Can Cultural Norms Reduce Conflicts? Confucianism and Peasant Rebellions in Qing China*

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Abstract

Can culture mitigate conflicts triggered by economic shocks? In light of the extraordinary emphasis that Confucianism places on subordination and pacifism, we examine its role in possibly attenuating peasant rebellion within the historical context of China (circa 1651-1910). Our analysis finds that, while crop failure triggers peasant rebellion, its effect is significantly smaller in counties characterized by stronger Confucian norms as proxied by Confucian temples and chaste women. This result remains robust after controlling for a long list of covariates and instrumenting Confucian norms using ancient Confucian sages (500 B.C.-A.D. 550) to address concerns of measurement error and reverse causality.

Keywords: Cultural norms, Confucianism, Economic shocks, Conflicts, Peasant rebellions
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1. Introduction

There is now more or less a consensus that economic (climate) shocks tend to trigger social conflicts (Collier and Hoeffler, 1998, 2004; Miguel, Satyanath and Sergenti, 2004; Bruckner and Ciccone, 2010; Bai and Kung, 2011; Besley and Persson, 2011; among others). But much less is known, at least empirically, about the potential attenuating effect of cultural norms on conflicts, despite the theoretical claim that such an effect exists (Rasmusen, 1996; Posner, 2000; Putnam, 2000; Funk, 2004).[1] By employing a unique dataset, we examine whether a set of cultural (Confucian) norms that have persisted for at least several millennia have had the benign effect of reducing social conflicts triggered by economic shocks.

We predicate our analysis on a specific form of social conflict—peasant rebellions—and examine whether the cultural norms associated with Confucianism served to attenuate the effect of economic shocks in triggering peasant rebellions in the last 267 years of China's dynastic rule (the Qing dynasty, circa 1644-1911). Peasant rebellions are the principal form of social conflict in agrarian societies. In these societies, peasants live so close to subsistence that periodic food shortages caused by the vagaries of weather easily give rise to what James Scott (1976) termed "subsistence ethic"—an ideology that justifies the occasional robbing and plundering for the sake of survival. The ties with which the peasant rebels have had with their village communities render them neither full-time military nor criminals, only someone forced to switch from farm work to robbery in times of economic hardship (Hobsbawn, 1972; Scott, 1976). This "two-faced" nature of peasants renders peasant rebellion a uniquely interesting form of conflict whose occurrence may occasionally be sparked by economic shocks.

To suppress this "subsistence ethic", China's emperors had tirelessly inculcated in the populace Confucian norms throughout the country's long history (circa 206 B.C. to A.D. 1911).[2] By inducing shame and moral distress in those who fail to abide by the principles taught, Confucianism stresses the importance of "subordination"—of a subject to the ruler, of a son to his father, and of a wife to

[1] A notable example is shaming punishments, which involve deliberate public humiliation and moral distress of the offender, as an alternative to the formal criminal justice system (Posner, 2000). Recent endeavors of the United Nations and other international communities in implementing a "peace education program" in those areas of Africa rife with civil conflicts are premised on this principle (UNICEF, 2009; Blattman, Hartman and Blair, 2011).

[2] It is easy to understand why the Chinese emperors were concerned about peasant uprisings. Throughout the country's long history, peasant rebellions had directly overthrown Qin (221-207 B.C.), Han (202 B.C.–A.D. 220), Sui (581-618), Yuan (1271-1368), and the Ming dynasties (1368-1643) (Wakeman, 1975).

her husband; the intended result was conflict avoidance. To foster this ethos, the Chinese emperors built temples to honor Confucius and his followers, praised the so-called chaste women (*lienv*) for the sacrifice they allegedly made by remaining as widows or even committed suicide upon their husbands' deaths,[3] developed an education and civil service examination system based almost exclusively on the memorization of Confucian classics and rote learning,[4] and so forth. While the Confucian ethos was undoubtedly undermined during the tumultuous times of the Communist rule in the twentieth century, it has been revived and persists even to this day.[5] Indeed, few civilizations have seen the persistence of cultural norms for such a long period of time, which presents an ideal situation for testing the possible effect of culture on conflict reduction.

To do this, we construct a panel dataset of 107 counties in Shandong Province that covers 260 years (1651-1910), a period that basically overlaps with the Qing dynasty. After several millennia of diffusion, Confucianism had by the Qing dynasty been firmly established as the cornerstone of morality in the Chinese society, permeating thoroughly to even the bottom rung of the social hierarchy (Yang, 1961; Ho, 1962). As for choosing Shandong Province, the reasons are two-fold. Foremost is that Qufu County of Shandong Province is the birthplace of Confucius; choosing Shandong Province thus allows us to examine the purest effect of Confucian culture in reducing social conflicts.[6] Shandong is also ideal for studying peasant rebellions because historically, certain parts of the province had been prone to both droughts and floods and had turned out to be the heartland of peasant rebellions in China.

Empirically measuring the strength or more specifically the popularity of Confucianism, however, is challenging. In light of the importance that the Chinese emperors accorded to the "religion" and the praises they showered on local Confucian exemplars, we employ the numbers of Confucian temples and chaste women to proxy for the strength of Confucianism. Given that cultural norms tend to evolve very slowly over time, our two measures of Confucianism should be fairly stable throughout the Qing dynasty.

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[3] These women allegedly exemplified the important virtues of Confucianism, namely subordination, loyalty and purity.

[4] Established in the tenth century, the civil service examination was designed to select qualified candidates to serve in the state's bureaucracy.

[5] After being denounced during the Communist era, Confucianism was recently embraced, albeit cautiously by the Chinese Communist Party once again as the moral cornerstone on which to "re-establish" social morality and maintain a harmonious society. *The Economist*, April 28, 2011.

[6] We would have liked to test the hypothesis on China as a whole, but the amount of time and effort required to collect the necessary data would be prohibitively arduous.

To empirically assess if Confucian norms play any significant role in mitigating the effect of economic shocks on peasant rebellions, we rely on the results of the interaction between yearly incidence of crop failure in each county and Confucian norms within the framework of a generalized difference-in-differences approach. This allows us to use county- and year-fixed effects to control for all the county-specific factors and the common trend faced by all the counties alike that may bear upon both peasant rebellions and Confucian norms.

But the effect of culture could still be confounded by other unobserved socioeconomic characteristics correlated with both Confucian norms and peasant rebellions. A notable case in point is economic prosperity, which is likely correlated with the numbers of temples, on the one hand, and peasant rebellions on the other. We control for this possible omission by employing two proxies—the suitability of land for planting the major crops at the time and the level of urbanization.

As Confucian classics made up the core curriculum in schools, our measures of Confucianism likely also capture the effect of education on peasant rebellions. To disentangle the effect of Confucian culture from that of education, we control for the number of schools in each county to proxy for education. A related possible omission is social mobility. In late imperial China, social mobility was achieved via success in civil service examinations, whose syllabi also drew heavily on the memorization of Confucian classics. To rule out the possibility that Confucian norms may affect peasant rebellions via the channel of social mobility (i.e., those who failed the exam became a rebel), we employ the number of county/prefectural level degree holders (*shengyuan*) to proxy for social mobility, as such a degree is the ticket to the gentry class and facilitated upward mobility.

Then there is the issue of state capacity, which is likely to reduce conflicts but may also simultaneously affect the diffusion of Confucian norms. To reduce this possibility, we expand our list of control variables to include also the number of imperial soldiers stationed in a county, a county's famine relief capacity (granaries) and fiscal capacity (land tax), and a county's political status (of being a prefectural capital).

Taoism and Buddhism—two religious-cum-philosophical beliefs—similarly advocate harmony, and so we control for them by enumerating their temples. By the same token, we also control for the possible effect of Western influence in the late Qing period by employing the years of opening up to the West (using the duration of treaty ports as proxy) and the years of (Christian) missionary presence. In order to disentangle the hypothesized mitigating effect of Confucian norms from the above list of controls, we interact these controls with crop failure.

Our empirical analysis finds that, while economic shocks as measured by crop failure do have the expected positive effect on the number of peasant rebellions, the effect is significantly smaller in counties with stronger Confucian norms. While we cannot rule out every conceivable factor that might be correlated with both Confucian norms and peasant rebellions, the evidence gathered is sufficiently robust in substantiating the claim that Confucian norms or culture have had a mitigating effect on economic shocks and accordingly peasant rebellions.

Given that temples may be destroyed during civil conflicts, reverse causality cannot be ruled out. A related concern is possible measurement error arising from the crudeness of our proxies for Confucian norms. To address these issues we adopt an instrumental variable approach in which we employ the number of ancient Confucian sages that ever lived prior to the Qing dynasty (from 500 B.C. to A.D. 550) to instrument for the strength of Confucian norms during Qing times. Our choice is premised on the reasoning that the strength of Confucian norms as it had developed over the past 2000 years would likely have continued into the Qing dynasty and thus be strongly correlated with it. Consistent with the OLS findings, the instrumented results reaffirm that the effect of economic shocks on peasant rebellions is significantly reduced by strong Confucian norms.

Our study contributes to an emerging literature that examines the mediating effects of political institutions, culture, and technology on conflicts. For example, Besley and Persson (2011) find that the effect of economic shocks on political violence exists only where political institutions are non-cohesive. Similarly, Jia (2014) observes that the triggering effect of droughts on peasant revolts in historical China could be mitigated by the introduction of New World crops—specifically the sweet potatoes. Likewise, Fetzer (2013) reports that in India a social insurance scheme known as the "Indian National Rural Employment Guarantee" has had the virtuous effect of mitigating insurgency violence triggered by income shocks.

Our study also contributes to a small but growing literature that examines the direct effect of cultural norms on conflicts, violence and crime. For example, Voigtlander and Voth (2012) find that medieval anti-Semitism can explain the violence against the Jews in the 1920s. Similarly, Fisman and Miguel (2007) find that diplomats from countries with severe corruption proclivities have a tendency to commit parking violations in the United Nations. Of course, not all cultural norms have a negative impact on social behavior. We aim to demonstrate how, in the context of China's long history of civilization, the stable cultural norms of Confucianism had had the effect of mitigating social conflicts triggered by economic shocks. In this respect, our work coincides with that of MacCulloch and

Pezzini (2010), who find that Christian beliefs have the benign effect of reducing the taste for revolts, and is in line with Buonanno, Montolio and Vanin's (2009) finding that a fear of social stigmatization and ostracism can similarly deter criminal behaviors.

