-Chinese directors on board. Stronger Confucianism is associated with greater profitability and growth.

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# 1. Introduction

Economic activities are shaped by culture (Weber, 1930). In economic terms, culture refers to deeply held general values and beliefs or even intuitions about right or wrong (Nunn, 2012). The literature has documented systematic differences among people with distinct cultural backgrounds in their decision-making, even in the same environment, due to their different preferences and beliefs (e.g. Nisbett and Masuda, 2003; Talhelm et al., 2014). These differences are further associated with varying levels of economic development across regions (e.g. Guiso et al., 2003; Algan and Cahuc, 2010; Nunn, 2008; Nunn and Wantchekon, 2011). In finance, a growing literature has also taken this cultural perspective to study the determinants of individual and corporate risk-taking and investment (e.g. Guiso et al., 2015b; Liu, 2016; Pan et al., 2020).The rationale is that people—both investors and employees who make financial decisions—are shaped by their cultures (Bertrand and Schoar, 2003; Malmendier, 2018; Guiso et al., 2008b). Despite the abundance of studies documenting cultural effects, it remains unclear how culture can shape business activities and influence corporate policies.

The study of culture in finance can be categorized in the following three ways. First, culture influences the behavior of individual investors. For example, Kumar et al. (2011) show that, in counties with higher ratios of the Catholic population to the Protestant population, investors are more likely to hold "lottery-type" stocks, firms introduce more option-based compensation plans, and first-day IPO returns are higher. Second, culture can affect financial markets. For instance, cultural differences in terms of individualism can explain the cross-country differences in the momentum strategy profits and price co-movement (Chui et al., 2010; Eun et al., 2015). Third, culture can affect corporate decisions, mostly through a CEO's cultural traits. For example, Nguyen et al. (2018) and Pan et al. (2020) document that U.S. CEOs' cultural heritages are significantly associated with their attitudes toward uncertainty and risk-taking behavior, which further affect firm performance. To date, however, the third strand of literature is relatively undeveloped.

The limited studies on how cultures affect corporations—by focusing on the cultures of

their CEOs—mostly speak to the effect of corporate culture instead of societal culture. Conceptually, corporate culture can be considered as a stock of shared knowledge and beliefs and can be reflected in firm reputation (Van den Steen, 2010; Gorton et al., 2021). It originates from firm leader communicating a desired culture to employees, who then interpret and exchanges views with each other. The aggregation of interpretations represents corporate culture, which influences employee behavior (Gorton and Zentefis, 2020). This perspective focuses on the formation of corporate culture but remains silent on how societal cultural values are initially formed, especially through a firm's interaction with various stakeholders, including consumers, suppliers, community, and even the public at large. A broader perspective requires a focus on the role of societal culture, which shapes corporate cultures within a given society (Hofstede and Peterson, 2000).

The literature on cultural effects on firms largely neglects the profound role of societal culture, a form of informal institution (North, 1991) that could have a first-order effect on economic activities. Societal culture influences both the adoption and functioning of formal institutions, such as legal rules (Guiso et al., 2015a), and the decision-making of corporate executives and employees, which shape the activities of firms. Firms must maintain a level of societal approval to recruit employees and access resources, and they gain legitimacy for their operations by conforming to societal values and norms (Sagiv and Schwartz, 2007). In addition, when both corporate leaders and employees are socialized to similar norms (Gorton and Zentefis, 2020), their biological and developmental traits are more likely to reflect the societal culture they are exposed to (Gorton et al., 2021; Schwartz, 2014). This implies that a corporate culture, as well as the cultural values of corporate leaders and employees, usually mirrors the societal culture it operates in. Therefore, we focus on societal culture, which we believe has stronger impact on firms than corporate culture and managers' cultural traits.

Although numerous studies have found that societal cultures are, to a large extent, correlated with systematic differences in economic behaviors across countries (e.g. Guiso et al.,

2003, 2008b; Nunn, 2008; Nunn and Wantchekon, 2011), it remains theoretically unclear how societal culture shapes corporate behavior and performance. To fill in this gap, we first develop a conceptual framework to understand how societal culture affects firms. In our framework, culture is represented by trust among a firm's stakeholders (Guiso et al., 2004, 2006, 2008a,b; Alesina and Giuliano, 2015), not just investors, employees, and customers but the broader community and society at large. Specifically, we consider trust as an important input of a firm's production that is supplied by its stakeholders. Firms with higher stakeholder trust will have greater access to stakeholder support, such as lower cost of capital from investors and lower wage demands by employees (Krueger et al., 2020). Gaining stakeholder trust is, however, costly, and thus a firm faces a cost-benefit trade-off. In an environment with a strong societal culture that emphasizes trust and reputation, a firm is more likely to gain trust from its key stakeholders at lower cost (Allen et al., 2005). Consequently, the low cost of acquiring this important input leads the firm to generate a higher output, given a fixed budget. As a result, the welfare of both stakeholders and firms improves.

It is empirically challenging to properly measure societal culture. The most commonly used measures are based on survey data, such as the Hofstede cultural dimensions (e.g. Hofstede, 1980, 2001), the Schwartz measures (e.g. Schwartz, 1994, 2006), the World Values Survey (Inglehart, 2000), and the GLOBE cultural scores (House et al., 2004). These country-level survey-based measures facilitate the cross-country analysis, especially in exploring the effects of specific cultural characteristics on individual behaviors and economic activities across the world (e.g. Gorodnichenko and Roland, 2011; Guiso et al., 2006, 2008b; Fisman and Miguel, 2007). However, these measures do not allow for investigating the significant within-country variations in culture (Guiso et al., 2006; Karolyi, 2016; Nunn, 2020), and it is inappropriate to equate nation with culture (Nunn, 2022). Some recent studies combine ethnic background of top executives in the United States and survey-based measures of national culture to measure the corporate culture, which enables them to investigate within-country, cross-firm cultural effects (e.g. Liu, 2016; Nguyen et al., 2018; Pan et al., 2020).

However, such measures suffer from the sample selection issue and the concern that people often fail to act in accordance with their stated intentions in surveys (Ajzen et al., 2004). They also do not measure the direct impact of societal culture on firms.

Another strand of research employs religion and language as proxies for societal culture (e.g. Stulz and Williamson, 2003; Hilary and Hui, 2009; Kumar et al., 2011). Regarding language, researchers consider people speaking the same language to share the same culture. With regard to religion, some studies focus on whether Catholics and Protestants exhibit significant differences in their preferences and economic behavior (e.g. Kumar et al., 2011, 2016; Stulz and Williamson, 2003). However, religions are complex institutions that comprise conflicting views on many issues, and people both within and across countries may have heterogeneous degrees of religious belief (Siegel et al., 2011). Thus, using religion as a measure for culture does not capture the significant within-region or within-country heterogeneities of cultural effects.

Identifying the causal impact of culture is also empirically challenging, especially in cross-country studies. Country-level confounding factors, such as economic conditions and other formal and informal institutions that vary across countries, may obscure causal inferences. Existing culture measures may capture other unobserved factors, resulting in omitted variable bias (Aggarwal et al., 2016).

We overcome these empirical challenges by exploiting the Chinese setting and leveraging a unique dataset on the dominant culture in China, namely Confucianism. For about 2,000 years, Confucianism has shaped practical affairs in China. This cultural persistence is, to a large extent, due to a lack of climatic variability in China, leading to cross-generational similarity of the environment (Giuliano and Nunn, 2021). Environmental stability, combined with China's long continuous history, guarantees that Confucian cultural values are deeply rooted in the Chinese society and are passed on over generations.

To measure a firm's exposure to Confucianism, we construct a novel dataset from historical archives in the Great Qing, the last dynasty in the imperial history of China, which ruled

the country for almost three centuries until it was succeeded by the Republic of China in 1912. We hand-collect information about 1,547 Confucian academies in the Qing Dynasty by referring to local chronicles between 1796 and 1840. We choose this period because the most comprehensive and complete chronicles are only available after 1796, and, after 1840 (after the Opium War), Westerners established municipal authorities, schools, and judiciaries in some cities of China (Jia, 2014). Confucian academies were the private schools, and one of the only places where most children, including those from poor families, could then receive proper education. It has been documented that these academies attracted talented young men who were keen for more out of their Confucian educations than just the rote mental preparation provided in government schools for the civil service examinations (Elman, 1989). During the Qing Dynasty, Confucian academies gained both local and governmental support and flourished as centers of education.

Our measure of a firm's exposure to Confucianism is the number of Confucian academies in the Qing Dynasty in the firm's adjacent region. We manually mark the coordinates of these academies and count the number of Confucian academies within a 100-kilometer radius around the coordinates of corporate headquarters based on the Baidu Map service. This coordinate-based measure for societal culture provides fine-grained, within-country variation of societal culture and is based on historical documents, which are objective and stable and can capture the intensity of cultural influence at the firm level.

To examine the effect of Confucianism on corporations, we follow the culture literature and identify the core values of Confucianism. Huang (2003) argues that the five virtues, namely benevolence (*Ren*), righteousness (*Yi*), courteousness (*Li*), wisdom (*Zhi*), and trustworthiness (*Xin*), are the foundation of Confucian ethics. These five virtues still function as the ethical codes that prescribe interpersonal relations in China today (Hwang, 1987). We next map these virtues into five major firm-level behaviors that best represent the five core values, including social contribution (benevolence), employee protection (righteousness), entertainment expenses (courteousness), patenting (wisdom), and trade credits (trustworthi-

ness). We then examine whether and how the intensity of a firm's exposure to Confucianism is systematically associated with these firm behaviors. We find that listed firms with greater exposure to Confucianism make more social contributions, provide greater employee protection, and have higher entertainment expenses, more patents, and more trade credits. Our results hold after employing an alternative measure of Confucianism and controlling for other cultural traits, including Taoism, Buddhism, and foreign values.

Although our key explanatory variable lagged our dependent variables by several centuries, there is still concern that the presence of Confucian academies could be correlated with regional economic development in the Qing Dynasty, which could persist and explain today's economic activities. Meanwhile, confounding factors correlated with both Confucianism and economic activities could drive the above results. To mitigate these concerns, we employ an instrumental variable (IV) approach. First, we use the number of *renowned Confucian scholars* in the Ming Dynasty (the dynasty preceding the Great Qing) in the firm's adjacent region as our instrumental variable. The rationale is that those renowned scholars often gave lectures to promote their beliefs about Confucianism in the local region. Meanwhile, the high cost of transport and communication during that period impeded people from afar from following the scholars' doctrine (Chen et al., 2020). Thus more Confucian scholars are associated with greater Confucianism in the Ming period. This regional cultural heritage was largely preserved from Ming to Qing, while the economies were vastly different between the two dynasties. We first argue that the number of renowned Confucian scholars is orthogonal to economic development in both dynastic times and today. The geographical distribution of these scholars in the Ming is not determined by the economic conditions then but instead heavily influenced by the establishment of Confucian academies where Confucian scholars gave seminars and disseminated knowledge in the Song Dynasty (prior to the Ming) (Gu et al., 2021). The latter is largely a result of government appointment and rituals (Chen et al., 2020). We next present evidence, which will be explained in greater detail in the text, to show that the regional economic development in the Ming differs from that at

present.

Our second instrumental variable is the regional death toll during the Taiping Rebellion from 1850 to 1864, a revolt by peasant rebels against the Qing Dynasty and one of the largest civil wars in world history. We argue that the rebellion's regional death toll is positively associated with the strength of Confucian culture. The rebellion advocated social reforms, such as property sharing by everyone, gender equality, and the replacement of Confucianism, Buddhism, and Chinese folk religion with a form of Christianity. The rebels were generally opposed by Confucian scholars, and they irritated local gentry because they challenged Chinese traditions. The turmoil and atrocities of the revolt left a strong imprint on the collective memories of people in affected areas over generations, making them cherish Confucian values more (Ke et al., 2019; Chen and Kung, 2020). In addition, the imperial government and local gentry engaged in massive reconstruction and restoration of schools in the affected regions after the war, which served to strengthen local Confucian culture and sustain the monarchy. Meanwhile, the timing and the location of the destruction by the rebellion were largely exogenous and unpredicted. Therefore, the local death toll during the Taiping Rebellion as an IV should satisfy both the relevance and exclusion conditions. Our IV estimates confirm that Confucianism has a large and significant effect on corporate policies.

We next explore the boundary of the cultural effects by investigating how they interact with other formal and informal institutions, such as political ideology, market development, and foreign cultures. North (1990) classifies institutions into informal (sanctions, taboos, customs, traditions, and codes of conduct) and formal ones (constitutions, laws, property rights). Culture is generally considered as an informal institution (Guiso et al., 2015b). Several studies document that trust, a key element of culture, substitutes for formal institutions (e.g., Aghion et al., 2010; Pevzner et al., 2015). Culture can also interact with other informal institutions, such as political and economic ideology (Ralston et al., 2008; Fetzer and Soper, 2012).

To test how culture interact with formal and other informal institutions, we partition our sample based on the degree of regional market-orientation, city mayors' ideology, and whether there are foreign board directors in a firm. We make the following predictions regarding the subsample analysis. First, several scholars (e.g., Tabellini, 2008; Alesina and Giuliano, 2015) argue that culture and formal institutions such as the market can influence each other, and their impacts on economic activities are usually substitutive. We thus conjecture that the effect of societal culture on firms is weaker in more market-oriented regions, and we find support from data using province-level marketization scores. Second, Marquis and Qiao (2020) find that people who joined the Chinese Communist Party (CCP) before 1978 were more likely to adopt Mao's ideology ("Maoist"), which suppressed Confucianism, especially in the "cultural revolutions" (Gold, 1985), compared to those who joined after 1978 and thus adopted Deng's ideology ("Dengist"). Liang et al. (2020) find systematic differences in corporate behavior between firms governed by Maoist mayors and those governed by Dengist mayors. Our results show that the effects of Confucianism are stronger in cities with Dengist leaders, suggesting that culture as an informal institution can interact with other informal institutions, such as ideology, to influence economic activity. Third, the effect of Confucianism should be attenuated if the firm is also exposed to foreign cultures, such as having more foreign directors on the board. The results are again consistent with our prediction.

Finally, our theoretical framework predicts that a higher level of stakeholder trust due to cultural influence leads to greater firm outputs and value. To test the value implications of societal culture, we relate Confucianism to firm performance and find that firms with greater exposure to Confucian culture have higher returns on equity, greater operating profit growth, and greater corporate social responsibility (CSR). These results collectively suggest that firms influenced by Confucianism gain more stakeholder support and have greater growth potential.