The remainder of this article proceeds as follows. The next section (Section 2) provides a historical background on peasant rebellions and Confucianism in late imperial China. Section 3 describes our sample and the construction of our variables. The effects of economic shocks and Confucianism on peasant rebellions are examined in Section 4. Section 5 checks the robustness of our estimations by adding a wide array of controls, whereas Section 6 discusses the rationale and results of the instrumental variable estimations. Section 7 provides a brief conclusion to the study.

2. Historical Background

2.1. Economic Shocks and Peasant Rebellions in Historical China

By and large peasant rebellions had afflicted the entire imperial China (221 B.C. – A.D. 1911), which for thousands of years had remained a predominantly agrarian economy subject to the vicissitudes of weather.[7] In this "land of famine", to borrow Mallory's (1926) term, the repeated ravages of weather shocks, periodic food shortages (and famines in the more extreme instances) and accordingly peasant rebellions were indeed a recurrent feature of rural China's economic and social reality.[8]

The periodic food shortages caused by the vagaries of weather easily gave rise to what James Scott (1976) termed "subsistence ethic"—one that justifies the occasional robbing and plundering by peasants when their subsistence is threatened (see also Hobsbawn, 1972). Frederic Wakeman's (1975, p. 6) depiction of the Chinese peasant-rebel as someone who "constituted the economic foundation of traditional Chinese society" (by devoting their lives to laborious farm work), but also "stepped out of this role and momentarily attached themselves just as firmly to ambitious bandits at the head of rebel armies" when economic resources were scarce, is an excellent example of the "subsistence ethic"

[7] In fact, China remained an agrarian economy until the early twentieth century, with roughly 95 percent of the population still classified as peasants then (Zhang, 1931).

[8] Evidence based on the past several thousand years shows that droughts had occurred at the rate of roughly once every seven years in the northern and central provinces, but about once every four years in the other provinces (Mallory, 1926). Moreover, the lack of irrigation infrastructure in most places suggests that crop yields were at the mercy of the weather (Sun, 1957).

at play. Indeed, this pattern of "time allocation" between farming and banditry is consistent with the records of Qing China's Board of Punishments, which found that banditry was "usually a seasonal activity closely tied to the agricultural calendar". In particular the "prime time for bandits" coincided with the slack farming seasons in the winter months of North China when there was little if any work to be done, with banditry falling off remarkably "after entering the busy agricultural season of Spring" (Esherick, 1987, pp. 22-3).[9]

Thus, notwithstanding the fact that some well-known peasant rebellions in the course of Chinese history had resulted in dynastic decline, the vast majority of these revolts were merely local unrests involving the plundering of resource-rich and powerful officials by no more than several hundred peasants in times of economic hardship. C. K. Yang (1975) offer evidence of this in his study of social unrests that occurred during the second half of China's Qing dynasty (1796-1911), where he found that less than 4.7 percent of the peasant rebellions enumerated involved over 10,000 participants.[10]

2.2. Confucianism

Moral suasion, especially when applied via the subtle indoctrinating influence of cultural norms, can be an effective means of governance. Throughout various dynasties, China's imperial authorities had indeed appealed to the virtues of subordination and pacifism—the twin pillars of Confucianism—in suppressing the "subsistence ethic".[11] The founding emperor of the Ming dynasty (1368-1643), Zhu Yuanzhang, was convinced that "indoctrination is the key to govern a country". As a matter of fact, most emperors in Chinese history had religiously adhered to the following creed from Confucius: "Lead the people with governmental measures and regulate them by law and punishment, and they will avoid wrongdoing but will have no sense of honor and shame. Lead them with virtue and regulate them by the rules of propriety, and they will have a sense of shame and, moreover, set themselves right" (*The Analects*).

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[9] This feature of peasant rebellions was found especially pervasive on the North China plain during the nineteenth century, where an "aggressive survival style"—articulated in the forms of banditry, organized feuds, and local militarization—saw the peasants alternating between farming and banditry conditional on the vagaries of weather (Perry, 1980).

[10] Wolf (1969), Chesneauxs (1973), Feuerwerker (1975), Tong (1991), and Rowe (2009) paint a similar picture of peasant rebellions in historical China.

[11] According to historians of China, the use of moral suasion for social control was also a consequence of: a) the sheer area of the country and size of its population, and b) the lack of a modern, sophisticated bureaucratic system (Hsiao, 1960; Wakeman, 1975).

Indeed, Confucianism had been actively promoted by various Chinese emperors as orthodox ideology (state religion) for over two thousand years (throughout almost the entire dynastic regime) on grounds of the powerful conviction that its "pacifist" doctrines are capable of discouraging conflicts and violence. As a complex system of ethics, Confucianism has persisted tenaciously for several millennia since sixth century B.C. when Confucius (551-479 B.C.) first began teaching. In a nutshell, Confucianism preaches the pursuance of harmonious human relations through the cultivation or (more appropriately) indoctrination of the twin virtues of subordination and pacifism.[12] Embodied in the *Three Guiding Principles* (*sangang*), which had been actively promoted throughout various imperial regimes, the Confucian ethics advocate specifically the subordination of a subject to the ruler (with a distinct emphasis on loyalty towards the emperor—the so-called "Mandate of Heaven"), of a son to his father and of a wife to her husband. By distinctly emphasizing filial piety and subordination within the family, the latter two principles constitute the micro-basis justifying subordination to the rulers—the first and overriding principle (Yao, 2000).

While the *Three Guiding Principles* lay down a clear subordinating relationship between actors within both the society and family, the *Five Constant Regulations* (*wuchang*) stress a number of social norms (compassion, righteousness, propriety, wisdom, and faithfulness), the violation of which would lead to severe penalty in the form of stigmatization and ostracism within one's community and family. Fear of such punishments, it is believed, would help suppress violence and reduce conflicts (Yao, 2000).

2.3. The Diffusion of Confucianism

From (as early as) the West Han dynasty (206 B.C. – A.D. 9) onwards, the imperial authorities had consciously and persistently promoted the Confucian virtues through: 1) the erection of temples for worshipping and honoring Confucius and those adhering religiously to his cardinal principles, and 2) honoring behavior that emphasized these principles.

The erection of Confucian temples within which the associated rituals could be practiced represented an important means of promoting Confucianism (Yang, 1961; Ho, 1962; Chow, 1994). Specifically, local governments were required to build temples and to perform sacrificial rites to worship the Confucian sages like

[12] From the Confucian perspective, the causes of conflict lie in one's own heart; people will naturally have peace when the heart is at peace; it is not riches or power, but virtuous manners that constitute harmonious human relations. In contrast, an uncultivated character causes one to be unhappy and prone to complaints, triggering conflicts and violence (Yao, 2000, pp. 179-80).

Confucius and Mencius and their followers (the Confucian scholars).[13] Meanwhile, local officials and gentry, who were deeply schooled in ethical Confucianism themselves, put a great deal of effort into popularizing Confucianism by persuading peasants of the importance of the moral principles underpinning the Confucian values (Chang, 1955; Wakeman, 1975; Fairbank and Reischauer, 1989).

Confucian norms were also diffused through publicly praising local examples of laudable behavior and conduct. A notable Confucian exemplar was "chaste women" or *lienv*, who were basically widows who had vowed not to remarry or, at the extreme, even committed suicide after their husbands' deaths, in order to demonstrate their unshaken determination to preserve fidelity and loyalty to their (deceased) husbands until death. [14] Reflecting the Confucian ethics of subordination and loyalty (which serve as the foundation of subordination to the ruler), chaste women were held in the highest regard by the imperial authorities and greatly honored in their own local communities from as early as the Zhou dynasty (1046–256 B.C.). During the Ming and Qing dynasties, the imperial authorities promoted this virtue to an unprecedented level. Not only were a set of sophisticated laws established for the sake of canonizing the chaste women, rituals were also developed for honoring them (Chow, 1994; Mann, 1997). For example, after getting nominated by the local gentry, candidates were subjected to strict scrutiny by various levels of government authorities before their "purity" was certified and the coveted honor of a chaste woman was eventually conferred on them by the court. After receiving the honor, memorial archways would be constructed in their hometowns to broadcast these virtues.

Not unexpectedly, the number of chaste women increased by leaps and bounds in late imperial times. Indeed, historical records indicate that, when measured on a decadal basis only one chaste woman had been identified in every one million of the population in the Yuan dynasty (1271-1368), but that number increased sharply to 13 and 16 during the Ming and Qing dynasties respectively.[15] This surge suggests the growing importance that the imperial authorities had placed

[13] Emperor Yongzheng (1722 to 1735) of the Qing dynasty decreed that counties should build temples in which men (and women) who excelled in filial piety and loyalty should be duly honored.

[14] The deeds of chaste women were recorded in detail in the local gazetteers during the Ming and Qing dynasties. An example is Jing Shi, a native of Licheng County, Shandong Province, who was conferred the honor of a chaste woman for her determination to continue looking after her parents-in-law after her husband passed away when she was only 28 (*Licheng Gazetteer*, 1926).

[15] The data on chaste women are obtained from the *Gujin tushu jicheng (Great Collection of Ancient and Modern Books)* (1726).

upon the Confucian ethics and norms as the last Chinese dynasty approached its eventual decline.

A confounding factor is education and in connection to it social mobility. Although Confucian classics and rote learning were almost exclusively taught in schools (Weber, 1922; Elman, 2000) and as such would very likely bear upon the diffusion of Confucianism, the latter's effect may well have come through the channel of social mobility. After all, social mobility, which in the historical Chinese context meant that those from a ("commoner") background without an educated literatus or gentry scholar as family member were able to study Confucianism, could only be achieved via passing the imperial civil service examinations (Ho, 1962; Rawski, 1979).[16] It is against this reasoning that we prefer to treat education and social mobility not as a measure of Confucianism but rather as having an independent effect on the dependent variable of interest.

After two thousand years, Confucian ideology had arguably permeated the entire social strata and established itself as the predominant social norms among the Chinese populace (Yang, 1961; Ho, 1962; Fairbank and Reischauer, 1989). This may be evidenced, at least in part, by the fact that every township in Qing China had a temple built to honor and venerate Confucius and his followers, to the degree that veneration of the Confucian sages is likened to the Christians' worship of Jesus Christ and the Muslims' reverence for their prophet Mohammed (Carus, 1918, p. 155).