Our study mostly relates to the work on how societal cultures shape economic activi-

ties (e.g., Guiso et al., 2003; Stulz and Williamson, 2003; Nunn, 2008; Zingales, 2015; Liu, 2016). Instead of just answering whether culture matters, our theoretical framework allows us to address how culture shapes economic activities via firm behavior. To this end, we investigate cross-firm variation in cultural exposure (instead of the cross-country cultural indexes used in most studies). Our focus also differs from that of many studies that investigate corporate culture and CEO's cultural traits, which are shaped by societal cultures. We further investigate how culture as an informal institution interacts with other formal and informal institutions, such as ideology and the market. In this way, we show the boundaries of cultural influence, a topic underexplored elsewhere. The effects we document are likely firm-level channels through which culture affects economic activities.

Our study also relates to the literature that takes a historical perspective to explain contemporary economic or financial outcomes. This line of research usually relies on new data that measures relevant aspects of historical incidents and tests a causal long-term effect of historically formed institutions and norms on economic activities today (Nunn, 2020). For example, many scholars argue that laws and political institutions established during the colonial period can persist and explain systematic differences in economic and financial development (e.g., La Porta et al., 1998; Acemoglu et al., 2001, 2002). Other informal institutions, such as trust (or mistrust), are also found to trace back to colonialism and the Atlantic slave trade (Nunn and Wantchekon, 2011; Pierce and Snyder, 2018; Levine et al., 2020; Lowes and Montero, 2021). While most of these studies focus on how history affects macroeconomic outcomes and household behavior, our paper focuses on how historical informal institutions impact culture and thus firms. We contribute to the literature by proposing novel historical mechanism and using it to investigate the effect of cultural values on corporate outcomes.

# 2. Conceptual Framework and Hypothesis Development

## *2.1. Conceptual Framework*

In this section, we integrate the classical demand-and-supply and cost-minimization analyses into our conceptual framework. Specifically, we view societal culture as a form of trust in a firm by its stakeholders, which is an important input for the firm's production. We treat the firm as the demander and its stakeholders as suppliers of this input. However, gaining trust from stakeholders is costly, and a firm faces a cost-benefit trade-off when making production decisions. In a society that has a strong culture of valuing stakeholder trust, firms are more likely to gain support from stakeholders at lower cost (Allen et al., 2005). Consequently, such low costs of acquiring the important input lead firms to generate higher output, given a fixed budget. As a result, the welfare of both stakeholders and shareholders can improve. We graphically illustrate this framework by analyzing the equilibrium adjustments under the scenarios of different intensities of culture.

Figure 1 shows the supply and demand of trust from a firm's stakeholders. The $x$-axis represents the "quantity" of trust from stakeholders on the firm, and the $y$-axis represents the cost of acquiring such stakeholder trust to the firm. The downward curve is the demand curve, $D$, which represents the quantity of trust demanded given the "price" of trust. We assume a constant marginal utility of trust for the firm, which can be relaxed easily. The upward dashed line ($S_1$) is the supply curve when the culture that values trust is weak and represents the quantity of trust supplied, given its price. The initial equilibrium quantity of trust on a firm is $Q_1$, and the equilibrium price of trust is $P_1$, the quantity and the price at which the demand curve intersects with the supply curve. A greater strength of societal culture helps provide more assurance to stakeholders and thus gains more trust from them. This is manifested by a shift of the supply curve toward the right, due to an increased supply of trust. The solid upward curve is the new supply curve, $S_2$. The new equilibrium quantity of trust on a firm increases to $Q_2$, and the new equilibrium price of trust is $P_2$. We further

assume that the intersection point is above Point $E$, which is the point of unit elasticity. Hence, an increase in the quantity of trust and a decrease in the price of trust leads to the rise of welfare of stakeholders ($P_2 \times Q_2 > P_1 \times Q_1$) and an increase in consumer surplus, which captures the welfare of the firm's stakeholders.

**<Figure 1 here>**

Figure 2 illustrates the production decision of firms facing different prices of trust. The isocost line, $L_1$, represents combinations of trust and other inputs that can be acquired with a fixed amount of capital when the price of trust is $P_1$. The isoquant curves, $U_1$ and $U_2$, represent all those combinations of trust and other inputs that are needed to produce the same level of output, whereas the higher curve, $U_2$, indicates higher output ($Q_2$) than what $U_1$ encompasses ($Q_1$). The equilibrium quantity of output is determined by equating the marginal rate of technical substitution to the ratio of the prices of the two factors. The initial output of the firm, given a fixed budget, is $Q_1$ since the isoquant curve $U_1$ is tangent to the isocost line $L_1$. With a stronger culture that values stakeholder trust, the price of trust decreases. As a result, the new isocost line, $L_2$, becomes flatter and is tangent to the higher isoquant curve, which implies that a greater intensity of culture leads to a higher output of the firm, given the same budget. We assume that the price of the firm's product remains stable. The higher output, given a fixed budget, generates higher profit for the firm.

**<Figure 2 here>**

## *2.2. Hypothesis Development*

We next describe the institutional background of our empirical setting and how we match the core values of Confucianism to firm behaviors. Confucianism originates from the teachings of the Chinese philosopher Confucius (551 B.C.–479 B.C) and has been the predominant value system governing the practical affairs in China since the Han Dynasty, for almost two thousand years. Confucian values also spread widely across other countries in Asia, such as

Singapore, Vietnam, South Korea, and Japan. The core of Confucian values consists of five virtues, namely, benevolence (*Ren*), righteousness (*Yi*), courteousness (*Li*), wisdom (*Zhi*), and trustworthiness (*Xin*). These virtues define the principles of being a decent person and the norms for interacting with others.

Benevolence (*Ren*) refers to compassion and altruism, and mostly concerns a person's caring and love for others, even at the cost of her own wellbeing. From a corporate perspective, a benevolent firm cares about the welfare of its society and various stakeholders and is willing to contribute to the society at a cost to itself. Therefore, a benevolent firm would have greater propensity to make social contributions. We therefore take a broad perspective and link benevolence to various forms of social contribution (or contributions to various stakeholders) by examining the combination of tax payments to the government, wage payments to employees, interest payments to debt holders, donations, and profit attributable to shareholders. In this way, we aim to capture how much a firm cares for its broad group of stakeholders.

Righteousness (*Yi*), often being referred together with benevolence in the ancient Chinese literature, is about respecting and helping the others, especially the virtuous, friends, and the weak in the society. From a firm's perspective and similar to benevolence, a righteous firm protects its internal and external stakeholders. To this end, we focus on a firm's protections of its employees and supply-chain partners, which are often vulnerable and disadvantaged stakeholders, relative to the firm and its shareholders. These protections may include stepping up safety measures for employees and ensuring fair competition among suppliers.

Courteousness (*Li*) refers to common courtesy in one's daily life, representing the etiquette, norms, and protocols that influence interactions with others. Inspired by the Analects, which considers courtesy as "the lubricant for the societal harmony," Chinese society takes the pride of itself being a "state of etiquette." The pursuit of courtesy and etiquette is also reflected in business, as firms interact with and entertain their stakeholders, with varying

degrees of strength across the society. A firm that is more exposed to a courteous culture would spend more on entertaining stakeholders and business partners. We therefore focus on a firm's entertainment expenditure to capture how the value of courteousness in Confucianism is reflected in its corporate behavior.

Wisdom (*Zhi*) refers to one's intellectual development and quality and is about the use of knowledge in a prudent way (Wang and Juslin, 2009). A firm that is more exposed to a culture that values intellectual capital will also commit resources to the development of intellectual property. To this end, we focus on a firm's innovative outputs, such as patents, to investigate the influence of Confucianism on a firm's pursuit of intellectual capital and outputs.

Lastly, trustworthiness (*Xin*) concerns one's credibility and the extent to which she keeps her promises in interpersonal relations. In business, trust among stakeholders is one of the most important factors in facilitating transactions and promoting welfare. Therefore, a firm in an environment with a high level of trust is more likely to be viewed as credible and trustworthy by its external stakeholders, such as customers and suppliers. Consequently they are more willing to grant the firm more trade credits. For example, a supplier can grant a firm that is perceived trustworthy a longer window for making payments after the delivery of products.

Overall, all these cultural aspects relate to maintaining good relationships with various stakeholders and receiving stakeholder support, which helps reduce transaction costs (Peng, 2004). In contrast to the previous literature, which focuses on only some aspects of culture, we try to comprehensively capture the core elements of Confucianism in China and examine its cultural effect on firms in totality. In this way, we can better infer the importance of culture.

# 3. Data and sample

This study employs data from several different sources: (i) a firm's exposure to Confucianism based on its geographical coordinates and the number of Confucian academies from local chronicles (Chorography) in the Great Qing; (ii) survey data on people's general attitudes from China Family Panel Studies (CFPS); (iii) population divorce rates from China National Bureau of Statistics; (iv) household intergenerational co-residence data from China Population Census; (v) firm headquarters location data from WIND; (vi) firm financial data and data on social contribution, employee protection, and ownership structure from China Stock Market & Accounting Research (CSMAR) database; (vii) CSR score from *Hexun.com*; (viii) city-level politicians' backgrounds from CSMAR; (ix) province-level market orientation scores from the China Marketization Index by Fan et al. (2011); (x) data on city-level GDP and FDI from the City Statistical Yearbook of China; and (xi) data on regional Taoism and Buddhism cultures from Yang (2011).

## *3.1. Confucianism measure*

Our main explanatory variable is a firm's exposure to Confucianism, which we measure using historical data in archival resources. This approach has been used in examining the persistent effect of historical factors on contemporary economic outcomes (e.g., Acemoglu et al., 2001, 2002; Nunn, 2008; Nunn and Wantchekon, 2011; Lowes and Montero, 2021). Specifically, we count the number of private Confucian academies in the Qing Dynasty in the firm's adjacent region. Private Confucian academies were the main venues where people were indoctrinated with Confucian values, which formed the main part of education in pre-industrial China. By the middle of the sixteenth century, these academies held regular meetings to allow Confucian scholars to exchange knowledge and views. Through these repeated social interactions, Confucianism spread to the community. In addition, private academies were more accessible for most people and provided elementary Confucian education, whereas not everyone could go

to government-funded official schools, which primarily focused on rote mental preparation for the civil service examinations (Elman, 1989). As a result, Confucian academies also gained local support and flourished as centers of learning in the Great Qing. Therefore, more Confucian schools suggest that a greater share of the local population was inculcated with Confucian culture, which was likely to be passed on over generations.

One may be concerned that having more Confucian schools more than a hundred years ago does not necessarily lead to stronger local Confucian culture today, as the cultural imprints may decay over long periods. In other words, cultural values may not persist and may not transmit stably over time. Although there are some examples of drastic cultural change (Firth, 1959), we argue that this is unlikely to be the case in our setting. Following the anthropology literature, Giuliano and Nunn (2021) argue that an important determinant of cultural persistence is the similarity of the environment across generations. That is, cultural traits that have evolved from the previous generation are more likely suitable for the current generation in a less variable environment, measured by climatic variability over time. They document that China is among countries with the least environmental variability, implying that the strength of Confucianism should persist over time there. Our validity tests (described in detail below) also confirm the persistence of the Confucianism across different regions in China.

To obtain data on Confucian academies, we construct a novel dataset by referring to local chronicles (*Difang Zhi*) from archives in different cities. Local chronicles documented nearly all aspects of a locality in China at the county level, including its history, geography, economy, administration, biography, and education. They were compiled by the local government and elites to describe local administrative matters and commemorate ancestors. They cover both populated and less-populated areas and have been updated ever since the twelfth century (Chen et al., 2020). Thus these chronicles serve as an important source for historical information in China. Figure 3 provides a one-page snapshot of a local chronicle. A local chronicle typically includes a "school" section (*Xuexiao Zhi*) that describes the schools

in the vicinity. This allows us to extract information on local Confucian academies.

**<Figure 3 here>**

To measure a firm's exposure to Confucianism, we proceed as follows. We first manually search for local chronicles in China from regional archives. Despite voluminous local chronicles, only those compiled during the Ming and Qing Dynasties are available for reference according to "*General Note on Chinese Local Chronicles*" by the renowned Chinese archivist Zhu Shijia (1958). When looking up local chronicles compiled in the Ming Dynasty, we found that there were missing records for several provinces, such as *Jilin* and *Heilongjiang*, as well as some autonomous regions. Hence, we choose to refer to the local chronicles compiled during the Qing Dynasty. Since the administrative regions in Qing Dynasty are different from those today, we exclude chronicles that documented information for regions beyond the borders of Mainland China. In addition, we focus on local chronicles compiled between 1796 and 1840, prior to the First Opium War. The reason we choose this period is that the most comprehensive and complete chronicles are only available after 1796. We also exclude chronicles compiled in the late Qing Dynasty, during which the West established municipal authorities, schools, and judiciaries in some Chinese cities (Jia, 2014).

Next we count the number of all Confucian academies documented in the local chronicles during the aforementioned period. In total, we obtain the information of 1,547 Confucian academies in Qing Dynasty, and their locations are based on their historical sites. Since the administrative division in the Qing Dynasty is different from that today, a city-level variable that directly records the number of Confucian academies within each city is infeasible and would introduce bias. Instead, we create a firm-level variable by counting the number of Confucian academies within a 100-kilometer radius around the firm, based on the geographical coordinates of both the firm and the school, and log-transform it to smooth distribution. Following prior studies (e.g., Hilary and Hui, 2009; Dessaint and Matray, 2017), we define a firm's location as the location of its headquarters. Information on firm headquarters is

obtained from the WIND database. We further calculate the distance between the coordinates of corporate headquarters and historical Confucian academies based on the Baidu Map service. Figure 4 depicts the geographical distribution of these academies.

**<Figure 4 here>**

### *3.2. Dependent variables*

Our main dependent variables are five firm-level variables that match the core values of Confucianism and the corresponding hypotheses: (1) social contributions, (2) employee and supplier protection, (3) entertainment expenses, (4) patenting, and (5) trade credit granted by other firms. Specifically, a firm's social contribution is defined as the ratio of the sum of total tax contribution, employee payments, interest expense, donations, and profit attributable to shareholders over its total assets. The data are extracted from CSMAR Database, one of the most comprehensive databases for Chinese listed-firm research, and firm annual reports. This variable, to a large extent, reflects the firm's commitment to its stakeholders and society. Employee and supplier protection is defined as whether the firm reports to have adopted measures to protect its employees and suppliers. The data are obtained from the firm's annual report and corporate social responsibility report. Entertainment expenses are defined as the natural logarithm of management fees after deducting total salaries of all executives, supervisors, and board directors plus one. Patenting is measured as the natural logarithm of the number of a firm's authorized patents plus one. Trade credit is defined as the sum of accounts payable and notes payable scaled by total assets. The data for the last three dependent variables also come from CSMAR database.

### *3.3. Controls*

We control for firm-level covariates that might be correlated with both culture and corporate policies, including firm size (the logarithm of total assets), profitability (return of assets,

ROA), leverage (debt-to-assets ratio), revenue growth, cash flow from operating activities (operating cash flows), and whether the firm is a state-owned enterprise (SOE). We further control for city-level macroeconomic variables to account for cross-regional variations in economic development, including GDP, city population, and total employee wages. The data for all control variables are obtained from the CSMAR database, and all variables are defined in Appendix Table A1. Our sample period is between 2007 and 2017, since the dependent variable, social contributions, only starts from 2007.

Table 1 presents the summary statistics of our main variables. Our sample contains 25,300 firm-year observations over the 2007–2017 period. The average number of Confucian academies around a firm (within a 100-kilometer radius) is 23. The mean (median) value of social contribution to asset ratio is 0.106 (0.095), with a standard deviation of 0.085, suggesting a significant variation in social contribution across firms. The average value of employee protection is 0.329, and the standard deviation is 0.706, indicating that many listed firms do not report to have taken measures to protect their employees and suppliers. The mean and standard deviation of entertainment expenses are about 280 million and 576 million Chinese yuan (CNY), respectively. The average number and standard deviation of patents granted to a listed firm are seven and 27, while the mean value and standard deviation for trade credit to assets ratios are 0.123 and 0.098, respectively. At the city level, the average GDP is about 221 billion CNY (34 billion USD), the mean population is over 4 million, and average total employee wages are 26 billion CNY (4 billion USD).

**<Table 1 here>**

### *3.4. Validation test*

To cross-validate that our coordinate-based measure indeed reflects time-persistent Confucian culture, we check whether there are significant cross-regional variations in people's life attitudes based on Confucian doctrines that are not directly related to the five virtues we test. To this end, we recognize that an important element of Confucianism is the importance

of family and family values, which entail familial collectivism, i.e., the family, rather than individual, being viewed as the most revered societal building block (Cheng, 1944; Ip, 2009).

We first focus on old-age support, which, accordingly to Confucianism, advocates that people should support their elderly parents unconditionally. Chen et al. (2019) argue that receiving old-age support reflects the extent to which filial piety, an ethic promoted by Confucianism, can determine people's decision to have children.[1] We follow their approach and employ the family-level data from China Family Panel Studies (CFPS), which asks respondents "why do you want to have children?", to construct an index of old-age support. We then regress this self-constructed index on our coordinate-based measure of Confucianism in a province. In Column (1) of Table A2, we find that these two measures are positively correlated.

Second, we examine the regional divorce rate as another reflection of the family ethic. Confucianism advocates the importance of family and thus prioritizes keeping a family together even during difficult times, and divorce is usually viewed as a stigma for the whole family. Thus, if our coordinate-based measure indeed captures Confucian culture, it should be negatively correlated with the divorce rate in a region. We obtain divorce data at the province level between 2010 and 2017 from China National Bureau of Statistics. In Column (2) of Table A2, we find that the number of Confucian academies is negatively correlated with regional divorce rate, confirming our prior.

Third, we validate our coordinate-based measure by checking its correlation with how much a family spends on education. By employing the data from CFPS, we construct a family-level variable that measures the amount of money parents spend on education. If our measure captures Confucian culture, we expect it to be positively associated with educational expense. The result in Column (3) of Table A2 again confirms our prediction.

Finally, we examine the relation between our measure and the percentage of households

[1]The authors use survey data from China Household Finance Survey (CHFS) to calculate the proportion of respondents in a region who answer "for old-age support" in response to the question "why do you want to have children?".

with four generations living under the same roof in each province, constructed from the 2000 and 2010 China Population Census. Such intergenerational co-residence within a family reflects the reverence for parents and older generations, which is an important Confucian value and has been widely used in the sociology literature as a measure of filial piety (e.g., Luong, 1989; Chen et al., 2019). Hence, we expect a positive relation between our Confucianism measure and this intergenerational co-habitation ratio. In Column (4) of Table A2, we find that these two measures are positively correlated, consistent with our conjecture.

Collectively, these four validation tests suggest that our measure of Confucianism is indeed correlated with a region's societal norms, as prescribed by the Confucian culture. These results enhance the validity of using this measure as a proxy for a firm's exposure to Confucianism.

# 4. The impact of culture

## *4.1. Baseline results*

We first use an ordinary least squares (OLS) regression on our panel dataset to examine the relation between a firm's exposure to Confucian culture and its related policies. The specification is as follows:

$$Y_{i,t} = \alpha + \beta Confucianism_i + \gamma' Controls_{i,t-1} + FE + \varepsilon_{i,t}$$

where the dependent variable, $Y_{i,t}$ denotes firm $i$'s five policies described above, namely, social contribution, employee protection, entertainment expenses, patenting, and trade credit. The independent variable $Confucianism_i$, our key measure of a firm's exposure to Confucian culture, is the natural logarithm of one plus the number of Confucian academies—as documented by the local chronicles in the Qing Dynasty—within a 100km radius around the firm. $Controls_{i,t-1}$ denotes a set of firm-level covariates, including total assets, ROA,

leverage, revenue growth, cash flow from operations, and SOE status in year $t-1$, and a set of city-level control variables, including GDP, city population, and total employee wages of the city in year $t-1$. *FE* includes year fixed effects and industry fixed effects. Although our independent variable is at the firm level, it exhibits some regional clustering. Thus, we do not include location fixed effects in this regression, so that the effect of Confucianism is not absorbed by these location fixed effects. All standard errors are clustered at the city by year levels.

**<Table 2 here>**

We report the results of our baseline tests in Table 2. From the column (1) to the column (5), the dependent variables are firm-level social contribution (proxy for benevolence), employee protection (proxy for righteousness), entertainment expenses (proxy for courteousness), the number of patents (proxy for wisdom), and the trade credit (proxy for trustworthiness). In each regression, we control for both firm-specific variables and regional macroeconomic conditions.

We find significant and positive coefficients of Confucianism in all five columns. This consistent result supports our hypothesis that a firm's exposure to Confucianism is strongly correlated with corporate behavior. The economic magnitudes of these effects are nontrivial. Specifically, the coefficient estimates in five columns imply that a 10 percent increase in the number of Confucian academies around the firm is associated with around 5 million yuan (approximately 790,000 USD) increase in the firm's social contribution, 0.6 percent increase in its stakeholder protection, around 92,000 thousand yuan (approximately 4,560 USD) increase in the entertainment expenses, an increase in patent number by about 0.5 percent, and around 5 million yuan (approximately 943,000 USD) increase in its trade credit.

In summary, the above baseline regressions support our hypothesis that firms with a greater exposure to Confucian culture make greater social contributions, protect employees, spend more on entertainment, and have more intellectual output and trade credits. In other words, these firms have more robust stakeholder relationships.

Next, we conduct several robustness checks by examining other social values and employing an alternative measure for the exposure to Confucian culture.

### *4.2. Alternative culture measures*

In this section, we test the effects of alternative culture measures. First, one may be concerned that our results are not driven by Confucianism and instead our Confucianism variable captures the effect of religion or other prevailing cultural norms in China. It is well documented that religion also plays a critical role in individual decision-making and firm behavior (Stulz and Williamson, 2003; Kumar et al., 2011, 2016). To test this religion-based alternative explanation, we control for Buddhism and Taoism, two popular religions in China. Specifically, we employ the logarithm of the numbers of Buddhist temples and Taoist temples within 100km of the location of a firm as independent variables. In addition, to account for the influence of foreign culture and values on firm behavior, which usually happens through international trade, we additionally control for the amount of foreign direct investment (FDI) at city level to measure the extent to which a city is influenced by foreign values and norms. Panel A of Table 3 presents the result. Specifically, we run a horserace test by including both the Confucianism variable and measures for Buddhism, Taoism, FDI. We find that, after controlling for the intensity of Buddhism and Taoism as well as FDI, the effect of Confucianism is still significant for all five corporate policies. In unreported tests, when we include these three culture variables one by one into the regression, we find similar results. Therefore, the results in Panel A confirm it is Confucian culture that accounts for the differences in corporate behavior.

**<Table 3 here>**

Second, we use the number of Imperial Scholars (*Jinshi*) in Qing Dynasty with their hometown adjacent to a contemporary firm's headquarters as an alternative measure of the firm's exposure to Confucianism. *Jinshi* was the highest academic degree that a candidate

could obtain from the civil service system of Imperial China and was typically selected for high-level government positions. To be accredited as *Jinshi*, a candidate (usually a male) needed to attend a national examination that took place in the capital of her region, followed by a re-examination at the imperial palace to be ranked (Bai and Jia, 2016). This civil service exam system lasted for over 1,300 years in China and served as the primary channel for recruiting elites during the Ming (1368–1644) and Qing (1644–1911) Dynasties.[2] After becoming a *Jinshi*, the scholar would hold high-ranking civil positions and gain political and economic power. These scholars often sought to promote Confucianism by establishing Confucian schools and temples in their hometowns and providing resources for local people to study in the schools (Gu et al., 2021). In addition, families in regions where there were more *Jinshi* would be more motivated to let their children follow this career paths by enrolling in these Confucian schools.

Similar to our measure based on the number of Confucian schools, we refer to the historical documents in Qing Dynasty to measure then intensity of *Jinshi*. These documents include *A list of jinshi in Qing Dynasty, The Draft History of Qing, A List of Imperial Clan Jinshi in Qing Dynasty, The Collection of Keju Examination Papers in Qing Dynasty, and General History of Fengtian*. We manually look up the information of 25,735 *Jinshi*, such as their names and hometowns. This accounts for over 96 percent of the total *Jinshi* population in the Qing Dynasty. We then generate a firm-level variable, *Jinshi*, which is measured by the natural logarithm of one plus the number of *Jinshi* whose hometown is within a 100km radius around a firm's headquarter.

Panel B of Table 3 presents the result. Consistent with our prediction, the coefficients of *Jinshi* measure are all significant and share the same sign with those in our baseline analysis. Thus our results for the effect of Confucianism are robust.

[2]The central contents of the examinations were the Confucian classical texts — the "Four Books and Five Classics", which constituted the foundation of Confucianism (Elman et al., 2000). The exam thus provided powerful motivation for every family to learn Confucianism.

### *4.3. IV Regression*

Despite our efforts at controlling for various firm-specific and city-specific covariates and ruling out the potential effects of other cultural values, one may still be concerned that Confucian schools were established in regions with better economic conditions during the Qing Dynasty and that this geographical pattern of the economic development has endured until today. In addition, there may be unobservable factors that are correlated with both the strength of Confucianism in a region and corporate behavior. In this section, we use two instrumental variables to further mitigate these concerns.

The first IV is the number of *renowned Confucian scholars* in the local area in the Ming Dynasty (1368–1644), which preceded the Qing. This differs from the alternative Confucianism measure in the robustness check. These scholars are influential Ming Confucian scholars who promoted their beliefs and values in the local region and were respected both then and today. Specifically, we take the natural logarithm of (one plus) the number of Confucian scholars whose hometown is within a 100km radius around the corporate headquarters in our IV analysis. We extract the data from *History of Chinese Thought in the Ming Period*, a book written by Huang Zongxi, a renowned Confucian philosopher in the Qing Dynasty, which reviews the development of Confucian philosophy.

The rationale of this IV is that those renowned scholars often gave lectures in Confucian academies, promoting their beliefs regarding Confucianism in the region. Meanwhile, the high cost of transport and communication in that period prevented people in regions far away from these scholars' academies from following their doctrine (Chen et al., 2020). Thus, more Confucian scholars are associated with greater intensity of the Confucian culture in the Ming period. This persisted for a hundred years and inspired local squires in the Qing period to build Confucian schools.

A valid IV needs to satisfy the exclusion restriction. To this end, we first argue that the number of Confucian scholars is orthogonal to economic development in both the ancient time and today. The geographical distribution of these scholars in the Ming is not determined

by the economic conditions then but heavily influenced by the establishment of Confucian academies in the Song (prior to the Ming) (Gu et al., 2021), while the latter is largely driven by political rather than economic considerations. For example, Zhu Xi, the most influential figure for popularizing Confucianism in the Song Dynasty, chose three cities to establish Confucian academies because of the mourning rituals and the official appointments from the central government. Meanwhile, these academies were not located in economic centers or undeveloped areas (Chen et al., 2020).

Many economic historians have documented a discontinuity in economic development in China between Ming and Qing as well as between Imperial China and Modern China. Such discontinuity is largely driven by dramatic changes in resource bases, farming technology, peasant wealth, silver's purchasing power, as well as exogenous shocks such as wars and natural disasters (e.g., Perkins et al., 1969; Brandt et al., 2014; Deng, 2015). Some anecdotal evidence also shows that the regional economic development in the Ming differs from that in modern times. For example, van der Speenkel (1953) documents a gain of population in northern, western, and south-western provinces of China and a loss of population in southern and south-eastern China during the Ming. As population growth is a common measure of long-term development (e.g., Acemoglu et al., 2002; Jia, 2014), such population change to some extent reflects that the economic activity in the southern and southeastern parts of ancient China could not sustain a stable population. However, there has been a reversal in wealth distribution and economic development in recent decades. You et al. (2021) find a negative population growth in northeast China since 2006, which has worsened since 2012. Meanwhile, it is well documented that three northern provinces, including *Hebei*, *Henan*, and *Shandong*, accounted for 30% of total land tax, the most important type of tax in ancient times, during the Ming (Liang, 2008). In contrast, they only account for 13% of total tax income as of 2018, according to the national statistical bureau. This evidence suggests that the density of renowned Confucian scholars in Ming is unlikely to be correlated with regional economic development today.

Our second IV is the regional death rate in Taiping Rebellion, measured as either the percentage death rate of the local population or the natural logarithm of (one plus) the death toll in each province between 1851 and 1865. The rebellion was a revolt against the Qing Dynasty and established the "Taiping Heavenly Kingdom" after the Taiping army won several battles against the Imperial Qing army. This rebellion induced the largest number of war deaths in human history, with over 40 million people killed (Wakeman, 1997).

The rebellion repulsed Confucianism and aimed to spread Christianity by destroying many Confucian temples, which triggered resistance by local Confucian gentry and suppression by the Qing government, which eventually defeated the rebellion army. We argue that the regional death toll caused by the rebellion is positively associated with the strength of Confucianism in the region. On one hand, the rebel's agenda included social reforms, such as shared "property in common," equality for women, and the replacement of Confucianism, Buddhism, and Chinese folk religion with a form of Christianity. This doctrine was generally questioned and opposed by Confucian scholars at the time and provoked the anger of local gentry because it violated traditional Chinese ethics and morals. The ruthless means of the Taiping Army in spreading their bogus religion did not leave an imprint of Christianity among the local people but only triggered strong resistance. The great turmoil of the revolt and memories of the atrocities, transmitted across generations, make residents in more affected areas value the stability that Confucianism emphasizes and helps mitigate the adverse effects of the negative events (Ke et al., 2019; Chen and Kung, 2020).