The effective diffusion of Confucian values and norms can also be gleaned from the fact that the overriding goal of suppressing the Taiping Rebellion (1850-1864) was not so much to protect the Manchu regime as to uphold Confucianism against a distorted interpretation of Christianity—the Society of God Worshippers, or *Bai Shangdi Hui* (Fairbank and Goldman, 1992).[17] Likewise, the patriotic Boxers of the late nineteenth century who ended up killing many Western missionaries and Chinese communicants did so to preserve the Confucian values

[16] Confucian classics refer to the Four Books of *Great Learning*, *Doctrine of the Mean*, *Analects*, and *Mencius*, and the Five Classics of *Book of Changes*, *Classic of Poetry*, *Classic of Rites*, *Classic of History*, and *Spring and Autumn Annals* (see Nylan, 2001 for details). Students began their studies as young children by learning basic Chinese characters and memorizing the thousands of characters composing the Confucian classics. They then went on to master and memorize the Four Books and the Five Classics, and to practice their composition skills of the eight-legged essays that were required in the examinations.

[17] With the most profound demographic consequences in Chinese history (the number of casualties was estimated to range between 50 [Perkins, 1969] and 73 million [Cao, 2000]), the Taiping Rebellion may be regarded as a "holy war" waged on Confucianism. It arose out of a disdainful denunciation of Confucianism and the Qing rule, and was suppressed by two army generals who were Confucian scholars—Zeng Guofan was a *jinshi* and Zuo Zongtang was a *juren* (Fairbank and Goldman, 1992).

(Spence, 1990).[18] Last but not least, that Confucian norms had firmly established itself in the Chinese society was also borne out by the New Cultural Movement (1915-1921)—the Chinese "Renaissance" that occurred shortly after the collapse of the Qing dynasty, wherein the Confucian culture was thoroughly condemned as being the key contributing factor to China's failure to develop the economy and democracy (Schwartz, 1983).

The crux, for our purpose, is whether the diffusion of Confucian ethics played a role in reducing social conflicts or specifically peasant rebellions. Anecdotal evidence suggests it did. For example, the prevailing popular expression "be a peaceful dog [rather than] a rebel" clearly opined that one should strive to become a "courteous gentleman" rather than a "martial knight". Even the peasant rebel army head Li Zicheng (1606-1645) and many other social bandits, who were forced (by adverse circumstances) into such roles, maintained a reverence for Confucius, to the extent that the Confucius family mansion and temples in the hometown of Confucius were effectively spared from their plundering (Zeng, 1876).[19] We thus expect that the diffusion of Confucian values and norms in China to have played a significantly positive role in reducing peasant rebellions.

3. Data

3.1. The Sample

To examine the effect of Confucianism on peasant rebellions, we construct a panel dataset that covers the 107 counties of Shandong Province throughout the 267 years of China's Qing dynasty (1644-1911). There are good reasons for choosing Shandong on the North China Plain for examining the possible effect of Confucianism on peasant rebellions (Appendix Figure A1). Foremost is that, being the birthplace of Confucius (Qufu County to be precise) and many other great Confucian sages, Shandong Province was the origin of the orthodox Confucian culture.[20] Its sacrosanct importance was reinforced in late imperial (Qing) times as

[18] China was forced to open up to the West after its defeat in the First Opium War (1839-1842) and the signing of a series of so-called "unequal treaties", particularly the Tianjin Treaty of 1860, which resulted in a more thorough penetration by the foreigners. A group of spontaneously formed, patriotic anti-imperialists in 1900 known as the "Boxers" attacked the foreign missionaries and communicants for the alleged superiority the latter imposed upon the Chinese, which essentially was underpinned by a clash of values between Confucianism and Christianity (Esherick, 1987).

[19] Li Zicheng was a famous peasant rebel leader who overthrew the Ming dynasty.

[20] Both Confucius and the majority of his disciples came from Qufu County or its nearby regions. His disciples, many of whom subsequently became great Confucian sages or scholars themselves, continued to spread Confucius' doctrines back in their hometowns or other places

some emperors, most notably Kangxi and Qianlong, chose to perform sacrificial ceremonies and built more temples there, and granted feudal nobility to descendants of the great Confucian sages who continued to live there (Elliott, 2009). While the county of Qufu and its neighboring regions allow us to examine the effect of Confucianism on peasant rebellions, there were regions within the province that were distinctly weak in the Confucian tradition. This sharp contrast within Shandong Province thus provides us with a suitable setting for examining the effect of Confucianism on peasant rebellions (more on this below).

Second, historically the western plain of Shandong Province was frequently struck by natural calamities. While droughts were a common occurrence, the Yellow River—the second largest river in China that runs from western Shandong to the sea—occasionally breached its levees to flood the western plain. By contrast, the eastern part of Shandong (the peninsula) enjoyed a plentiful supply of rainfall and was far away from the flooding areas of the Yellow River. By the mid-to-late nineteenth century the Yellow River had shifted its course repeatedly (1852-1887), leading to a series of floods and consequently widespread crop failures. Even more unfortunate was that such mishaps were followed on close heels by the great drought of 1896-1897, resulting in a large-scale famine in Shandong and other parts of North China.

Accordingly, certain pockets in west Shandong were also home to the social bandits and popular unrests in historical China (Esherick, 1987). One of the four classic Chinese novels, the *Water Margin* (also known as *Outlaws of the Marsh*), which tells a tale of how a group of 108 outlaws gathered at Mount Liang (or *Liangshan* Marsh) and amassed a sizable army to resist the government, was set in southwest Shandong in the early twelfth century (the Song dynasty). By the late nineteenth and early twentieth centuries, Western missionaries saw southwestern Shandong as the place where the "classic Eldorado of bandits" were gathered (Stenz, 1897).[21]

It is also worth mentioning that, with a land area approximately 20 percent larger than that of England, and with more than a hundred counties (107) having sufficient variations in culture, weather conditions, and peasant rebellions (see subsections 3.2 and 3.3 for details), Shandong Province is uniquely suited for

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near Qufu (Esherick, 1987; Legge, 1991). That was why Qufu was promoted as the "holy land" of Confucianism by various imperial authorities from the Han dynasty (206 B.C.-A.D. 220) onwards (Forsyth, 1912).

[21] In his book *The Origins of the Boxer Uprising*, historian Joseph Esherick (1987) finds that Confucianism's lack of popularity in southwestern Shandong (especially Caozhou Prefecture) was an important reason behind the dominance of heterodox sects, which orchestrated endemic crime, banditry, and revolts in times of economic hardship.

conducting a study of this nature. Focusing on a single province enables this study to avoid the unobserved heterogeneities that typically afflict other studies involving cross-country comparisons.

We choose the Qing dynasty (1644-1911) to be our sample period because, as we have pointed out in subsection 2.3, Confucianism had by then become deeply ingrained in the Chinese society after several millennia of promotion by successive emperors. We begin our analysis from 1651 onwards to exclude those social unrests carried over from the Ming dynasty. Similarly, we end our analysis in 1910 simply to avoid the complicated political circumstances that clouded the final year of the Qing dynasty (1911).

3.2. Measures of Peasant Rebellions and Economic Shocks

The dependent variable, peasant rebellions, is measured by the number of uprisings that reportedly occurred in a county on a yearly basis. The detailed records on the place and time of each peasant rebellion were meticulously compiled by the Qing court in the *Qing Shilu* (Veritable Records of the Qing Emperors).[22] According to Chinese historians, the *Qing Shilu* is the most complete and systematic source of original information on social unrests that occurred during the Qing dynasty. Indeed, C. K. Yang (1975) checked the accuracy of the entries on peasant rebellions by comparing those listed in the *Qing Shilu* against those enumerated in 40 county gazetteers of six provinces, and found that the *Qing Shilu* did adequately cover virtually all the reported social unrests (specifically the location and time of occurrence). Figure 1(a) shows the striking contrast in the number of peasant rebellions across the counties within Shandong Province. For example, whereas those counties in the south and southwestern regions were heavily afflicted, the other parts of the province were decidedly more peaceful.

Being a rain-fed agrarian economy, China was susceptible to economic shocks, which oftentimes resulted in crop failure. To measure such shocks, we employ a dummy variable to indicate whether a county had experienced crop failure. In

[22] The *Qing Shilu* is the official record of imperial edicts and official memorials about events of national significance. Unfortunately, it contained no systematic information on the size and causes of the rebellions—they were all uniformly referred to as "*feiluan*" (bandit unrests). We provide below two examples of rebellions as they were documented in the *Qing Shilu*. Case 1: "The twelfth year of Tongzhi emperor (1873): stationed in Guan County, a group of bandits plundered around. County magistrate Li Yu was ordered (by the court) to lead the local constables to suppress them ..." Case 2: "The third year of Xianfeng emperor (1852), March: the grand councillor of state was instructed to quell the thousands of bandits headed by Huang Fu in Weishan Lake, who plundered frequently."

addition, we also lag this variable by one year, as crops in north China are typically harvested in summer and autumn, hence, peasant rebellions induced by harvest failures are more likely to occur in the following year. According to the *Qing Shilu*, the documented crop failures were invariably caused by such natural disasters as droughts, waterlogged land, floods, locust plagues, and earthquakes—in short by exogenous weather shocks.[23] Figure 1(b) shows that counties in the western regions were prone to crop failure, but the other parts of the province were relatively immune to it.

For robustness, we also employ the unusual levels of rainfall in drought and waterlogging episodes (hereafter "extreme rainfall") as alternative measures of economic shocks. The rainfall data are obtained from *Zhongguo jin wubai nian hanlao fenbu tuji* (*Atlas on the Spatial Distribution of Drought and Waterlog in China for the Recent Five Hundred Years*), complied by the China Meteorological Administration (1981). The rainfall level is differentiated on a scale of 0 to 2, with 0 indicating normal weather conditions, 1 indicating slight drought or waterlogging, and 2 indicating severe drought or waterlogging.[24] But since in peasant societies extreme rainfall is not as direct a measure of income shock as crop failure—not to mention that rainfall data are available only at the prefecture (rather than county) level, we continue to use crop failure as our key measure of economic shock and employ extreme rainfall to check its robustness.

[Figure 1 about here]

3.3. Measures of Confucian Norms

Our main challenge lies in constructing a valid measure to proxy for the strength of Confucianism. Unlike other religions (such as Christianity), whose strength can be measured by, for instance, the share of communicants in a population (e.g., Becker and Woessmann, 2009; Bai and Kung, 2014), Confucianism resembles more of a set of social norms, and therefore lacks a clear-cut standard with which to

[23] The *Qing Shilu* contains the most systematic information on crop failures that occurred in the Qing dynasty. For example, "The eighth year of Tongzhi emperor (1869): Due to waterlogging, drought, and locust plagues, the counties of Licheng, Shouzhang, Fan, Dong-e, Jining, Zouping, Changshan, Qihe...of Shandong Province are exempted from taxation until further notice."