On the other, after repressing the rebellion, the Qing government started to rebuild the affected regions. Rawski (1979) documented that, in Ancient China, the government often spent enormous effort to rebuild schools in areas that recently experienced war and famine as a means of restoring the Confucian order and sustaining the monarchy. Wooldridge (2009) documents that Zeng Guofan, the governor general in charge of the reconstruction of Nanjing, attached great importance to the Confucian school and temple complex and considered education and ritual as palliatives for the rebellion, a view that justified the vast sum spent

on the construction of the school. Similarly, Wright (1962) argues the Taiping Rebellion forced the reassertion of Confucian moral values and the revival of Confucian institutions. Hence we expect the severity of damage caused by the rebellion to be positively related to the strength of Confucianism, due to local resistance and post-war restoration efforts. Meanwhile, it is unlikely that the regional death toll caused by the Taiping Rebellion will directly influence economic development today. Alternatively, we also employ the regional death toll in the Taiping Rebellion as an instrumental variable. Mortality data during the rebellion is obtained from *Population History of China* (Cao, 2008), which records population information at provincial level.

We include the same set of control variables in our two-stage IV regressions. The first-stage results for both IVs are reported in Panel A, Table 4, which show that the number of renowned Confucian scholars in the Ming Dynasty is positively associated with our firm-level Confucianism measure (Column (1)). This is consistent with our prediction that these scholars helped disseminate Confucian culture in their regions. The regional death rate and death toll in the Taiping Rebellion also positively predict the firm's exposure to Confucianism (Column (2) and (3)), also supporting our conjecture that regions that experienced suppression of Confucian culture had stronger Confucianism. Panel B of Table 4 presents the second-stage regression results for our first IV based on the number of renowned Confucian scholars. In Panels C and D of Table 4, our instrumental variables are the death rate and the (log-transformed) death toll in the region, respectively. In Panel B, the coefficients on Confucianism are mostly significant and positive, with the exception of Column (2), which is insignificant. In both Panels C and D, we find that a firm's exposure to Confucian culture is significantly and positively associated with its five corporate polices. Since all our three instrumental variables are historical and time-invariant, we also run a two-stage IV regression cross-sectionally using data in the year of 2008, the beginning year of our dependent variables in the regression. The results reported in Table A3 show that our earlier results on the effects of Confucianism culture still hold.

**<Table 4 here>**

# 5. Cross-Sectional Analysis

Are the cultural impacts on firms homogeneous or contingent on institutional environment? North (1990) classifies institutions into informal ones (sanctions, taboos, customs, traditions, and codes of conduct) and formal ones (constitutions, laws, property rights) and argues that formal and informal institutions usually interact in shaping economic activities. According to North's definitions, the Confucian culture in our context is an important informal institution. Therefore, in this section, we investigate the boundaries of the effects of culture by examining how it interacts with other informal and formal institutions, such as political ideology and market development.

## *5.1. How culture interacts with market*

We first examine whether the effects of Confucianism on corporate policies depends on the market orientation of the local economy, an important formal institution that has been well established to influence economic development and firm performance (e.g., La Porta et al., 2002; Megginson and Netter, 2003). Meanwhile, several seminal studies have shown that informal institutions, such as trust, a key element of culture, can substitute for market development and other formal institutions (e.g., Williamson, 2000; Guiso et al., 2004; Aghion et al., 2010; Pevzner et al., 2015). Therefore, we conjecture that the effect of Confucianism on firms is weaker in regions with stronger market orientation.

We use the marketization index for 31 Chinese provinces from Fan et al. (2011), which has been updated annually. This index captures the development of market systems via five aspects, including the relationship between government and the market, the development of private sector, the development of product markets, the development of factor markets, and the development of market intermediaries as well as the market-friendly legal environment

(Fan et al., 2011). We partition our sample into high and low market-orientation groups based on whether the marketization index score for the focal province in each year belongs to the top or the bottom tercile. The results for high (low) market-orientation group are presented in of Table 5. We find that the effect of Confucianism is significant for all five corporate policies for firms in low marketization regions, while this is not the case for the high market-orientation group. These results suggest a substitutive relationship between Confucian culture and local market development and thus between informal and formal institutions, in influencing firm behavior. Therefore, the effect of Confucianism depends on the strength of market institutions.

**<Table 5 here>**

### *5.2. How culture interacts with ideology*

We next investigate how the effects of Confucianism depend on the prevailing ideology in China. Similar to culture, ideology is an important informal institution. Piketty has defined it as "a set of a priori plausible ideas and discourses describing how society should be structured ... and an attempt to respond to a broad set of questions concerning the desirable or ideal organization of society" (Piketty, 2020). According to this definition, the effects of culture and ideology on firms can be substitutive or complementary, as they are both relate to how business activities can be organized.

We test this by exploiting a drastic change in Chinese political ideology in 1978, the transition from Mao's ideology to Deng's. During the Cultural Revolution, Mao's 10-year political and ideological campaign, which lasted until Mao died in 1976[3], there were continuous efforts to eradicate traditional habits and attitudes, which were viewed as harmful to social development (Goldman, 1975). Mao launched repeated campaigns against Confucian-

[3]Mao's ideology did not fade immediately upon his death. In 1976, the "Gang of Four", jockeyed for power, continuing abusing Mao's ideology. In 1977, Hua Guofeng, the president then, published the so-called "Two Whatevers" propaganda campaign: Whatever Mao had said and whatever Mao had done should be treated as a binding precedent.

ism, which was thought to be the root of those habits and attitudes (Gold, 1985). Following Mao's death, Deng Xiaoping emerged as the dominant figure among the pragmatists in the Chinese leadership. Starting in 1978, Deng set out on nationwide economic reforms, with the "Reform and Opening-Up" policy. He thus inaugurated a period when China began establishing a market economy and gradually opened to the outside world.

Almost all major government officials in China are members of the Chinese Communist Party (CCP), and they usually receive intensive indoctrination upon joining the CCP. As a result, regional political leaders may have adopted strikingly different ideologies, depending on when they joined the CCP (Liang et al., 2020). We expect that politicians who joined during Mao's regime would be more likely to adopt Mao's ideology and that politicians who joined during Deng's regime would be more likely to adopt Deng's ideology, conditional on them having the same age.

We conjecture that the effect of Confucianism on corporate policies should be less pronounced in cities with Maoist leaders. To capture a clean interaction effect, we split the sample based on whether the CCP secretary of the city (who is usually the top leader of the city) where a firm is headquartered joined the CCP before 1976 (Maoist leaders) or after 1979 (Dengist leaders) and run our baseline regression with the age of city secretary as an additional variable on the two subsamples, separately. The results in Table 6 confirm our conjecture. Across all specifications, the effect of Confucianism is significantly positive in the subsample of city secretaries who joined the CCP after 1979. In contrast, for the subsample of city secretaries who joined the CCP before 1976, the coefficients of Confucianism are mostly negative or insignificant. These results suggest that the effect of Confucianism indeed depends on the prevailing ideology in the city and corroborate the idea that culture as an informal institution can interact with other informal institutions to influence economic activity.

**<Table 6 here>**

### *5.3. The role of foreign cultures*

Finally, we examine how the effect of Confucian culture depends on foreign culture. We measure a firm's exposure to foreign culture by the number of foreign directors on the board. Specifically, we identify firms in which there is at least one foreign director and those with all Chinese board members. Foreign directors are more likely to carry non-Confucian values, due to growing up in different places and inheriting the values of their home countries. Directors are important corporate insiders directly involved in decision-making of the firm, and thus the congruence of their cultural backgrounds would influence corporate policies. Even without active involvement in decision-making, the presence of foreign directors signifies the company's openness to foreign culture that is different from Confucianism. Therefore, we expect that the presence of the non-Chinese directors will attenuate the effect of Confucianism.

We report the results in Table 7. We partition our sample into two groups based on the composition of the board. The results show little correlation between Confucianism and corporate policies for the subsample of firms with foreign directors. The sign of the only significant coefficient on Confucianism for this subsample is even negative in column (3). However, all coefficients on Confucianism are significantly positive for the subsample of firms with only Chinese directors on board. We also employ the amount of local foreign direct investment (FDI) to proxy for a firm's exposure to societal foreign culture. FDI requires foreign firms to set up plants and send foreign managers to monitor operations. This interpersonal interactions can help disseminate foreign culture. The untabulated results remain similar and consistent with our conjecture. This highlights that the communication of cultures also influences the cultural effect on firms.

**<Table 7 here>**

# 6. Culture and firm performance

We have shown that Confucianism has enduring and systematic influences on corporate behavior across China. A natural question is whether such culture-biased corporate behavior has value implications. In this section, we investigate whether differences in corporate behavior shaped by Confucianism persistently impact firm performance, such as profitability, growth, and stakeholder engagement. Our conceptual framework posits that a strong societal culture that emphasizes trust and reputation helps firms gain more stakeholder trusts and supports at lower cost, which leads to the firm to generate a higher output and greater value. However, whether culture-induced behavioral differences would translate into performance differences is not entirely straightforward, as underperforming firms may already be out of the market in the long run due to the competition.

We study performance by employing a two-stage regression approach. We first regress a firm's policies—social contribution, employee protection, entertainment expenses, the number of patents, and trade credit—on our Confucianism measure and get the "predicted" values of firm policies from the regression. We next construct a model relating three corporate performance measures—return on equity (ROE), operating profit growth, and CSR performance—to these "predicted" values of firm policies. This two-stage regression allows us to examine how Confucianism affects firm performance through its impact on firm policies. In both regressions, we keep the same set of control variables and fixed effects as in the previous baseline regressions. The regression model is specified as follows:

$$Policy_{i,t} = \alpha + \beta Confucianism_i + \gamma' Controls_{i,t} + FE + \varepsilon_{i,t}$$

$$Performance_{i,t+1} = \alpha + \beta \widehat{Policy}_{i,t} + \gamma' Controls_{i,t} + FE + \epsilon_{i,t}$$

We also run a reduced-form regression in which the independent variable is our proxy for Confucian culture and the dependent variable is the corporate performance proxy. The estimates from this reduced-form approach reflect the overall impact of Confucianism on

firm performance. The model is constructed as follows:

$$Performance_{i,t+1} = \alpha + \beta Confucianism_i + \gamma' Controls_{i,t} + FE + \iota_{i,t}$$

Table 8 reports the results. In Panel A, the dependent variable is ROE. We find that each of these five corporate policies is positively associated with a firm's ROE. In Column (6), the estimate from reduced-form regression indicates a positive correlation between Confucianism and ROE, consistent with the findings of Liang et al. (2020). Similarly, the results in Panel B show that there is a significantly positive relation between Confucianism and a firm growth. In Panel C of Table 8, the dependent variable is CSR score of a listed firm, which aims to capture the firm's stakeholder welfare. The data on firm-level CSR score is extracted from *Hexun.com*, a leading professional financial website and CSR rating provider in China. Again, the coefficients in all columns are significantly positive, consistent with the notion that Confucianism calls for virtuous behavior toward others.

**<Table 8 here>**

# 7. Post-hoc results

We have conducted several post-hoc tests to further demonstrate the enduring impact of Confucian culture on Chinese firms. In addition to the five core virtues (*Wuchang*), Confucianism also advocates other ethical standards and values, such as the "Three Cardinal Guides": ruler guides subject, father guides son, and husband guides wife. Therefore, in this section, we investigate how these additional values of Confucian culture affect other types of corporate behavior.

First, Confucianism emphasizes ruler–subject loyalty and filial piety, which indicate the acceptance of hierarchy. We match this norm to the firm-level hierarchical structure by examining the effect of Confucianism on board hierarchy, following Zhu et al. (2016). A unique

feature of corporate board structure in China is that, unlike in the United States, where firms usually list their directors alphabetically on the board roster, many Chinese firms list directors according to their relative power in the company (Zhu et al., 2016). Directors with more power and longer tenure are more respected and thus listed at the top. Independent directors are usually placed behind executive directors in companies that emphasize hierarchy. In order words, firms that value hierarchy would not alphabetically list their directors on the roster. Following Zhu et al. (2016), we construct a dummy variable that equals 1 if all the firm's independent directors are placed at the bottom of the director list (that is, not in alphabetical order) and 0 otherwise. We then regress this dummy variable on our Confucianism measure as well as all the control variables and fixed effects. The results are reported in Column (1) of Panel A of Table 9. The coefficient of Confucianism is significantly positive, indicating that firms with greater exposure to Confucianism are more likely to list their independent directors at the bottom and thus are more hierarchical.

**<Table 9 here>**

Second, Confucianism emphasizes on male superiority and supports patriarchy by belittling the role of women.[4] It clearly specifies gender roles in society: women should stay at home and do housework to support their husbands and children, while men should work outside the home to feed the family. To test how such patriarchal culture influences firms, we focus on board gender diversity. We expect that firms with greater exposure to Confucianism have fewer female directors and thus less gender diversity. We show the results of regressing measures of board female representation on Confucianism and other control variables and fixed effects in Columns (2)–(4). The dependent variable is the ratio of female board directors in Column (2), an indicator of whether there is at least one female director in Column (3), and the Blau index, which captures the gender diversity on board in Column

[4]The Three Obedience and Four Virtues (*San Chong Si De*) ) are the ethical codes for women proposed by Confucianism. The Three Obediences require women to obey the father before marriage, obey the husband after marriage, and obey the first son after the death of husband. The Four Virtues are (sexual) morality, proper speech, modest manner, and diligent domestic work.

(4). Specifically, the Blau index is calculated as:

$$Blau = 1 - \sum_i P_i^2$$

Where $P_i$ refers to the percentage of female or male board members (Blau, 1977). We find that the coefficients of Confucianism are all significantly negative, indicating that firms' with greater exposure to Confucianism which downplays the role of women indeed have lower female representation on board.

As a further post-hoc test, we recognize that Confucianism also advocates the development of "preparedness for the unexpected and hardship", which stresses the importance of having consciousness of uncertainty and taking precautions. To test whether firms with greater exposure to Confucianism are more likely to have precautionary policies, we examine a firm's cash holdings when facing unexpected shocks. A large literature has documented that firms may hold excess cash as a precaution (e.g., Kim et al., 1998; Opler et al., 1999; Bates et al., 2009). In particular, firms could hold cash to better cope with adverse shocks when there is the risk of a liquidity shortage (Acharya et al., 2012), such as exposure to natural disasters. To this end, we follow Dessaint and Matray (2017) and adopt a difference-in-difference identification approach using earthquakes as adverse shocks to firms' operations. Since the saliency and influence of an earthquake are magnified by its proximity, we can rely on a natural experiment framework by leveraging the distance between a firm and the epicenter of an earthquake.

We separate firms into three groups based on the distance between a firm and the epicenter of an earthquake: the affected firms, the firms in the neighborhood, and the unaffected firms. We define "affected firms" as those within 400 kilometers from the epicenters and "neighboring firms" as those that are over 400 kilometers and within 800 kilometers from the epicenters. We next define a "Disaster Zone" dummy variable, which equals one if the firm is in the affected group over the past 12 months, and a "Neighbor" dummy, which

equals one if the firm is in the neighboring firms group over the past 12 months in our difference-in-differences regression. Unaffected firms are treated as the baseline. Across all specifications, the dependent variable is a firm's quarterly cash holdings over assets. Since most of the usual firm-level control variables are themselves affected by the disaster proximity, we do not include them in the regression to avoid the "overcontrolling" problem, following Dessaint and Matray (2017). Panel B of Table 9 presents the results. Column (1) includes the Confucianism variable, "Neighbor" dummy, "Disaster Zone" dummy, and the interaction term between Confucianism and "Disaster Zone" dummy. In Column (2), we replace the interaction term in Column (1) with the interaction between Confucianism and "Neighbor" dummy. Column (3) includes both interaction terms above. In all specifications, we control for firm-quarter fixed effects and year-quarter fixed effects to account for the seasonality in earthquake shocks and firms' cash holding patterns. The coefficient of the interaction "Neighbor $\times$ Confucianism" is significant and positive, whereas that of the interaction "Disaster Zone $\times$ Confucianism" is negative and statistically insignificant. The insignificance of the latter is likely due to the fact that firms in affected areas experience cash drain, due to their operations and supply chains being harmed by the earthquakes. These results suggest that firms with greater exposure of Confucianism in the neighboring area—which are supposedly not directly affected by the unexpected negative shocks on their operations—will accumulate more cash as a precaution, which is consistent with our prediction.

# 8. Conclusion

Culture as a critical informal institution has drawn significant interest from economic and business researchers. Studies mainly focus on cross-country differences in cultural values to investigate the effect of societal culture on national outcomes such as economic development. However, little is known about the impact of societal culture on firms, which lie at the center of the economic activities. In this paper, we develop a conceptual framework for

how societal culture can help a firm improve its relationships with its key stakeholders to lower transaction costs as well as enhance firm value and overall stakeholder welfare. Employing a granular measure of a firm's exposure to a culture that persists over a long history, this paper examines the role of societal culture in shaping business activities through influencing corporate policies. Specifically, we exploit the Chinese setting and leverage a unique dataset of Confucian academies established in the Qing Dynasty to construct a firm-level variable to measure corporate exposure to Confucianism. Using this firm-level measure, we find that firms more influenced by Confucianism make more social contributions, provide greater employee protection, spend more on entertainment, and have more patents and trade credits. These five firm-level policies and outcomes match with the five core virtues of Confucianism: benevolence (*Ren*), righteousness (*Yi*), courteousness (*Li*), wisdom (*Zhi*), and trustworthiness (*Xin*).

The above findings survive a battery of robustness checks and are upheld by an instrumental variable approach. We also document significant interactive effects of Confucianism and other formal and informal institutions, including ideology, market orientation, and foreign culture. Finally, we find that firms with greater exposure to Confucianism have higher returns on equity, greater operating profit growth, and higher CSR scores. culture on business and economic activities in China.

Collectively, our findings suggest a more systematic but also nuanced view on the effects of societal culture on firms, which differs from corporate culture and other well-documented survey evidence. One cannot fully grasp the broader implications of culture on the economy and society at large without understanding its firm-level channels. Moreover, the cultural effects on firms and the economy has its boundary, as it interacts with other institutions, and policy design should take into account of such institutional complexity to enhance both shareholder value and stakeholder welfare.

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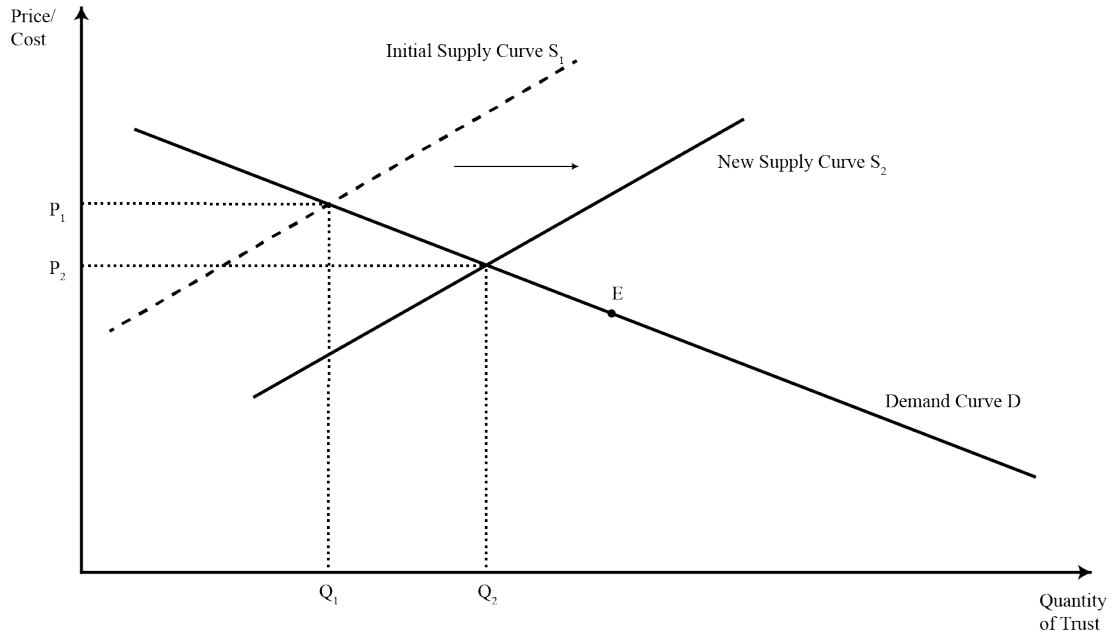


**Figure 1: The supply and demand of stakeholder trust**

This figure illustrates the supply and demand of trust from stakeholders on firms. The $x$-axis represents the "quantity" of trust from stakeholders on the firm, and the $y$-axis represents the cost of acquiring such stakeholder trust to the firm. The downward curve is the demand curve, $D$, which represents the quantity of trust demanded given the "price" of trust. We assume a constant marginal utility of trust for the firm, which can be relaxed easily. The upward dashed line ($S_1$) is the supply curve when the culture that values trust is weak and represents the quantity of trust supplied, given its price. The initial equilibrium quantity of trust on a firm is $Q_1$, and the equilibrium price of trust is $P_1$, the quantity and the price at which the demand curve intersects with the supply curve. A greater strength of societal culture helps provide more assurance to stakeholders and thus gains more trust from them. This is manifested by a shift of the supply curve toward the right, due to an increased supply of trust. The solid upward curve is the new supply curve, $S_2$. The new equilibrium quantity of trust on a firm increases to $Q_2$, and the new equilibrium price of trust is $P_2$. We further assume that the intersection point is above Point $E$, which is the point of unit elasticity. Hence, an increase in the quantity of trust and a decrease in the price of trust leads to the rise of welfare of stakeholders ($P_2 \times Q_2 > P_1 \times Q_1$) and an increase in consumer surplus.

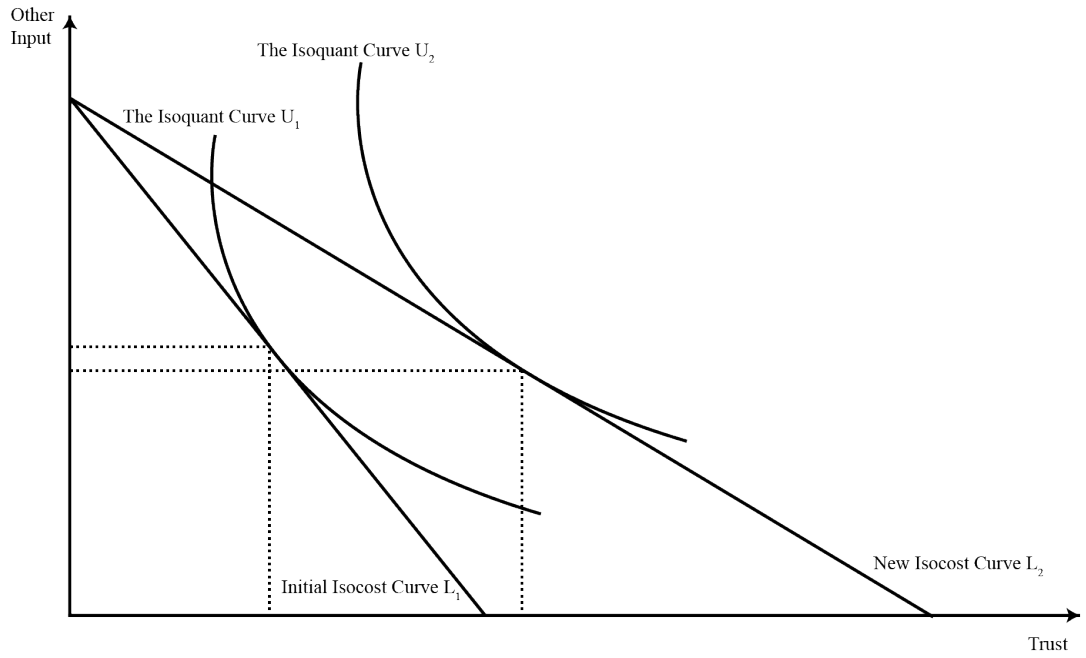


**Figure 2: The production decision by a firm under stakeholder trust**

This figure illustrates the production decision of firms facing different "prices" of trust. The isocost line, $L_1$, represents combinations of trust and other inputs that can be acquired with a fixed amount of capital when the price of trust is $P_1$. The isoquant curves, $U_1$ and $U_2$, represent all those combinations of trust and other inputs that are needed to produce the same level of output, whereas the higher curve, $U_2$, indicates higher output ($Q_2$) than what $U_1$ encompasses ($Q_1$). The equilibrium quantity of output is determined by equating the marginal rate of technical substitution to the ratio of the prices of the two factors. The initial output of the firm, given a fixed budget, is $Q_1$ since the isoquant curve $U_1$ is tangent to the isocost line $L_1$. With a stronger culture that values stakeholder trust, the price of trust decreases. As a result, the new isocost line, $L_2$, becomes flatter and is tangent to the higher isoquant curve, which implies that a greater intensity of culture leads to a higher output of the firm, given the same budget. We assume that the price of the firm's product remains stable. The higher output, given a fixed budget, generates higher profit for the firm.

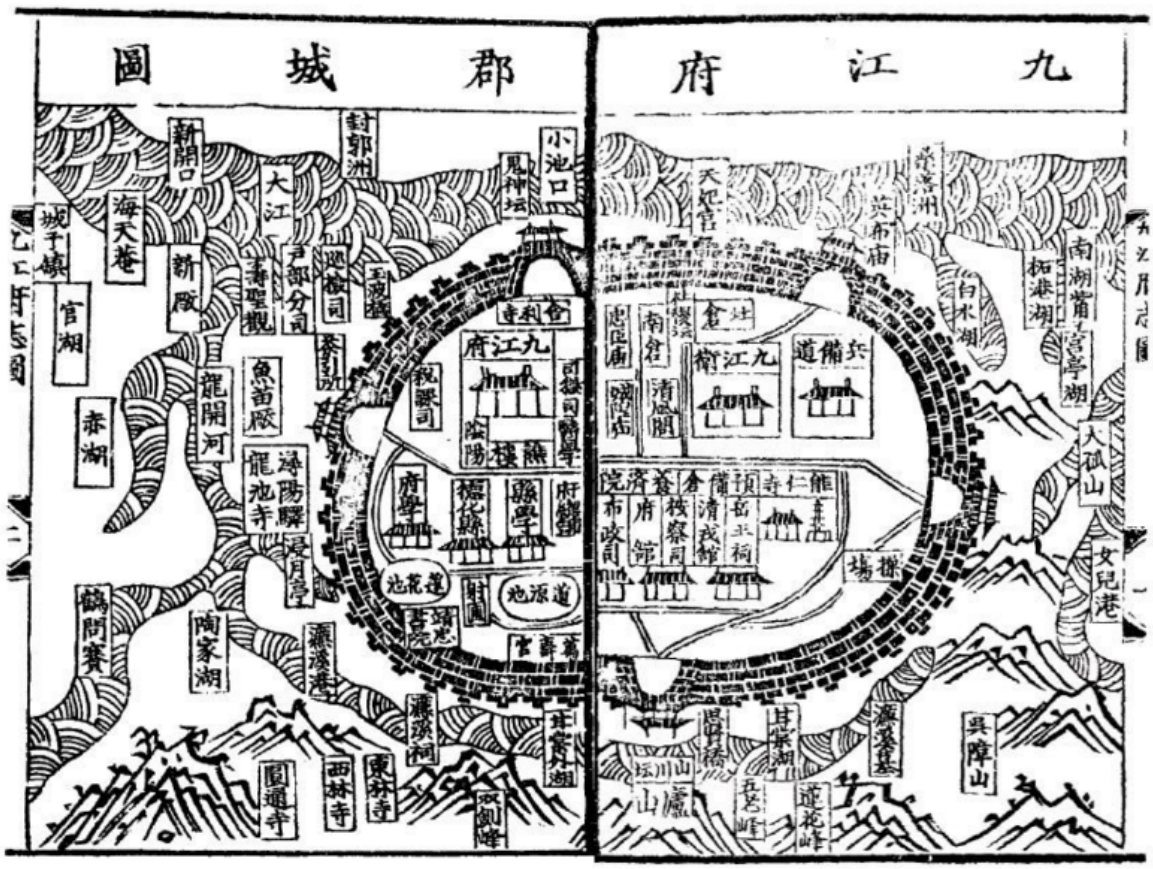


**Figure 3: A one-page snapshot of a Local Chronicle**

This figure is a one-page snapshot of a Local Chronicle of *Jiujiang* county.