[24] The original values in the *Atlas* ranged from 1 to 5, with 1 indicating severe drought, 2 slight drought, 3 normal weather conditions, 4 slight waterlogging, and 5 severe waterlogging. To combine the two measures in the same direction, we convert 3 (normal weather conditions) to 0, 2 and 4 to 1 (slight drought or waterlogging), and 1 and 5 to 2 (severe drought or waterlogging).

identify the true believers. After careful deliberations, we came up with some reasonable proxies for the strength of Confucian norms.

Our first measure of Confucian norms is the number of Confucian temples that a county had established. Our choice is premised on the reasoning that stronger Confucian norms would likely give rise to more Confucian temples being built, which would in turn deepen those norms (Ho, 1962). According to the Qing court, Confucian temples were differentiated based on whether they were specifically erected for honoring Confucius (e.g., *wenmiao*), for honoring the notable officials and local virtuous Confucians (e.g., *minghuan xiangxian ci*), or for honoring the local loyal and filial men (e.g., *zhongxiao jieyi ci*) (Yao, 2000).

Our second measure is the number of chaste women officially elected by the Qing court. Due to data limitations, we can only cover the period 1644-1890—about two decades before the Qing dynasty came to an end. We consider chaste women a valid proxy for Confucian norms because, as discussed in subsection 2.3, the deeds of the chaste women were considered an ultimate expression of the Confucian virtues pertaining to purity, loyalty, and subordination, and thus represented a code of conduct that the Qing government was eager to promote. Moreover, unlike temples, it is less likely for chaste women to be correlated with economic prosperity.

As with the other important social and economic affairs of the time the Qing government kept systematic records of these temples and chaste women in the *Shandong Tongzhi* (Provincial Gazetteer of Shandong), a compendium compiled since the 1890s and published in 1934. More than 96 percent of the Confucian temples had already been built before the Qing dynasty (Appendix Figure A2).[25] Information is available on when a temple was constructed (specifically by reign of the emperor-cum-dynasty) for about 58 percent of those temples. As for chaste women, the *Shandong Tongzhi* does not provide specific information regarding when they were conferred; it only lists the total number of chaste women between 1644 and 1890.

Since the *Shandong Tongzhi* (1934) does not provide temporal variations in the numbers of Confucian temples and chaste women, we are treating the strength of Confucian norms during the Qing dynasty as time-invariant. This is also consistent with the fact that cultures are likely to remain stable over a long period of time (e.g., Boyd and Richerson, 1985; Putnam, 1993; Tabellini, 2010; Nunn and Wantchekon, 2011; Voigtlander and Voth, 2012). Appendix Figure A2, which

[25] It is possible that the *Shandong Tongzhi* may have excluded those temples that had been destroyed in uprisings, yet it remains the most reliable source for the number of temples that existed in the Qing dynasty.

shows the number of newly-established Confucian temples by the reign of emperor (and the corresponding dynasty) from 206 B.C. to A.D. 1911, suggests that Confucianism had cumulatively developed from China's long historical past and must have become firmly established as the orthodox religious-cum-cultural ideology in China by the Qing dynasty (Fairbank and Reischauer, 1989). To account for the possible effect of county size on our independent variables, we normalize them primarily by land area (per 1,000 km^2).[26] To reduce skewness in our two measures, we express them in terms of natural logarithm. Figures 1c and 1d, which respectively show the numbers of Confucian temples and chaste women (per 1,000 km^2) at the county level in Shandong Province, indeed reveal a positive relationship among the two measures (at the 1% level of significance and with a coefficient greater than 0.54). Moreover, the geographic distribution of each of these measures apparently supports the idea that Confucian norms were distinctly stronger in the "holy land" of Confucianism. For instance, Figures 1c and 1d show that there were indeed more temples and chaste women in the Confucian "Mecca" of *Qufu* and its surrounding counties, as well as in the northwestern part of the province, than elsewhere in the province.

One yardstick by which to ascertain whether Confucian temples and chaste women are sound proxies for Confucian culture is to examine the extent to which they may be correlated with Confucian culture or the local folk customs such as "respecting Confucianism" (*zunru*), "observing propriety" (*lirang*), "observing integrity" (*mingjie* or *zhengqi*), and "observing loyalty" (*zhongyi* or *shoufa*) that prevailed in the Qing dynasty.[27] As each county was evaluated independently by the *Tongzhi* as to whether they exhibited any of the above characteristics, it allows us to convert each of the above dimensions of local culture into a dummy variable—with 1 indicating that a county has exhibited such folk customs, and 0 otherwise. Moreover, by aggregating the four dummy variables into a single index, we are able to construct an overall index of Confucian customs on a scale of 0 to 4—with 4 indicating the strongest Confucian customs.[28] We find that the numbers

[26] Since systematic population data are unavailable at the county level during the Qing dynasty, we rely on the normalization using a county's land area.

[27] These customs were explicitly listed in the "*fengsu* (customs)" volume (or *juan*) of the *Shandong Tongzhi* (1934). Compared to our two proxies of Confucianism these measures are admittedly cruder, and they relied on the subjective interpretation of the editors of the *Tongzhi* regarding whether or not they possessed any of the four characteristics in question.

[28] Take Jiyang County of Jinan Prefecture for example. For this county, "observing integrity" and "observing loyalty" were mentioned, so we assign the value of 1 to these two folk customs accordingly. Conversely, the other two aspects—"respecting Confucianism" and "observing propriety"—were not mentioned, so we assign a value of 0 to them (refer to the *Shandong*

of both Confucian temples and chaste women are significantly and positively correlated with the various measures of local Confucian culture as identified in the *Tongzhi* (Appendix Table A1), lending further confidence to the validity of our measures of Confucian culture.

Additionally, contemporary survey evidence further supports the claim that chaste women is a reliable measure of Confucian norms. Conducted in 28 Chinese provinces in 2005, the China General Social Survey (CGSS) finds that, in spite of the fact that women in rural China were given the same rights as men to vote for their representatives, systematically fewer of them voted in villages with strong clan organization. [29] Although this finding concerns specifically political participation, it carries the strong implication that the Confucian values of subjugating women to men have most likely persisted to this day.

Details on the descriptive statistics of peasant rebellions, crop failures, and Confucianism are provided in Table 1.

[Table 1 about here]

3.4. Descriptive Evidence

Figure 2 shows the close association between the number of peasant rebellions and the number of crop failures in Shandong Province from 1651 to 1910 on a decadal basis. Where there were few crop failures, as was the case before 1800, there were correspondingly few rebellions. But as the number of crop failures climbed rapidly after 1800 and peaked in 1850-1870s, so too did the number of peasant rebellions.

The trend that crop failures and accordingly peasant rebellions before 1800 were fewer than after 1800 raises a concern about data reliability. Fortunately, there is mounting evidence from climatologists to suggest that the growing incidence of crop failures after 1800 was largely due to harvest failures caused by a

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Tongzhi, 1934, volume 40, p. 1500, for details). Accordingly, the overall index of Confucian customs for Jiyang County is 2.

[29] Prevailing since the Song dynasty (A.D. 960-1279), clans are lineage groups that put strong emphasis on Confucian moral obligations—especially filial piety, loyalty and subordination—among the kin. Within the clans, the prevailing ethos is for women to subjugate to their husbands (Weber, 1922). Covering 410 villages and 3,991 rural residents, the CGSS of 2005 directly asked the villagers whether there was an ancestral hall or clannish activities organized on the basis of (same) surnames in their villages. According to the survey results, in villages with distinct clannish presence, only 19% of the women voted in the most recent village elections, compared to 30% in the case of men. The negative effect of clans on women's but not men's voting behavior is confirmed by regression analysis that controls for a set of individual and village characteristics (not reported).

colder climate; the result was a spike in wars and rebellions.[30] Concern about data reliability should also be ameliorated by the fact that the Qing government had, since the seventeenth century, systematically collected data on rainfall at the county level (Wilkinson, 1969).

[Figure 2 about here]

Figure 3 shows the decadal difference in the number of peasant rebellions among counties in which Confucianism had diffused to varying degrees. For simplicity, we classify those counties with the number of Confucian temples per 1,000 km^2 above (below) the median of 11.89 as having strong (weak) Confucian norms. We find that, when crop failure occurs, there are fewer peasant rebellions in counties with strong Confucian norms than in counties with weak Confucian norms. On average, the number of peasant rebellions (per county per year) is 0.044 in the former instance and 0.07 in the latter. When evaluated at the mean of 0.055, this difference accounts for 47% of the average number of peasant rebellions (per county per year) in times of crop failure. Together, Figures 2 and 3 provide intuitive support to the hypotheses regarding the role crop failure played in triggering peasant rebellions and specifically the mitigating effects of Confucianism, of which we will examine in Section 4.

[Figure 3 about here]

4. Empirical Results

4.1. The Effect of Economic Shocks on Peasant Rebellions

Before examining the effect of Confucian norms on peasant rebellions, we first examine whether economic shocks were indeed a primary source of peasant rebellions using the following OLS specification:

$$\text{Rebellion}_{it} = \beta_1 \, \text{shock}_{it\text{-}1} + \text{county}_i + \text{year}_t + \varepsilon_{it} \qquad (1)$$

where Rebellion_{it} denotes the number of peasant rebellions in county i in year t, $\text{shock}_{it\text{-}1}$ denotes the variations in economic shocks as measured by the crop failure

[30] By relying on evidence from a wide range of studies including those on tree rings, corals, ice-cores, boreholes and historical documents, Zhang et al. (2006) find that China inadvertently experienced an unusually cold phase during 1806-1912, with the average temperature (of -0.456 ◦C) being 10.4% lower than normal (e.g., in 1718-1805, the average temperature was -0.413 ◦C).

dummy in the previous year, county_i refers to county fixed-effects that capture the time-invariant and county-specific factors, whereas year_t indicates year fixed-effects, which capture the common trend faced by all the counties.[31] ε_{it} is the error term.

We report the OLS estimate of the lagged crop failure variable in columns 1 and 2 of Table 2. To provide a baseline, we do not include the county- and year fixed-effects initially (column 1). To control for serial correlation we cluster the standard errors at the county level. The result shows that economic shocks have a significant and positive effect on peasant rebellions across all the estimations. In terms of magnitude, the coefficient in column 2 indicates that the number of peasant rebellions is about 0.00973 higher in counties with crop failure than in counties without crop failure. Evaluated at the mean (0.03), this difference accounts for one-third of the average number of peasant rebellions. In column 3 we examine whether contemporaneous crop failure (crop failure $_t$) and crop failure lagged by two years (i.e., crop failure $_{t-2}$) also bear on peasant rebellions. The results show that they have no significant effect; only crop failure in the previous year (crop failure $_{t-1}$) does. This reinforces our confidence in using lagged crop failure as the pertinent measure of economic shocks.