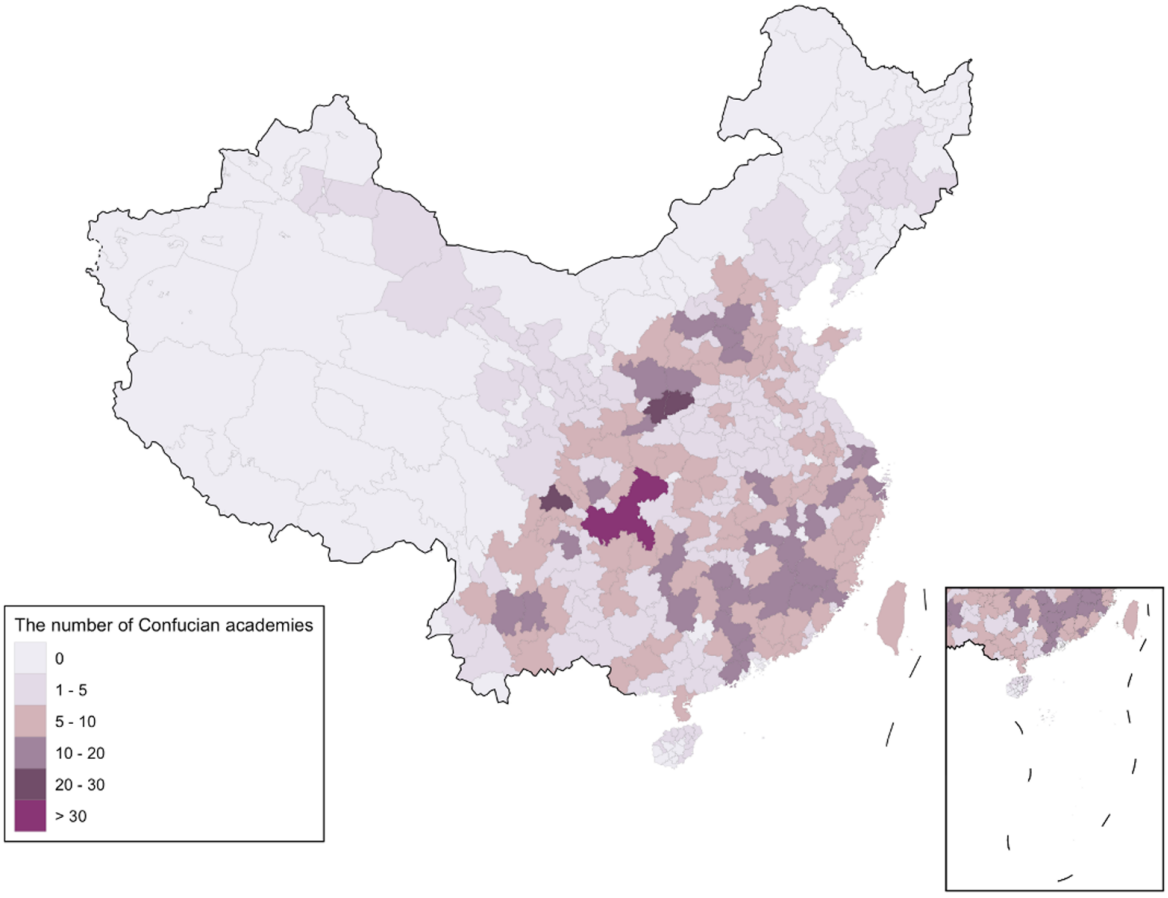


**Figure 4: Geographical distribution of Confucian academies**

This figure plots the geographical distribution of Confucian academies across China.

**Table 1. Summary statistics**

This table provides the summary statistics on firm- and city-level variables for the whole sample. Our sample period spans from 2007 to 2017. Statistics are summarized at the firm-year level for firm characteristics, and at the city-year level for city characteristics. All variable definitions are provided in Appendix Table A.1.

| Variables | Obs. | Mean | Std. Dev | Min | Median | Max |
|---|---|---|---|---|---|---|
| *Firm-level variable* | | | | | | |
| Confucianism | 25,389 | 2.909 | 0.899 | 0.000 | 3.136 | 4.205 |
| Confucian Academies | 25,389 | 23.685 | 15.760 | 0.000 | 22.000 | 66.000 |
| Social Contribution | 25,336 | 0.102 | 0.064 | 0.015 | 0.095 | 0.357 |
| Stakeholder Protection | 25,412 | 0.329 | 0.706 | 0.000 | 0.000 | 2.000 |
| Entertainment Expenses (million CNY) | 25,302 | 280.024 | 576.252 | 8.462 | 105.915 | 4103.418 |
| Patents | 25,412 | 6.936 | 27.401 | 0.000 | 0.000 | 201.000 |
| Trade Credit | 25,409 | 0.123 | 0.098 | 0.002 | 0.097 | 0.465 |
| Size | 25,412 | 21.871 | 1.313 | 19.021 | 21.724 | 25.818 |
| Leverage (%) | 25,409 | 44.552 | 22.568 | 4.671 | 43.684 | 109.952 |
| ROA (%) | 25,409 | 3.971 | 5.987 | -22.463 | 3.811 | 21.193 |
| Revenue Growth (%) | 23,312 | 22.832 | 62.951 | -65.602 | 12.051 | 465.467 |
| Operating Cash Flow (%) | 25,373 | 7.441 | 0.2242 | -1.0667 | 0.0724 | 0.744 |
| SOE | 25,412 | 0.419 | 0.493 | 0.000 | 0.000 | 1.000 |
| Buddhism | 25,384 | 3.260 | 1.330 | 0.000 | 3.367 | 7.825 |
| Taoism | 25,384 | 1.986 | 0.989 | 0.000 | 1.946 | 6.650 |
| ROE (%) | 25,408 | 6.6960 | 14.1056 | -75.4378 | 7.2058 | 52.3204 |
| Operating Profit Growth | 23,352 | 0.219 | 0.815 | -1.047 | 0.141 | 1.769 |
| CSR Score | 16,916 | 3.129 | 0.757 | -3.218 | 3.157 | 4.520 |
| *City-level variable* | | | | | | |
| City GDP (billion CNY) | 2,564 | 220.886 | 297.641 | 6.597 | 125.023 | 3063.299 |
| City Employment (thousand) | 2,464 | 712.40 | 1,113.62 | 20.84 | 367.85 | 17,145.50 |
| City Total Wage (billion CNY) | 2,297 | 26.249 | 60.289 | 0.669 | 12.071 | 1018.284 |
| FDI (million USD) | 2,216 | 951.952 | 2087.428 | 0.160 | 264.075 | 30825.645 |

**Table 2. The Effects of Culture on Firm Policies: Baseline Results**

This table reports the results of running the following regression model:

$$Y_{i,t} = \alpha + \beta Confucianism_i + \gamma^{'} Controls_{i,t-1} + FE + \varepsilon_{i,t},$$

Where $Y_{i,t}$ represents five corporate policies, *Controls* represents a vector of control variables, *FE* denotes fixed effects. Specifically, the dependent variables are firm-level social contribution to assets ratio (a proxy for *Benevolence*, Column (1)), stakeholder protection (a proxy for *Righteousness*, Column (2)), entertainment expenses (a proxy for *Courteousness*, Column (3)), patents (a proxy for *Wisdom*, Column (4)), and trade credit (a proxy for *Trustworthiness*, Column (5)), respectively. A firm's social contribution is the ratio of the sum of total tax contribution, employee payments, interest expense, donations, and profit attributable to shareholders over its total assets. Stakeholder protection is whether a firm reports to have taken measures to protect its staff and suppliers. Entertainment expenses are the natural logarithm of (one plus) management fees deducted by executives' and directors' wages. Patents is the natural logarithm of (one plus) the number of patents authorized by the government plus one. Trade credit is the sum of accounts payable and notes payable, scaled by total assets. The key explanatory variable is *Confucianism*, measured by the logarithm of Confucian academies in the Qing Dynasty that are within a 100-kilometer radius of a firm's headquarter based on their geographical coordinates. The OLS regression includes control variables for firm-level and city macro-economic characteristics, including firm size, leverage, ROA, revenue growth rate, operating cash flow, whether the company is a state-owned enterprise (SOE), as well as the logarithms of a city's GDP, number of employment, and total employee wages. All columns include industry and year fixed effects. Standard errors are clustered at the city by year levels. *t*-statistics are reported in the parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1%, respectively. All variable definitions are provided in Appendix Table A.1.

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| | Social Contribution | Stakeholder Protection | Entertainment Expenses | Patents | Trade Credit |
| Confucianism | 0.0044*** | 0.0171** | 0.0327*** | 0.0456*** | 0.0048*** |
| | (6.268) | (2.531) | (5.741) | (4.507) | (5.962) |
| Size | -0.0040*** | 0.2198*** | 0.7816*** | 0.1285*** | 0.0022*** |
| | (-5.610) | (25.054) | (148.563) | (9.343) | (3.295) |
| Leverage | -0.0109** | -0.0679*** | 0.0726** | -0.1822*** | 0.1654*** |
| | (-2.172) | (-2.715) | (2.288) | (-4.506) | (35.186) |
| ROA | 0.5041*** | 0.9690*** | 1.2835*** | 0.5432*** | 0.0644*** |
| | (25.715) | (10.863) | (11.702) | (3.440) | (4.436) |
| Revenue Growth | -0.0020** | -0.0419*** | -0.0131 | -0.0242** | 0.0012 |
| | (-1.971) | (-6.013) | (-1.619) | (-2.107) | (0.965) |
| Operating Cash flow | 0.0222*** | -0.0018 | -0.0194 | 0.0045 | -0.0188*** |
| | (7.132) | (-0.086) | (-0.681) | (0.170) | (-6.609) |
| SOE | 0.0124*** | 0.1108*** | 0.0991*** | 0.0884*** | 0.0124*** |
| | (9.311) | (7.110) | (8.869) | (4.260) | (7.646) |
| City GDP | -0.0011 | -0.0559*** | -0.0431*** | 0.0370 | 0.0105*** |
| | (-0.682) | (-3.039) | (-2.748) | (1.495) | (4.222) |
| City Employment | -0.0061** | 0.1030** | -0.0610*** | -0.0229 | 0.0137*** |
| | (-2.455) | (2.060) | (-2.716) | (-0.411) | (4.260) |
| City Total Wage | 0.0091*** | -0.0336 | 0.1291*** | 0.0292 | -0.0199*** |
| | (3.796) | (-0.779) | (5.985) | (0.595) | (-6.256) |
| Industry Fixed Effects | Yes | Yes | Yes | Yes | Yes |
| Year Fixed Effects | Yes | Yes | Yes | Yes | Yes |
| Obs. | 18,762 | 18,769 | 18,747 | 18,769 | 18,768 |
| R-squared | 0.2412 | 0.1972 | 0.7433 | 0.0873 | 0.3482 |

## Table 3. Alternative Culture Measures

This table reports the results of testing the effect of alternative culture measures. The dependent variables below ($Y_{i,t}$) are firm-level social contribution to assets ratio (a proxy for *Benevolence*, Column (1)), stakeholder protection (a proxy for *Righteousness*, Column (2)), entertainment expenses (a proxy for *Courteousness*, Column (3)), patents (a proxy for *Wisdom*, Column (4)), and trade credit (a proxy for *Trustworthiness*, Column (5)), respectively. These five dependent variables are measured in the same way as in Table 2. Panel A tests the following regression model:

$$Y_{i,t} = \alpha + \beta Confucianism_i + \rho Values_{i.t-1} + \gamma^{'} Controls_{i,t-1} + FE + \varepsilon_{i,t},$$

Where *Confucianism* is measured in the same way as in Table 2, and *Values* denotes a vector of other culture measures, including Buddhism (the logarithm of the number of (one plus) Buddhist temples within a 100km radius of a firm's headquarter), Taoism (the logarithm of the number of (one plus) Taoist temples within a 100km radius of a firm's headquarter), and FDI (the logarithm of the total foreign direct investment (plus one) in the city where the firm is headquartered). Panel B tests the following regression model:

$$Y_{i,t} = \alpha + \beta Jinshi_i + \gamma^{'} Controls_{i,t-1} + FE + \epsilon_{i,t},$$

Where the key explanatory variable is $Jinshi$, an alternative measure of Confucianism which is measured as the logarithm of the number of (one plus) imperial scholars (*Jinshi*) whose hometown are within a 100km radius of a firm's headquarter. *Controls* and *FE* represent the same set of control variables and fixed effects as in Table 2. Standard errors are clustered at the city by year levels. *t*-statistics are reported in the parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1%, respectively. All variable definitions are provided in Appendix Table A.1.

***Panel A. The Effects of Other Cultures***

| | (1) Social Contribution | (2) Stakeholder Protection | (3) Entertainment Expenses | (4) Patents | (5) Trade Credit |
|---|---|---|---|---|---|
| Confucianism | 0.0049*** | 0.0504*** | 0.0325*** | 0.0351** | 0.0032*** |
| | (4.816) | (5.001) | (4.041) | (2.381) | (2.850) |
| Buddhism | 0.0006 | 0.0083 | 0.0278*** | 0.0314** | 0.0012 |
| | (0.716) | (0.784) | (3.972) | (2.537) | (1.028) |
| Taoism | -0.0014 | -0.0499*** | -0.0307*** | -0.0200 | 0.0004 |
| | (-1.024) | (-3.072) | (-3.149) | (-1.099) | (0.280) |
| FDI | 0.0008 | -0.0145** | 0.0097 | 0.0149 | 0.0048*** |
| | (0.936) | (-2.025) | (1.324) | (1.380) | (5.329) |
| Control Variables | Yes | Yes | Yes | Yes | Yes |
| Industry Fixed Effects | Yes | Yes | Yes | Yes | Yes |
| Year Fixed Effects | Yes | Yes | Yes | Yes | Yes |
| Obs. | 18,259 | 18,266 | 18,244 | 18,266 | 18,265 |
| R-squared | 0.2419 | 0.1995 | 0.7445 | 0.0879 | 0.3535 |

*(Continued)*

**Table 3 *(Continued).* Alternative Culture Measures**

***Panel B. Alternative Measure of Confucianism***

| | (1) Social Contribution | (2) Stakeholder Protection | (3) Entertainment Expenses | (4) Patents | (5) Trade Credit |
|---|---|---|---|---|---|
| *Jinshi* | 0.0018*** | 0.0110*** | 0.0099*** | 0.0314*** | 0.0033*** |
| | (4.688) | (2.885) | (2.864) | (5.574) | (7.065) |
| Control Variables | Yes | Yes | Yes | Yes | Yes |
| Industry Fixed Effects | Yes | Yes | Yes | Yes | Yes |
| Year Fixed Effects | Yes | Yes | Yes | Yes | Yes |
| Obs. | 18,762 | 18,769 | 18,747 | 18,769 | 18,768 |
| R-squared | 0.2404 | 0.1973 | 0.7429 | 0.0877 | 0.3489 |

**Table 4. Instrumental Variable Regression**

This table reports the results of instrumental variable (IV) tests using two-stage least square regressions (2SLS):

$$Confucianism_i = \delta_0 + \delta_1 IV_{i/p} + \gamma^{'} Controls_{i,t-1} + FE + \varepsilon_{i,t},$$

$$Y_{i,t} = \beta_0 + \beta_1 \widehat{Confucianism}_i + \gamma^{'} Controls_{i,t-1} + FE + _{i,t},$$

Where $Y_{i,t}$ represents five corporate policies. Specifically, the dependent variables are firm-level social contribution to assets ratio (a proxy for *Benevolence*, Column (1)), stakeholder protection (a proxy for *Righteousness*, Column (2)), entertainment expenses (a proxy for *Courteousness*, Column (3)), patents (a proxy for *Wisdom*, Column (4)), and trade credit (a proxy for *Trustworthiness*, Column (5)), respectively. These five dependent variables are measured in the same way as in Table 2. IV represents the instrumental variables, which are: (1) *Confucian renowned scholars*, measured as the logarithm of (one plus) the number of Confucian scholars in the Ming Dynasty whose hometowns are within 100km of a firm's headquarter (plus one); (2) *death rate*, measured as the death rate of the local population at the provincial level during the Taiping Rebellion in late Qing; (3) *death toll*, measured as the logarithm of (one plus) the total death toll at the provincial level during the Taiping Rebellion. The key explanatory variable is *Confucianism*, which is measured in the same way as in Table 2. Panel A reports the first-stage results of regressing Confucianism on the three IVs. Panels B, C, D report the second-stage regression results using *Confucian scholars*, *death rate*, and *death toll* as the IVs, respectively. The control variables and fixed effects in the first-stage and second-stage models are the same as those in Table 2. Standard errors are clustered at the city by year levels. *t*-statistics are reported in the parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1%, respectively. All variable definitions are provided in Appendix Table A.1.

***Panel A. First Stage***

| *DV = Confucianism* | (1) | (2) | (3) |
|---|---|---|---|
| Confucian Scholars | 0.4928*** | | |
| | (26.622) | | |
| Death Rate | | 0.0129*** | |
| | | (11.691) | |
| Death Toll | | | 0.0854*** |
| | | | (11.516) |
| Control Variables | Yes | Yes | Yes |
| Industry Fixed Effects | Yes | Yes | Yes |
| Year Fixed Effects | Yes | Yes | Yes |
| Obs. | 18,768 | 18,769 | 18,769 |
| R-squared | 0.4788 | 0.2327 | 0.2458 |

*(Continued)*

**Table 4 *(Continued)*. Instrumental Variable Regression**

***Panel B. Second stage results with the number of Confucian scholars as IV***

| | (1) Social Contribution | (2) Stakeholder Protection | (3) Entertainment Expenses | (4) Patents | (5) Trade Credit |
|---|---|---|---|---|---|
| Confucianism | 0.0064*** | -0.0041 | 0.0332*** | 0.0634*** | 0.0065*** |
| | (5.896) | (-0.376) | (3.536) | (3.692) | (5.400) |
| Control Variables | Yes | Yes | Yes | Yes | Yes |
| Industry Fixed Effects | Yes | Yes | Yes | Yes | Yes |
| Year Fixed Effects | Yes | Yes | Yes | Yes | Yes |
| Obs. | 18,761 | 18,768 | 18,746 | 18,768 | 18,767 |
| R-squared | 0.2408 | 0.1967 | 0.7433 | 0.0872 | 0.3480 |

***Panel C. Second stage results with regional death rate as IV***

| | (1) Social Contribution | (2) Stakeholder Protection | (3) Entertainment Expenses | (4) Patents | (5) Trade Credit |
|---|---|---|---|---|---|
| Confucianism | 0.0126*** | 0.0477* | 0.0896*** | 0.1926*** | 0.0194*** |
| | (5.521) | (1.821) | (3.808) | (4.889) | (6.527) |
| Control Variables | Yes | Yes | Yes | Yes | Yes |
| Industry Fixed Effects | Yes | Yes | Yes | Yes | Yes |
| Year Fixed Effects | Yes | Yes | Yes | Yes | Yes |
| Obs. | 18,762 | 18,769 | 18,747 | 18,769 | 18,768 |
| R-squared | 0.2349 | 0.1961 | 0.7418 | 0.0789 | 0.3341 |

***Panel D. Second stage results with regional death toll as IV***

| | (1) Social Contribution | (2) Stakeholder Protection | (3) Entertainment Expenses | (4) Patents | (5) Trade Credit |
|---|---|---|---|---|---|
| Confucianism | 0.0100*** | 0.0655** | 0.0735*** | 0.1500*** | 0.0130*** |
| | (4.790) | (2.231) | (3.716) | (4.128) | (4.833) |
| Control Variables | Yes | Yes | Yes | Yes | Yes |
| Industry Fixed Effects | Yes | Yes | Yes | Yes | Yes |
| Year Fixed Effects | Yes | Yes | Yes | Yes | Yes |
| Obs. | 18,762 | 18,769 | 18,747 | 18,769 | 18,768 |
| R-squared | 0.2382 | 0.1945 | 0.7425 | 0.0831 | 0.3438 |

## Table 5. How Culture Interacts with Market

This table reports the results of testing the cross-sectional heterogeneity in the effect of Confucianism following the specification:

$$Y_{i,t} = \alpha + \beta\, Confucianism_i + \gamma' Controls_{i,t-1} + FE + \varepsilon_{i,t},$$

Where $Y_{i,t}$ represents five corporate policies, *Controls* represents a vector of control variables, *FE* denotes fixed effects. Specifically, the dependent variables are firm-level social contribution to assets ratio (a proxy for *Benevolence*, Column (1)), stakeholder protection (a proxy for *Righteousness*, Column (2)), entertainment expenses (a proxy for *Courteousness*, Column (3)), patents (a proxy for *Wisdom*, Column (4)), and trade credit (a proxy for *Trustworthiness*, Column (5)), respectively. These five dependent variables, as well as the key explanatory variable, *Confucianism*, are measured in the same way as in Table 2. We partition the whole sample into a high- and a low-market-orientation group based on whether the marketization index score (compiled by Fan et al. (2011) and updated every year) for the focal province in each year belongs to the top or the bottom tercile. The control variables and fixed effects in all columns are the same as those in Table 2. Standard errors are clustered at the city by year levels. *t*-statistics are reported in the parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1%, respectively. All variable definitions are provided in Appendix Table A.1.

| | (1) | | (2) | | (3) | | (4) | | (5) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Social Contribution | | Stakeholder Protection | | Entertainment Expenses | | Patents | | Trade Credit | |
| Market-orientation | Low | High | Low | High | Low | High | Low | High | Low | High |
| Confucianism | 0.0055*** | 0.0015 | 0.0231* | -0.0315** | 0.0612*** | 0.0043 | 0.0700*** | -0.0727** | 0.0066*** | 0.0065*** |
| | (4.267) | (0.854) | (1.848) | (-2.041) | (5.778) | (0.352) | (3.987) | (-2.083) | (4.929) | (2.867) |
| Control Variables | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Obs. | 5,298 | 4,013 | 5,299 | 4,015 | 5,295 | 4,010 | 5,299 | 4,015 | 5,299 | 4,015 |
| R-squared | 0.2518 | 0.2948 | 0.1725 | 0.2740 | 0.7080 | 0.7821 | 0.1002 | 0.1148 | 0.3431 | 0.3798 |

**Table 6. How Culture Interacts with Ideology**

This table reports the results of testing the cross-sectional heterogeneity in the effect of Confucianism following the specification:

$$Y_{i,t} = \alpha + \beta\, Confucianism_i + \gamma^{'} Controls_{i,t-1} + FE + \varepsilon_{i,t},$$

Where $Y_{i,t}$ represents five corporate policies, *Controls* represents a vector of control variables, *FE* denotes fixed effects. Specifically, the dependent variables are firm-level social contribution to assets ratio (a proxy for *Benevolence*, Column (1)), stakeholder protection (a proxy for *Righteousness*, Column (2)), entertainment expenses (a proxy for *Courteousness*, Column (3)), patents (a proxy for *Wisdom*, Column (4)), and trade credit (a proxy for *Trustworthiness*, Column (5)), respectively. These five dependent variables, as well as the key explanatory variable, *Confucianism*, are measured in the same way as in Table 2. We partition the whole sample into two subsamples based on whether the CCP secretary of the city (who is usually the supreme leader of the city) where a firm is headquartered joined the CCP before 1976, the year of Mao' death ("Maoist leaders"), or after 1979, the starting year of China's adoption of "reform and opening up" policy ("Dengist leaders"). The control variables and fixed effects in all columns are the same as those in Table 2. Standard errors are clustered at the city by year levels. *t*-statistics are reported in the parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1%, respectively. All variable definitions are provided in Appendix Table A.1.

| | (1) | | (2) | | (3) | | (4) | | (5) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Social Contribution | | Stakeholder Protection | | Entertainment Expenses | | Patents | | Trade Credit | |
| Politician ideology | Dengist | Maoist | Dengist | Maoist | Dengist | Maoist | Dengist | Maoist | Dengist | Maoist |
| Confucianism | 0.0046*** | 0.0037* | 0.0182** | -0.0062 | 0.0449*** | 0.0156 | 0.0528*** | -0.0203 | 0.0061*** | -0.0016 |
| | (5.252) | (1.854) | (2.071) | (-0.351) | (5.920) | (1.181) | (3.708) | (-0.948) | (5.704) | (-0.761) |
| Control Variables | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Obs. | 9574 | 3675 | 9576 | 3677 | 9567 | 3674 | 9576 | 3677 | 9576 | 3677 |
| R-squared | 0.2542 | 0.2291 | 0.1739 | 0.2632 | 0.7234 | 0.7606 | 0.0822 | 0.1180 | 0.3656 | 0.3571 |

## Table 7. How Local Culture Interacts with Foreign Cultures

This table reports the results of testing the cross-sectional heterogeneity in the effect of Confucianism following the specification:

$$Y_{i,t} = \alpha + \beta\, Confucianism_i + \gamma^{'} Controls_{i,t-1} + FE + \varepsilon_{i,t},$$

Where $Y_{i,t}$ represents five corporate policies, *Controls* represents a vector of control variables, *FE* denotes fixed effects. Specifically, the dependent variables are firm-level social contribution to assets ratio (a proxy for *Benevolence*, Column (1)), stakeholder protection (a proxy for *Righteousness*, Column (2)), entertainment expenses (a proxy for *Courteousness*, Column (3)), patents (a proxy for *Wisdom*, Column (4)), and trade credit (a proxy for *Trustworthiness*, Column (5)), respectively. These five dependent variables, as well as the key explanatory variable, *Confucianism*, are measured in the same way as in Table 2. We partition the whole sample into two subsamples based on whether there is at least one foreign director on the board or not. The control variables and fixed effects in all columns are the same as those in Table 2. Standard errors are clustered at the city by year levels. *t*-statistics are reported in the parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1%, respectively. All variable definitions are provided in Appendix Table A.1.

| | (1) | | (2) | | (3) | | (4) | | (5) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Social Contribution | | Stakeholder Protection | | Entertainment Expenses | | Patents | | Trade Credit | |
| Presence of foreign director | No | Yes | No | Yes | No | Yes | No | Yes | No | Yes |
| Confucianism | 0.0041*** | 0.0028 | 0.0170** | 0.0087 | 0.0354*** | -0.0300* | 0.0544*** | -0.0312 | 0.0053*** | 0.0014 |
| | (5.437) | (1.263) | (2.440) | (0.420) | (6.073) | (-1.743) | (5.433) | (-0.701) | (6.400) | (0.592) |
| Control Variables | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Obs. | 16563 | 2197 | 16569 | 2198 | 16553 | 2192 | 16569 | 2198 | 16568 | 2198 |
| R-squared | 0.2542 | 0.2291 | 0.1739 | 0.2632 | 0.7234 | 0.7606 | 0.0822 | 0.1180 | 0.3656 | 0.3571 |

**Table 8. Confucianism and firm performance**

This table reports the results of testing the effect of culture-biased corporate policies on firm performance in two-stage least square (2SLS) regressions. Columns (1)-(5) show the second-stage results of the following two-stage regressions:

$$Policy_{i,t} = \alpha + \beta Confucianism_i + \gamma' Controls_{i,t} + FE + \varepsilon_{i,t}$$

$$Performance_{i,t+1} = \alpha + \beta \widehat{Policy}_{i,t} + \gamma' Controls_{i,t} + FE + \epsilon_{i,t}$$

In the first stage, we regress a firm's social contribution, employee and supplier protection, entertainment expenses, the logged number of patents, and trade credit respectively on *Confucianism*, measured by the logarithm of the number of Confucian academies within a 100-kilometer radius around the a firm's headquarter. In the second stage, we regress firms' return on equity (ROE) (panel A), Operating Profit Growth (panel B), and CSR score (panel C) on the predicted values of the five corporate policies obtained from the first stage regressions. Column (6) reports the "reduced form" results of directly regressing the above performance measures on *Confucianism* and other variables as follows:

$$Performance_{i,t+1} = \alpha + \beta Confucianism_i + \gamma' Controls_{i,t} + FE + \iota_{i,t}$$

The control variables and fixed effects in all columns are the same as those in Table 2. Standard errors are clustered at the city by year levels. $t$-statistics are reported in the parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1%, respectively. All variable definitions are provided in Appendix Table A.1.

***Panel A. Dependent variable = ROE***

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| Social Contribution | 0.7717** | | | | | |
| | (2.312) | | | | | |
| Stakeholder Protection | | 0.2060** | | | | |
| | | (2.397) | | | | |
| Entertainment Expenses | | | 0.1069** | | | |
| | | | (2.373) | | | |
| Patents | | | | 0.0772** | | |
| | | | | (2.397) | | |
| Trade Credit | | | | | 0.7025** | |
| | | | | | (2.322) | |
| Confucianism | | | | | | 0.0035** |
| | | | | | | (2.397) |
| Controls and Fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Obs. | 18,761 | 18,768 | 18,746 | 18,768 | 18,767 | 18,768 |
| R-squared | 0.1174 | 0.1172 | 0.1175 | 0.1172 | 0.1169 | 0.1172 |

*(Continued)*

**Table 8 *(Continued).* Confucianism and firm performance**

| | | | | | | |
|---|---|---|---|---|---|---|
| ***Panel B. Dependent variable = Operating Profit Growth*** | | | | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Social Contribution | 3.7207** | | | | | |
| | (2.164) | | | | | |
| Stakeholder Protection | | 0.9382** | | | | |
| | | (2.125) | | | | |
| Entertainment Expenses | | | 0.5059** | | | |
| | | | (2.190) | | | |
| Patents | | | | 0.3515** | | |
| | | | | (2.125) | | |
| Trade Credit | | | | | 3.3013** | |
| | | | | | (2.117) | |
| Confucianism | | | | | | 0.0160** |
| | | | | | | (2.125) |
| Controls and Fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Obs. | 18,762 | 18,769 | 18,747 | 18,769 | 18,768 | 18,769 |
| R-squared | 0.0768 | 0.0779 | 0.0777 | 0.0774 | 0.0775 | 0.0779 |
| ***Panel C. Dependent variable = CSR score*** | | | | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Social Contribution | 5.2025*** | | | | | |
| | (2.849) | | | | | |
| Stakeholder Protection | | 1.3381*** | | | | |
| | | (2.853) | | | | |
| Entertainment Expenses | | | 0.6936*** | | | |
| | | | (2.828) | | | |
| Patents | | | | 0.5013*** | | |
| | | | | (2.853) | | |
| Trade Credit | | | | | 4.7206*** | |
| | | | | | (2.849) | |
| Confucianism | | | | | | 0.0229*** |
| | | | | | | (2.853) |
| Controls and Fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Obs. | 13,551 | 13,552 | 13,544 | 13,552 | 13,551 | 13,552 |
| R-squared | 0.2447 | 0.2448 | 0.2448 | 0.2448 | 0.2447 | 0.2448 |