To check the robustness of our results we employ extreme rainfall (drought and waterlogging) as alternative measures in column 4 of Table 2. Consistent with the historical observation that peasant rebellions in Shandong Province were triggered mainly by droughts (Esherick, 1987), we indeed find that only drought but not waterlogging has a significantly positive effect on peasant rebellions. The fact that crop failure has both a larger coefficient and a higher level of significance reinforces our intuition that in an agrarian society extreme rainfall is not as direct a measure of income shock as crop failure.

[Table 2 about here]

4.2. The Effect of Confucian Norms on Peasant Rebellions

Now we turn to examine whether Confucian norms are able to mitigate the effect of crop failure on peasant rebellions. We employ the specification in Equation (2):

$$\text{Rebellion}_{it} = \beta_2 \,\text{shock}_{it-1} + \beta_3 \,\text{shock}_{it-1} \times \text{Confucianism}_i + \text{county}_i + \text{year}_t + \varepsilon_{it} \quad (2)$$

[31] A notable example of this common trend is changing state capacity over time, which historically was stronger at the beginning (and in the middle) of a dynasty but declined toward the end (Goldstone, 1991; Sng, 2014).

where Confucianism$_i$ denotes the time-invariant strength of the Confucian norms as measured by Confucian temples and chaste women. The interaction term, shock$_{it-1}$ × Confucianism$_i$, is our key variable of interest and is included to estimate the possible effect of Confucian norms. Specifically, we expect the effect of economic shocks to be smaller in counties with a stronger diffusion of Confucian norms. Should that be the case, the sign of the coefficient β_3 should be significantly negative.

Before examining the possible mitigating effect of Confucianism, we first examine whether or not Confucianism has any direct effect on peasant rebellions. Since the variables of Confucianism do not vary with time, we are restricted to employing the random-effect regressions. The pertinent results, reported in columns 1-4 of Appendix Table A2, confirm the significant effect of Confucianism in reducing peasant rebellions. To check their robustness, we convert the panel data into cross-sectional data and run the regressions again. Reported in columns 5-8, the results reaffirm the earlier findings.

In Table 3, we examine whether Confucian norms are able to mitigate the effect of crop failure on peasant rebellions based on the specification of Equation (2). Columns 1 and 2 of Table 3 report the OLS estimates of the number of Confucian temples normalized by county area (in 1,000 km^2) and expressed in terms of natural logarithm, i.e., ln (temples/area), whereas columns 3 and 4 report the estimates using the number of chaste women as the pertinent measure.[32] Across all regressions the county and year fixed-effects are fully controlled for. Given that our analysis spans a lengthy period of more than 260 years, some county-specific factors may impact differentially on peasant rebellions over time. To address this concern we thus control also for the county-specific linear time trends by interacting the county dummies with a linear time trend in columns 2 and 4.

The results show that, while the effect of crop failure is significant and positive, its interacting effect with Confucian temples has a significant and *negative* impact on peasant rebellions across estimations.[33] The magnitude of the effect of Confucian temples on peasant rebellions is far from trivial. For instance, a 10% increase in the number of temples per 1,000 km^2 has the effect of reducing the number of peasant rebellions triggered by crop failure by 3.8 percent.[34] The results of using chaste women instead of Confucian temples to proxy for Confucian

[32] To check robustness we also employ the sheer number of Confucian temples and chaste women—similarly normalized by land size, and the sheer number of Confucian temples and chaste women. The results are similar (hence not reported but are available upon request).

[33] An exception is column 1.

[34] The calculation is based on column 2 of Table 3: $|(0.1\times0.00872)/0.02313|\times100=3.8$.

norms are strikingly similar: while the effect of crop failure is significantly positive, its interacting effect with chaste women has a significant and *negative* impact on peasant rebellions across estimations.

[Table 3 about here]

In addition to clustering the robust standard errors at the county level, we also try several other ways of clustering and report the results in columns 1 and 2 of Appendix Table A3. For instance, to allay the concern about spatial correlation possibly caused by the ease with which peasant rebellions can spread from one county to another, we employ the Conley standard errors adjusted for two-dimensional spatial autocorrelation (Conley, 1999, 2008).[35] Moreover, in order to allow for time variations (while allaying the concern about spatial correlations within the same prefecture), we cluster the standard errors (two-way) at both the county and year × prefecture level. Last, but not least, to rule out the unlikely (though not impossible) event that all counties within Shandong Province may be spatially correlated, we cluster the two-way standard errors at the county and year level. While doing so gives rise to a larger standard error, the effect of Confucian norms remains significant in these estimations.

Given that peasant rebellion was a rare occurrence, our dependent variable in the OLS estimation contains a large fraction (97.8%) of zero values. To reduce the "over-zero" problem, we employ both the Tobit and Conditional Logit estimations—the latter by converting the dependent variable into a dummy, with 1 indicating the occurrence of peasant rebellions, and 0 otherwise.[36] Finally, to address the concern that crop failures may have been inconsistently recorded over time (especially before 1800), we drop that part of our data and run the regressions again using only the shorter window of 1800-1910. The results of the Tobit, Conditional Logit, and restricted sample (1800-1910) estimations are all

[35] We use Hsiang's (2010) Stata codes to calculate the panel version of Conley standard errors. The Conley standard errors are constructed assuming a window with weights equal to 1 for observations less than 100 kilometers apart and 0 for observations further apart. Given that the mean of county land area is 1451 km^2, using 100 kilometers as the cutoff point covers an average of approximately one contiguous (bordered) counties. We also try various other cutoff points (e.g., 200 or more kilometers) and obtain similar results (not reported). We thank an anonymous reviewer for this suggestion.

[36] When the number of peasant rebellions is 0 (or 1) for all observations for a county (or a year), this county (or year)'s contribution to the log-likelihood is zero, and hence is dropped automatically in the Logit estimation. Doing so removes a total of 18,443 observations (all with zero values). Moreover, the Conditional Logit estimation allows us to minimize the problem caused by outliers (some counties, for instance, had up to 6 or 7 rebellions a year).

consistent with those of the OLS estimates involving the full sample (1651-1910), and hence are not reported separately (but are available upon request).

5. Omitted Variable Bias and Additional Controls

In examining the relationship between culture and conflict, a formidable task is to disentangle the effects of culture from those of other variables, most notably institutional environment and its attendant socioeconomic conditions (Fisman and Miguel, 2007; Miguel, Saiegh and Satyanath, 2008). This is especially the case in the Chinese context because Confucianism, as state orthodoxy, was more than just a culture as it had long been promoted and embedded in state institutions and the education system, affecting both governance and social mobility (see below), not to mention its possible (morally) constraining effects among the populace. Against this background, one might wonder if the effect of Confucian norms came instead from other omitted factors correlated with both Confucian norms and peasant rebellions. To address this concern, we add a vector of controls based on the pertinent literature and the specific historical context of China. Also, in order to allow these controls to differentially affect the impact of economic shocks on peasant rebellions, we interact each of them with crop failure. Details on the source and descriptive statistics of the control variables are provided in Table 1.

5.1. Economic Prosperity

Economic prosperity is a possible omission that may be correlated with both Confucian culture and peasant rebellions. On the one hand, the economically prosperous counties were in a better position to alleviate the income shocks associated with crop failure; on the other hand, they were better able to promote the Confucian culture by erecting more Confucian temples.

Given that Qing China was predominantly an agrarian society (with north China, without irrigation, being primarily a rain-fed economy), economic prosperity must be intimately tied to agricultural output. Unfortunately such data are not available. To proxy for this effect, we control for the suitability of a county's land for planting the region's main crops (wheat, maize, broomcorn, millet, and potatoes), which is measured in terms of climate, soil, and slope characteristics [FAO, 2012 Global Agro-Ecological Zones (GAEZ) database]. The GAEZ database provides an index that ranges from 0 (very unsuitable) to 100 (very suitable) for all the major staple crops grown in Shandong Province during the Qing dynasty as outlined above. By matching the land suitability map with the map of the county-boundary of Qing Shandong, we take the average of the

indices of each of the six major staple crops outlined above to be our measure of land suitability for these crops. While this measure is not the same as actual agricultural output, it is a reasonable proxy, considering that land suitability is positively correlated with the actual output of these same crops in the 1930s (at the 5% level of significance and with a coefficient greater than 0.23, see Appendix Table A5).[37]

To ensure that our measure of economic prosperity is robust, we also control for the varying degrees of urbanization across the counties in Shandong. Drawing on the population records of prefectural and county gazetteers, Cao (2000) provides estimates of the level of urbanization for all the counties of Shandong Province in the 1770s.[38] The estimates are closely correlated with Stauffer's (1922) more accurate surveyed data on the share of urban population in the same sets of counties in 1920s (at the 1% level of significance and with a coefficient of 0.65, refer to Appendix Table A5).[39] The regression results after controlling for the various measures of economic prosperity are reported in columns 1 and 2 of Table 4. The mitigating effect of both Confucian temples and chaste women on peasant rebellions remains significant.

[Table 4 about here]

5.2. Education and Social Mobility

As Confucian classics made up the core of the school curriculum, our measures of Confucianism likely capture also the effect of education on peasant rebellions. To disentangle these two effects, we control for the number of schools (in natural logarithm) in each county. There were primarily two kinds of schools at the county level. The official schools, *fuxue* and *xianxue*, were financed and administered by the prefectural and county governments, whereas the academies,

[37] Data on agricultural output in the 1930s are obtained from *Zhongguo Shiyezhi* (Gazetteer of China Industries), compiled in 1933 by the Ministry of Economic Affairs, Republic of China.

[38] Cao's classifications are based on a county's population. Small towns were those with only 2,000 inhabitants, ordinary counties or mid-sized towns were those with 5,000, counties with 12,000 are considered large, whereas those with 25,000 were large municipalities, and those with 50,000 or above were province-level municipalities-cum-commercial cities (Cao, 2000, p. 732).

[39] For robustness we also control for population density in 1776 as an additional measure of economic prosperity, although systematic data on China's population are available only at the prefecture level (an administrative unit between the province and the county in Qing China) (Cao, 2000). The results are similar and hence not reported separately (but are available upon request).

shuyuan, were run by the local literati and gentry.[40] The *Shandong Tongzhi* (1934) lists all the schools that existed in the Qing period by county. Since it does not provide any temporal variations, we have to treat this variable as time-invariant.