## Table 9. Post-hoc Tests

This table reports the results of several post-hoc tests. In Panel A, the regression model is

$$Y_{i,t} = \alpha + \beta Confucianism_i + \gamma' Controls_{i,t-1} + FE + \varepsilon_{i,t},$$

Where $Y_{i,t}$ represents firm-level structure or policy, *Controls* represents a vector of control variables, *FE* denotes fixed effects. Panel A shows the results of testing within-firm hierarchy. The dependent variable in Column (1), is board hierarchy, a dummy variable that equals 1 if all the firm's independent directors are placed at the bottom rungs of the director list and 0 otherwise. The dependent variable in Column (2) is the female director ratio on board. The dependent variable in Column (3) is female directors dummy, a binary indicator that equals 1 if there is at least one female director on the board, and 0 otherwise. The dependent variable in Column (4) is the Blau index of female directors following Blau (1977). The key explanatory variable, *Confucianism*, the control variables and fixed effects in all columns are the same as those in Table 2. In Panel B, the regression model is

$$Y_{i,q,t} = \alpha_{i,q} + \delta_{t,q} + \beta_1 DisasterZone_{i,t,q} + \beta_2 Confucianism_i + \beta_3 Neighbor_{i,t,q} \times Confucianism_i + \beta_4 DisasterZone_{i,t,q} \times Confucianism_i + \varepsilon_{i,t},$$

Where $i$ indexes firm, $t$ indexes year, $q$ indexes calendar quarter (1 to 4), the dependent variable is cash (to asset) ratio at the end of quarter $q$ of year $y$, $\alpha_{i,q}$ are firm-quarter fixed effects, $\delta_{t,q}$ are year-quarter effects, *Neighbor* is a dummy variable that equals one if the firm is headquartered in the neighborhood of an area (over 400 kilometers and within 800 kilometers from the epicenter) hit by an earthquake over the last 12 months and zero if not, *Disaster Zone* is a dummy variable that equals one if the firm is headquartered within 400 kilometers from the epicenter of an earthquake over the last 12 months and zero if not. The key explanatory variable *Confucianism*, the logarithm of the number of Confucian academies within a 100-kilometer radius around a firm's headquarter. Since most of the usual firm-specific control variables are themselves affected by the disaster proximity, we do not include these control variables in the regression to avoid an "overcontrolling" problem (Dessaint and Matray, 2017). Standard errors are clustered at the city and year levels in Panel A, and at the city level in Panel B. t-statistics are reported in the parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1%, respectively. All variable definitions are provided in Appendix Table A.1.

**Panel A. Testing Within-Firm Hierarchy and Gender Diversity**

| | (1) Board Hierarchy | (2) Female Directors Ratio | (3) Female Director Dummy | (4) Blau Index |
|---|---|---|---|---|
| Confucianism | 0.0601* | -0.0087*** | -0.0988*** | -0.0102*** |
| | (1.685) | (-7.504) | (-4.946) | (-6.896) |
| Industry Fixed Effects | Yes | Yes | Yes | Yes |
| Year Fixed Effects | Yes | Yes | Yes | Yes |
| Obs. | 13295 | 18364 | 18364 | 18364 |
| R-squared | 0.0377 | 0.0779 | 0.0329 | 0.0743 |

*(Continued)*

**Table 9 *(Continued)*. Post-hoc results**

| **Panel B. Testing precautionary cash holding motive** | | | |
|---|---|---|---|
| DV = Cash ratio | (1) | (2) | (3) |
| Neighbor | 0.718* | 0.723* | 0.728* |
| | (1.79) | (1.82) | (1.83) |
| Disaster Zone | 1.444*** | 1.404*** | 1.415*** |
| | (3.11) | (3.04) | (3.06) |
| Confucianism | 0.007 | 0.001 | 0.003 |
| | (0.20) | (0.03) | (0.08) |
| Neighbor × Confucianism | | 0.014** | 0.012* |
| | | (2.34) | (1.94)) |
| Disaster Zone × Confucianism | -0.011 | | -0.007 |
| | (-1.61) | | (-1.11) |
| Firm-quarter Fixed Effects | Yes | Yes | Yes |
| Year-quarter Fixed Effects | Yes | Yes | Yes |
| Obs. | 94,479 | 94,479 | 94,479 |
| R-squared | 0.5051 | 0.5052 | 0.5052 |

**Table A1. Variable Definition**

| Variable | Source | Description |
|---|---|---|
| Confucianism | Local Chronicles in Qing Dynasty | The natural logarithm of (one plus) the number of Confucian academies within a 100km radius of a firm's headquarter. |
| Social Contribution | CSMAR | Social contribution (summing up total tax contribution, employee payment, interest expense, donations, and profit attributable to shareholders) divided by total assets. |
| Stakeholder Protection | CSMAR | The sum of binary indicators of whether a firm reports to have taken measures to protect its staff and suppliers. |
| Entertainment Expenses | CSMAR | The natural logarithm of management fees deducted by executives' and directors' wages plus one. |
| Patents | CSMAR | The natural logarithm of the number of patents authorized by the government plus one. |
| Trade Credit | CSMAR | The sum of accounts payable and notes payable divided by total assets. |
| Size | CSMAR | The natural logarithm of a firm's total assets plus one. |
| Leverage | CSMAR | The ratio of debt to total assets of a firm. |
| ROA | CSMAR | The ratio of a firm's net profit to total assets. |
| Revenue Growth | CSMAR | The annual revenue growth rate of a firm. |
| Operating Cash Flow | CSMAR | The cash flow generated by operating activity dived by total revenue. |
| SOE | CSMAR | A binary variable that equals 1 if the ultimate owner of the firm is the state, and 0 otherwise. |
| Buddhism | Yang (2011) | The natural logarithm of the number of Buddhist temples within a 100km radius around a firm's headquarter plus one. |
| Taoism | Yang (2011) | The natural logarithm of the number of Taoist temples within a 100km radius around a firm's headquarter plus one. |
| Jinshi | *A list of Jinshi in Qing Dynasty* | The natural logarithm of the number of imperial scholars (Jinshi) in Qing Dynasty whose hometowns are within a 100km radius around a firm's headquarter plus one. |
| Confucian Scholars | *History of Chinese Thought in the Ming Period* | The natural logarithm of the number of renowned Confucian scholars in the Ming Dynasty whose hometowns are within a 100km radius around a firm's headquarter plus one. |
| ROE | CSMAR | The ratio of a firm's net profit to its book value of equity. |
| Operating Profit Growth | CSMAR | The annual growth rate of a firm's operating profit. |
| CSR Score | *Hexun.com* | A firm's corporate social responsibility (CSR) score provided by Hexun.com |
| Board Hierarchy | Zhu et al. (2016) | A binary variable that equals 1 if all the firm's independent directors are placed at the bottom rungs of the director list and 0 otherwise. |

*(Continued)*

**Table A1 *(Continued)*. Variable Definition**

| Variable | Source | Description |
|---|---|---|
| Women Directors Ratio | CSMAR | The ratio of female directors to all directors on the board. |
| Women Directors Dummy | CSMAR | A binary variable that equals 1 if there is at least one female director on the board and 0 otherwise. |
| Blau Index | CSMAR | The Blau index of gender diversity in the board: $Blau = 1 - \sum_i P_i^2$ Where $P_i$ refers to the percentage of female or male board members (Blau, 1977). |
| Cash ratio | CSMAR | The ratio of a firm's cash to its total assets. |
| City GDP | National Bureau of Statistics of China | The natural logarithm of the city's GDP (in billion RMB). |
| City Employment | National Bureau of Statistics of China | The natural logarithm of the number of residents who are currently employed in the city (in thousand). |
| City Total Wage | National Bureau of Statistics of China | The natural logarithm of total employee wages (in thousand RMB) of the city. |
| FDI | National Bureau of Statistics of China | The natural logarithm of total foreign direct investment (in million USD) plus one. |
| Marketization index | Fan et al. (2011) | The index constructed by Fan et al. (2011) that captures the development of market-orientation of a province every year. This index is assessed in five fields with 23 component indicators. The five fields are the level of resource allocation by governments and the market, market intermediaries and the legal environment for the market, the development of the non-state enterprise sector, the development of the product market, and the development of labor, financial, and technology markets. |
| Death Rate | *Population History of China* | The death rate of the local population during the Taiping Rebellion. |
| Death Toll | *Population History of China* | The death rate of the local population during the Taiping Rebellion. |
| Perspectives on Raising Children | China Family Panel Studies | The percentage of respondents who choose "for old-age support" in response to the question "why do you want to have children?" |
| Divorce Population Ratio | National Bureau of Statistics of China | The percentage of divorced pairs to the average population at the provincial level. |
| Education Expenses | China Family Panel Studies | The natural logarithm of the amount of money that a family spends on children education plus one. |
| Intergenerational Coresidence Ratio | China Population Census in 2000 and 2010 | The percentage of households with four generations living under the same roof in each province. |

**Table A2. Validation Test of the Confucianism Measure**

This table reports the results of validating the Confucianism measure as a proxy for Confucian culture. The dependent variables are survey-based ratings based on three major Confucian cultures that are not directly related to our firm policy variables: (i). perspectives on raising children (Column (1)), (ii). provincial divorce population ratio (Column (2)), (iii). a family's education expense (Columns (3)), and (iv). the ratio of intergenerational coresidence ratio (the percentage of population for which at least four generations live under the same roof) of the local province. The key explanatory variable Confucianism is the natural logarithm of (one plus) the number of Confucian academies in a province. In Column (1), Controls include father age, mother age, father education level, and mother education level. In Column (2), the year fixed effect is controlled, and the control variables include provincial GDP, provincial GDP per capita, the logarithm of total employee wages in the province, and logarithm of the total employment in the province. In Column (3), Controls include family's total saving, an binary indicator for whether the family holds financial securities, total annual income, and total annual expenses. Column (4) includes year fixed effects as well as provincial GDP, provincial GDP per capita, and logarithm of the total employment in the province. Total employee wages in provinces in 2000 are not available. Standard errors are clustered at the provincial level. $t$-statistics are reported in the parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1%, respectively.

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | Perspectives on Raising Children | Divorce Population Ratio | Education Expenses | Intergenerational Coresidence Ratio |
| Confucianism | 0.0243** | -0.5437*** | 0.3176*** | 0.0011*** |
| | (2.252) | (-4.584) | (10.116) | (4.301) |
| Controls | Yes | Yes | Yes | Yes |
| Fixed Effects | Yes | Yes | Yes | Yes |
| Obs. | 8675 | 248 | 12871 | 62 |
| R-squared | 0.0059 | 0.4563 | 0.0609 | 0.3787 |

## Table A3. IV Regression Using the Data of 2008

This table reports the results of instrumental variable (IV) tests using two-stage least square regressions (2SLS) and only the data of 2008:

$$Confucianism_i = \delta_0 + \delta_1 IV_{i/p} + \gamma' Controls_{i,t-1} + FE + \varepsilon_{i,t},$$

$$Y_{i,t} = \beta_0 + \beta_1 \widehat{Confucianism}_i + \gamma' Controls_{i,t-1} + FE + _{i,t},$$

Where $Y_{i,t}$ represents five corporate policies. Specifically, the dependent variables are firm-level social contribution to assets ratio (a proxy for *Benevolence*, Column (1)), stakeholder protection (a proxy for *Righteousness*, Column (2)), entertainment expenses (a proxy for *Courteousness*, Column (3)), patents (a proxy for *Wisdom*, Column (4)), and trade credit (a proxy for *Trustworthiness*, Column (5)), respectively. These five dependent variables are measured in the same way as in Table 2. IV represents the instrumental variables, which are: (1) *Confucian renowned scholars*, measured as the logarithm of (one plus) the number of Confucian scholars in Ming Dynasty whose hometowns are within 100km of a firm's headquarter (plus one); (2) *death rate*, measured as the death rate of the local population at the provincial level during the Taiping Rebellion in late Qing; (3) *death toll*, measured as the logarithm of (one plus) the total death toll at the provincial level during the Taiping Rebellion. The key explanatory variable is *Confucianism*, which is measured in the same way as in Table 2. Panels A, B, C report the second-stage regression results using *Confucian scholars*, *death rate*, and *death toll* as the IVs, respectively. The control variables and fixed effects in the first-stage and second-stage models are the same as those in Table 2. Standard errors are clustered at the city levels. *t*-statistics are reported in the parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1%, respectively. All variable definitions are provided in Appendix Table A.1.

***Panel A. IV = Confucian scholars***

| | (1) Social Contribution | (2) Stakeholder Protection | (3) Entertainment Expenses | (4) Patents | (5) Trade Credit |
|---|---|---|---|---|---|
| Confucianism | 0.0089** | -0.0244 | 0.0306 | 0.1032* | 0.0173** |
| | (2.471) | (-0.807) | (0.896) | (1.871) | (1.985) |
| Control Variables | Yes | Yes | Yes | Yes | Yes |
| Industry Fixed Effects | Yes | Yes | Yes | Yes | Yes |
| Obs. | 1,423 | 1,425 | 1,420 | 1,425 | 1,425 |
| R-squared | 0.1974 | 0.0728 | 0.7286 | 0.0744 | 0.1222 |

*(Continued)*

**Table A3 *(Continued)*. IV Regression Using the Data of 2008**

***Panel B. IV = Death rate***

| | (1) Social Contribution | (2) Stakeholder Protection | (3) Entertainment Expenses | (4) Patents | (5) Trade Credit |
|---|---|---|---|---|---|
| Confucianism | 0.0263** | -0.1273 | 0.0536 | 0.2655** | 0.0358** |
| | (2.573) | (-1.376) | (0.445) | (2.001) | (2.442) |
| Control Variables | Yes | Yes | Yes | Yes | Yes |
| Industry Fixed Effects | Yes | Yes | Yes | Yes | Yes |
| Obs. | 1,423 | 1,425 | 1,420 | 1,425 | 1,425 |
| R-squared | 0.1250 | 0.0232 | 0.7284 | 0.0400 | 0.2374 |

***Panel C. IV = Death toll***

| | (1) Social Contribution | (2) Stakeholder Protection | (3) Entertainment Expenses | (4) Patents | (5) Trade Credit |
|---|---|---|---|---|---|
| Confucianism | 0.0234** | -0.1453 | 0.0584 | 0.2847** | 0.0463*** |
| | (2.211) | (-1.545) | (0.469) | (1.993) | (2.691) |
| Control Variables | Yes | Yes | Yes | Yes | Yes |
| Industry Fixed Effects | Yes | Yes | Yes | Yes | Yes |
| Obs. | 1,423 | 1,425 | 1,420 | 1,425 | 1,425 |
| R-squared | 0.1364 | 0.0095 | 0.7283 | 0.0333 | 0.1858 |

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