It is also necessary to control for social mobility as it is likely correlated with both Confucianism and peasant rebellions. For instance, we know that social mobility in Qing China was intimately tied to Confucianism, given that the imperial examination drew heavily on the memorization of the Confucian classics and rote learning (Ho, 1962; Elman, 2000). Likewise, social mobility (or rather the lack thereof) is also likely a partial correlate of social conflict. For example, in areas of high (low) social mobility people were likely more (less) willing to invest in civil examination than to engage in unlawful behavior.[41] Given the possible intricate relationships between social mobility, Confucianism and peasant rebellions, we control for social mobility using the number of *shengyuan* degree holders who passed the imperial exams at the sub-provincial—prefectural and county—levels.[42]

The *shengyuan* degree was arguably the first and also most important step by which commoners could achieve upward social mobility, as it qualified them to sit for upper level exams and attain the higher degrees of *juren* and *jinshi*, which in those days represented a passport for appointment in the government. Even without these subsequent achievements, the *shengyuan* scholars automatically acquired the social status of a local gentry and earned the privileges of having cor'vee labor and corporal punishment waived (Chang, 1955). For each county the state allocated a fixed quota of *shengyuan*, which, save for the post-Taiping Rebellion period had remained basically stable throughout the Qing dynasty (Chang, 1955).[43] Obtained from the *Shandong Tongzhi* (1934), we thus treat *shengyuan* as time-invariant, and use its number before the Taiping rebellion (1850) as the pertinent measure.[44] The regression results after controlling for

[40] In a few counties the local literati and gentry also ran the community schools *shexue* and *yixue*, but there were so few of them we do not enumerate them as part of our school measure.
[41] Esherick (1987) also finds that the lower social mobility rate in southwestern Shandong during the Qing period was a potential source of popular unrests.
[42] The civil service examination is made up of three levels of degrees. The lowest level, the *shengyuan* (analogous to a bachelor's degree), was taken at the county and prefecture levels. The next level up, the *juren* (equivalent to a master's degree), was taken at the provincial level. The highest degree, the *jinshi* (equivalent to a doctoral degree), was taken at the metropolitan (palace) level (Chang, 1955; Ho, 1962).
[43] As an incentive, the Qing authorities allocated additional quotas as a reward to those provinces (and below) that provided financial and/or military support to suppress the Taiping Rebellion.
[44] The results are robust to other measures of social mobility. For example, social mobility is also measured by dividing the number of *shengyuan* into the pre- and-post Taiping period,

schools and social mobility are reported in columns 3 and 4 of Table 4. The effect of the two measures of Confucian norms remains significant.

5.3. State Capacity

It is widely assumed that state capacity plays an important role in determining conflict (Fearon and Laitin, 2003; Besley and Persson, 2011). In particular, to the extent that local authorities were required to consciously promote Confucianism in imperial China as state orthodoxy, spatial variations in the strength of Confucian norms were likely to be correlated positively with state capacity. To address this concern, we construct several measures to proxy for state capacity at the county level in Qing China.

As a direct cost of peasant rebellion, our first proxy is the strength of military deterrence measured by the number of imperial soldiers stationed in a county (per 1,000 km^2, in natural logarithm). The pertinent data are obtained from the *Shandong Tongzhi* (1934), which records the number of imperial soldiers stationed in each county over time.

A related measure of state capacity is the ability to provide famine relief. In late imperial China, the Qing administration, together with the local gentry, had striven to use granaries as a means to provide temporary relief to victims of natural calamities (Shiue, 2004). We expect that government relief measures could effectively reduce peasant rebellions in times of economic hardship. As we have no information on the actual amount of grain stored in each county, we employ the capacity of the granaries in a county, taken from the *Shandong Tongzhi* (1934), to proxy for the possible effect of famine relief.

According to Tilly (1990), state capacity may also be reflected in the ability to levy tax (fiscal capacity). We employ land tax (in silver *liang*) per *mu* (1 Chinese *mu* is equivalent to 666.7 square meters) to proxy for a county's fiscal capacity. The pertinent data are obtained from the *Shandong Tongzhi* (1934), which provides land tax in the 1890s at the county level.

To add more confidence to our measure of state capacity, we employ an additional proxy—a dummy variable indicating whether a county is also the seat of a prefectural government. Typically, governance was likely stronger in counties where a prefectural government was seated. Reported in columns 5 and 6 of Table 4, the effect of Confucian temples and chaste women remain significant after controlling for all these variables of state capacity.

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and by normalizing the number of *shengyuan* by county area, etc. The results are similar and hence not reported separately.

5.4. Western Influence, Other Cultures, Geography, and Lagged Rebellions

The other factor that may bear upon both Confucianism and peasant rebellions was the increasing influence of the West after China's defeat by the Western powers in the First Opium War (1839-1842). Prominent among these changes were the opening up of the so-called "treaty ports" (which granted special trading privileges and rights to the Western powers) and the rapid diffusion of Christianity (in particular Protestantism).[45] This penetration of Western economic and ideological forces had the likely effect of undermining the strength of Confucian norms on the one hand, and also bred popular social unrests on the other; the Taiping Rebellion and the Boxer Uprising alluded to earlier are but two salient examples of the consequences of these influences (Wakeman, 1975; Spence, 1990).

If Western influence indeed had an effect on both Confucianism and peasant rebellions, its omission would bias our estimates. While the year fixed-effects help to capture the common trend in social changes in the late Qing period for all the counties, we cannot control for the differential impact of these changes across counties using these year fixed-effects. To isolate the potentially confounding effects of Western influence, we control for the number of years for which a county had established a treaty port (conditional upon it having one), and the number of years for which the Christian (Protestant) missionaries had made a presence in a county (duration). The data on Christian presence are obtained from Stauffer (1922), whereas the data on treaty ports are from Yan (1955).

Like Confucianism, Taoism and Buddhism similarly advocate harmony and condemn violence (Giles, 1989; Gethin, 1998). Also like Confucianism, the two had a similarly long history and enjoyed immense popularity among the Chinese. This raises the concern that these two religions may be correlated with both Confucianism and peasant rebellions. To deal with this we control for the numbers of Taoist and Buddhist temples (natural logarithm per 1,000 km^2) that existed in the Qing dynasty. Once again, the pertinent data are obtained from the *Shandong Tongzhi* (1934).

Geographic factors in general and terrain ruggedness in particular have long been considered a potential co-determinant of conflict (Fearon and Laitin, 2003).

[45] Treaty ports were coastal cities that the Qing government was forced to open up (by virtue of the Treaty of Nanking) to Britain and other Western powers upon its defeat in the First Opium War. The first five treaty ports were Shanghai, Canton, Ningbo, Fuzhou and Xiamen (Amoy). Considerably more treaty ports were subsequently added to the list. Jia (forthcoming) argues that prefectures with a treaty port grew faster in terms of population size in the long run.

In our historical context, the rugged mountainous terrain in southern Shandong Province arguably provided an ideal nest for the bandits and outlaws (Esherick, 1987). But rugged terrains are typically ill-served by the transport infrastructure and thus would impair the diffusion of Confucianism. To control for this effect we calculate the average terrain ruggedness for each county based on the method employed by Nunn and Puga (2012).[46]

Last but not least, the incidence of peasant rebellions may be correlated positively with past occurrences. The Qing history of Shandong Province is replete with examples of rebellions that persisted in certain pockets (e.g., Caozhou Prefecture in the southwest) with a long tradition of endemic banditry and popular unrests (Esherick, 1987). To address this concern we thus control for the number of peasant rebellions in the previous year (lagged rebellions). Including lags of past rebellions may raise concerns about Nickell (1981) dynamic panel bias, but the bias should be very small given that we have a large T (260 years) and a small N (107 counties). For robustness we have included longer lags (e.g., 2 to 5 years) in our regressions but find that they do not affect our main results (and hence are not reported).

The results after controlling for Western influence, Taoist and Buddhist temples, terrain ruggedness, lagged rebellions, together with the various covariates mentioned above, are reported in columns 7 and 8 of Table 4.[47] The results continue to show that counties with stronger Confucian norms have significantly fewer peasant rebellions in times of economic shocks. This suggests that the effect of Confucian norms on peasant rebellions is unlikely to have come through the channels of the additional controlled variables.

As with our baseline estimation in columns 1 and 2 of Appendix Table A3 where we report the Conley standard errors adjusted for two-dimensional spatial autocorrelation, the two-way standard errors clustered at respectively the county

[46] The effect of terrain ruggedness on development has recently received growing attention from economists. Nunn and Puga (2012), for example, have shown that the rugged terrain in parts of Africa protected the Africans from being raided during the slave trades (as these parts are more difficult to access), which in turn had a positive if indirect effect on contemporary income. In the historical Chinese context, terrain ruggedness is measured in meters of elevation difference for grid points 3 arc-seconds apart. The elevation data are obtained from Hole-filled SRTM for the Globe, Version 4, CGIAR-CSI SRTM 90m Database (http://srtm.csi.cgiar.org). We match the elevation map to the Qing county-boundary map, the latter of which is obtained from Harvard-Yenching's (2007) CHGIS, and average all grid cells to obtain the average terrain ruggedness for each county.

[47] To save space we report the coefficients of all the control variables (and their standard errors) in Appendix Table A4. As expected, economic prosperity (land suitability) and fiscal capacity (land tax) significantly mitigate the impact of crop failure on peasant rebellions, whereas missionary presence and past rebellion strengthen it.

and year × prefecture level, and the two-way standard errors clustered at respectively the county and year, we perform the same robustness checks on a full range of control variables and report the results in columns 3 and 4 of Table A3. Regardless, the effect of Confucian norms remains significant.

6. Reverse Causality and Measurement Error: Instrumented Evidence

Given that temples may be destroyed during civil conflicts, reverse causality cannot be ruled out. This problem may also arise from the possibility that counties that witnessed fewer rebellions in response to economic shocks were more likely to adopt Confucianism in the first place. We are more concerned, however, about the possible measurement error associated with our proxies for Confucian norms. One particular concern is this: the enumeration of only the numbers of Confucian temples and chaste women in the Qing period may not be sufficient to reflect the strength of Confucianism, given its long existence (of over 2,000 years). Measurement error may also arise from the crudeness of our two proxies. For instance, we only know how many Confucian temples there were but not their sizes, let alone the number of pilgrims in each temple, the availability of which would allow us to better capture the strength of Confucian norms. And while the chaste women measure does not suffer from the same limitation, the fact that local governments were responsible for nominating them to the court (who reserved the right of officially conferring the honorary title on them) implies that the process could be subject to manipulations—depending on the (varied) ulterior motives of the local governments.

To deal with these concerns, we exploit the variation in the strength of Confucianism across the counties prior to the Qing dynasty to instrument the strength of Confucianism in the Qing dynasty. The validity of this instrument relies on the premise that Confucian norms as they existed during the Qing dynasty were the outcome of a two-thousand-year-long process of cultural diffusion (refer again to Appendix Figure A2), and that their differential spatial diffusion prior to the Qing dynasty is likely to correlate significantly with that during the Qing dynasty.

We proxy for the strength of Confucian norms in a county before the Qing dynasty using the number of Confucian sages (*shengxian*) born in a county—approximately between 500 B.C. and A.D. 550. By Confucian sages we include, in addition to Confucius and Mencius, also the famous Confucian scholars and notable dignitaries who, by virtue of their "recognizably virtuous deeds", were conferred by the emperors the official title of sages and enshrined in the Temple of

Confucius (*wenmiao*). This choice is premised upon the reasoning that stronger Confucian norms would produce more Confucian sages, and that more Confucian sages would in turn help to strengthen these norms—a reasoning borne out empirically by our data. As shown in Appendix Table A5, we find a significantly positive correlation between the number of ancient Confucian sages on the one hand, and the number respectively of Confucian temples and chaste women of the Qing period on the other.

Enumeration of the Confucian sages is made possible by the detailed biographical records contained in the *Shandong Tongzhi* (1934). As with the variable of Confucianism, we normalize the number of Confucian sages by a county's land area (per 1,000 km^2).

Before turning to the instrumental variable estimation, we employ a reduced-form estimation by directly examining the effect of Confucian sages on peasant rebellions in columns 1 and 2 of Table 5. Regardless of whether the additional controls are included, the results consistently show that Confucian sages can mitigate the effect of crop failure on peasant rebellions.

[Table 5 about here]

The instrumented results are reported in columns 3-6 of Table 5 (with the first-stage results reported in the bottom panel).[48] As with estimating the effect of Confucianism and crop failure on peasant rebellions, here we similarly adopt the interaction of the same two variables as the instrumental variable. Columns 3 and 4 report the results of using the temple measure, whereas columns 5 and 6 report the results of using the measure of chaste women. As before, we first exclude all the additional control variables before including them in the estimations. In all regressions, the instrumented results importantly confirm that the effect of economic shocks on peasant rebellions is significantly reduced by Confucianism. All of these reinforce the validity of our OLS findings.

7. Conclusion

The research question raised in this study—namely whether conflicts triggered by economic shocks can be mediated by strong cultural norms—was motivated by a literature that has consistently demonstrated the existence of a significant relationship between economic shocks and social conflicts. Using historical China

[48] The Kleibergen-Paap F-statistic has a value ranging from 11.88 to 53.83—all above Staiger and Stock's (1997) rule-of-thumb value of 10, suggesting that Confucian sages is by no means a weak instrument of Confucian norms.

as the pertinent context, we constructed a unique dataset to ascertain, first of all, whether there was indeed a significant relationship between economic shocks and peasant rebellions, before turning to examine, more importantly, whether Confucian norms—which emphasize conflict avoidance—were effective in alleviating this particular form of social conflict. Regardless of how Confucian norms (temples and chaste women) were measured, and the extent to which we controlled for other covariates and dealt with issues of reverse causality and measurement error, we obtained the same robust results that economic shocks did impact peasant rebellions significantly. But what is of greater interest to us is the result that the effect of economic shock was significantly smaller in areas where Confucian norms were more strongly established.

Given the limitations of historical data, however, our results should be interpreted with due caution. First, in spite of our efforts in dealing with the omitted variable bias, we cannot possibly control for every conceivable factor that might be correlated with both Confucian norms and peasant rebellions. Second, some of our control variables may also be crudely measured. Last but not least, we are in no way claiming that our results, obtained based on a single province, can be generalized to the other Chinese provinces. Data on those provinces would need to be assembled through a more concerted effort if we are to make a generalization.

These limitations notwithstanding, our findings serve importantly to enrich the understanding of the determinants of social conflicts in a broader context than that of historical China. In particular, we have demonstrated that the triggering effect of economic shocks is actually *conditional* upon the specific set of prevailing cultural norms that exist in peace times. Furthermore, we are confident that Confucianism is not an exceptional case. There is now evidence suggesting that Christian beliefs have the similarly pacifying effect of subduing the taste for revolts (MacCulloch and Pezzini, 2010), just as the fear of social stigmatization and ostracism has a deterring effect on criminal behaviors (Buonanno, Montolio and Vanin, 2009). While understanding the causes of conflict is clearly a worthy endeavor, examining how various cultural norms may abate social conflict is a potentially exciting research agenda.

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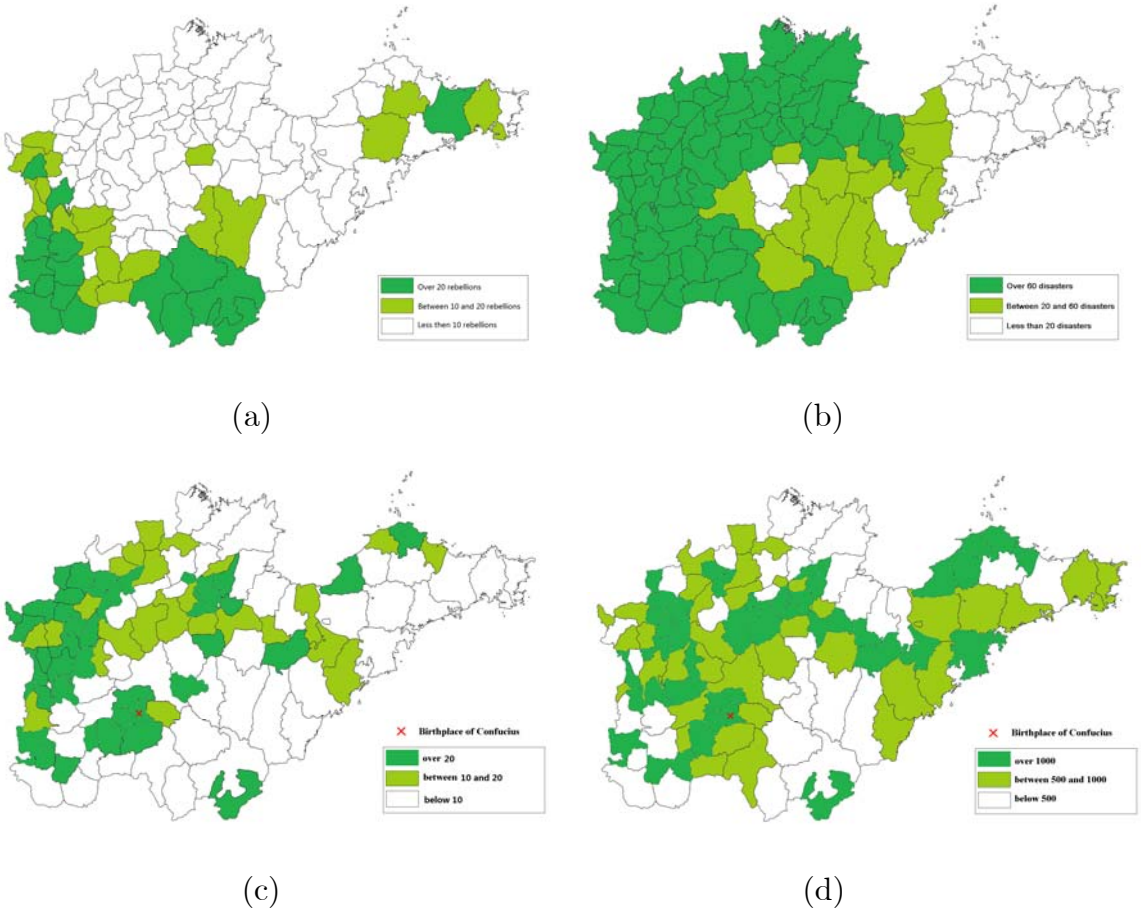

(a) (b)

(c) (d)

Figure 1. Distribution of (a) number of peasant rebellions, (b) number of crop failures, (c) number of Confucian temples, and (d) number of chaste women in Shandong Province during the Qing Period (by County)

Notes: The numbers of peasant rebellions and crop failures are based on the *Qing Shilu* (Veritable Records of the Qing Emperors). The numbers of Confucian temples and chaste women are based on the *Shandong Tongzhi* (Provincial Gazetteer of Shandong) (1934), and are normalized by a county's land area (in 1,000 km^2).

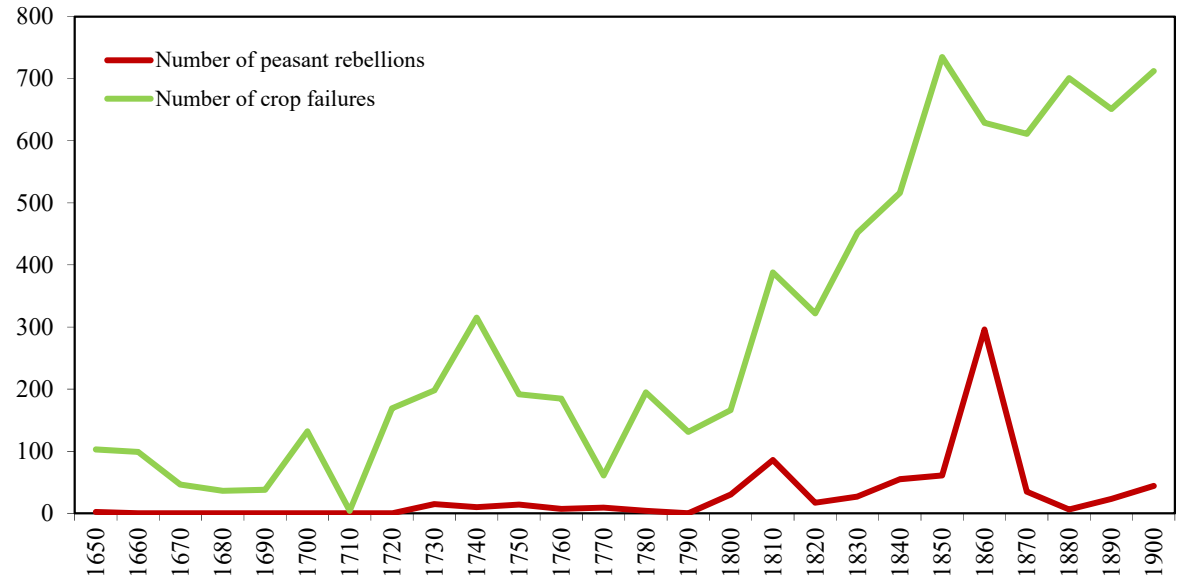

Figure 2. Number of Peasant Rebellions and Crop Failures in Shandong Province

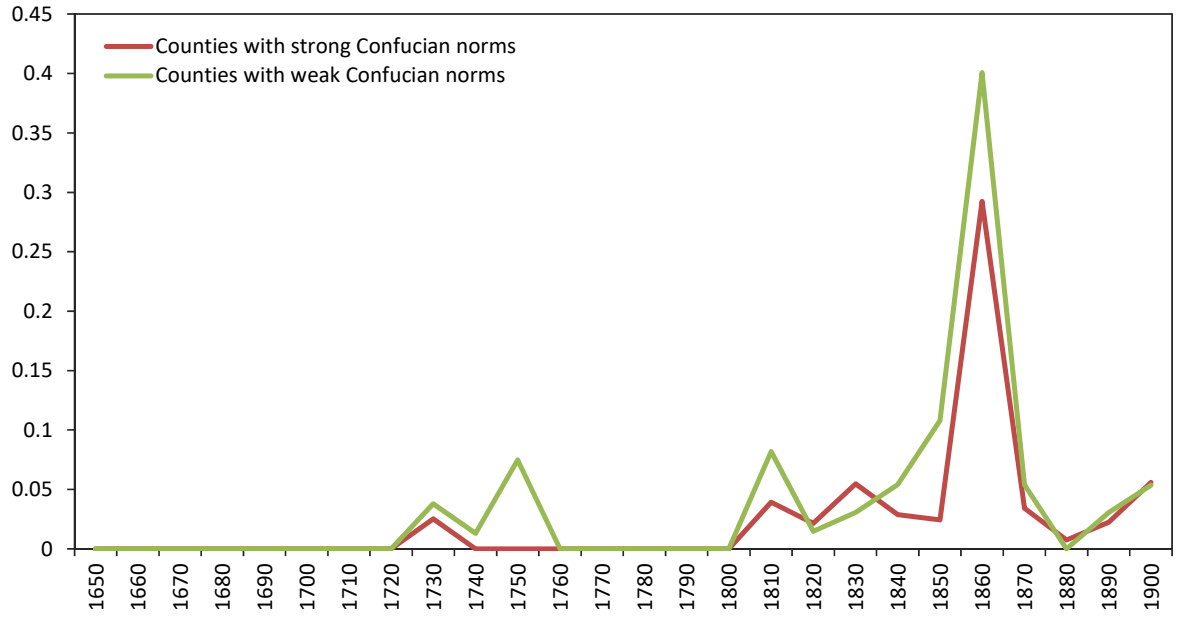

Figure 3. Number of Peasant Rebellions in Counties with Crop Failure (by Decade): Weak and Strong Confucian Norms Compared

Notes: We enumerate only peasant rebellions on a decadal basis in counties with reported crop failure. For simplicity we classify counties with the number of Confucian temples per 1,000 km^2 above (below) the median of 11.89 as being strongly (weakly) steeped in Confucian traditions. The average number of peasant rebellions (per county per year) is 0.044 in counties with strong Confucian norms and 0.07 in counties with weak Confucian norms.

Table 1. Sources and Descriptive Statistics of the Variables

Variable	Source	Level of variation	Mean	S. D.	Min.	Max.
Peasant rebellions	*Qing Shilu* (Veritable Records of the Qing Emperors) (1644-1911)	County-year	0.03	0.20	0	7
Crop failure	*Qing Shilu* (Veritable Records of the Qing Emperors) (1644-1911)	County-year	0.28	0.45	0	1
Drought	China Meteorological Administration (1981)	Prefecture-year	0.38	0.66	0	2
Waterlog	China Meteorological Administration (1981)	Prefecture-year	0.52	0.72	0	2
Temples	*Shandong Tongzhi* (Provincial Gazetteers of Shandong) (1934)	County	12.73	4.72	7	39
Chaste women	*Shandong Tongzhi* (Provincial Gazetteers of Shandong) (1934)	County	1224.66	1142.03	116	6622
Land suitability	Global Agro-Ecological Zones (GAEZ) (2012)	County	37.81	9.85	20.94	59.67
Urbanization 1770s	Cao (2000)	County	0.27	0.73	0	4
Schools	*Shandong Tongzhi* (Provincial Gazetteers of Shandong) (1934)	County	2.59	1.49	1	8
Shengyuan	*Shandong Tongzhi* (Provincial Gazetteers of Shandong) (1934)	County	34.6	15.97	16	80
Imperial soldiers	*Shandong Tongzhi* (Provincial Gazetteers of Shandong) (1934)	County-year	284.57	716.43	0	6780
Granary (in 10,000 *shi*)	*Shandong Tongzhi* (Provincial Gazetteers of Shandong) (1934)	County	2.21	2.87	0	19.86
Land tax (in silver *liang* per *mu*)	*Shandong Tongzhi* (Provincial Gazetteers of Shandong) (1934)	County	0.04	0.02	0.002	0.09
Prefecture seat	*Shandong Tongzhi* (Provincial Gazetteers of Shandong) (1934)	County	0.12	0.33	0	1
Duration of treaty ports (years)	Yan (1955)	County-year	0.05	1.19	0	48
Duration of missionary presence (years)	Stauffer (1922)	County-year	0.99	4.61	0	51
Taoist and Buddhist temples	*Shandong Tongzhi* (Provincial Gazetteers of Shandong) (1934)	County	5.16	2.84	1	21
Terrain ruggedness	Hole-filled SRTM for the Globe (2008)	County	0.35	0.34	0.04	2.02
Ancient Confucian Sages	*Shandong Tongzhi* (Provincial Gazetteers of Shandong) (1934)	County	3.28	4.72	0	23

Notes: Refer to the text for variables definition.

Table 2. Economic Shocks and Peasant Rebellions

	Dependent variable is number of peasant rebellions			
	(1)	(2)	(3)	(4)
Crop failure $_{t}$			-0.00054	
			(0.00462)	
Crop failure $_{t-1}$	0.04541***	0.00973**	0.00979***	
	(0.00570)	(0.00395)	(0.00358)	
Crop failure $_{t-2}$			0.00022	
			(0.00452)	
Drought $_{t-1}$				0.00697*
				(0.00355)
Waterlog $_{t-1}$				-0.00190
				(0.00178)
Year fixed-effects	No	Yes	Yes	Yes
County fixed-effects	No	Yes	Yes	Yes
R-squared	0.01	0.18	0.18	0.18
Number of observations	27713	27713	27606	27713

Notes: OLS results. Robust standard errors clustered at the county level are reported in parentheses. * Significant at 10%; ** significant at 5%; *** significant at 1%.

Table 3. The Mitigating Effect of Confucianism: Baseline Results

	Dependent variable is number of peasant rebellions			
	(1)	(2)	(3)	(4)
Crop failure $_{t-1}$	0.03639*	0.02313**	0.11610**	0.07348**
	(0.01857)	(0.01137)	(0.04568)	(0.02851)
Crop failure $_{t-1}$ × ln(temples/area)	-0.01092	-0.00872**		
	(0.00696)	(0.00409)		
Crop failure $_{t-1}$ × ln(chaste women/area)			-0.01621**	-0.01090**
			(0.00669)	(0.00416)
Year fixed-effects	Yes	Yes	Yes	Yes
County fixed-effects	Yes	Yes	Yes	Yes
County-specific time trend	No	Yes	No	Yes
R-squared	0.18	0.21	0.18	0.21
Number of observations	27713	27713	27713	27713

Notes: OLS results. Robust standard errors clustered at the county level are reported in parentheses. * Significant at 10%; ** significant at 5%.

Table 4. The Mitigating Effect of Confucianism: Additional Controls

	Dependent variable is number of peasant rebellions							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crop failure $_{t-1}$	0.04838***	0.09311***	0.04494**	0.08901***	0.07018***	0.10291***	0.12109***	0.15909***
	(0.01794)	(0.03095)	(0.01911)	(0.03099)	(0.02335)	(0.03467)	(0.03891)	(0.04385)
Crop failure $_{t-1}$ × ln(temples/area)	-0.00961**		-0.00956**		-0.01614***		-0.01607***	
	(0.00411)		(0.00413)		(0.00556)		(0.00509)	
Crop failure $_{t-1}$ × ln(chaste women/area)		-0.01110**		-0.01149***		-0.01292**		-0.01336**
		(0.00427)		(0.00429)		(0.00521)		(0.00509)
Crop failure $_{t-1}$ × land suitability	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Crop failure $_{t-1}$ × urbanization 1770s	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Crop failure $_{t-1}$ × ln(schools)	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Crop failure $_{t-1}$ × *shengyuan*	No	No	Yes	Yes	Yes	Yes	Yes	Yes
ln(imperial soldiers/area)	No	No	No	No	Yes	Yes	Yes	Yes
Crop failure $_{t-1}$ × ln(imperial soldiers/area)	No	No	No	No	Yes	Yes	Yes	Yes
Crop failure $_{t-1}$ × land tax	No	No	No	No	Yes	Yes	Yes	Yes
Crop failure $_{t-1}$ × ln(granary/area)	No	No	No	No	Yes	Yes	Yes	Yes
Crop failure $_{t-1}$ × prefecture seat	No	No	No	No	Yes	Yes	Yes	Yes
Treaty ports	No	No	No	No	No	No	Yes	Yes
Crop failure $_{t-1}$ × treaty ports	No	No	No	No	No	No	Yes	Yes
Missionary presence	No	No	No	No	No	No	Yes	Yes
Crop failure $_{t-1}$ × missionary presence	No	No	No	No	No	No	Yes	Yes
Crop failure $_{t-1}$ × ln(Taoist and Buddhist temples/area)	No	No	No	No	No	No	Yes	Yes
Crop failure $_{t-1}$ × ln(terrain ruggedness)	No	No	No	No	No	No	Yes	Yes
Peasant rebellions $_{t-1}$	No	No	No	No	No	No	Yes	Yes
Crop failure $_{t-1}$ × peasant rebellions $_{t-1}$	No	No	No	No	No	No	Yes	Yes
Year fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
County fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
County-specific time trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.21	0.21	0.21	0.21	0.21	0.21	0.22	0.22
Number of observations	27713	27713	27713	27713	27713	27713	27713	27713

Notes: OLS results. Robust standard errors clustered at the county level are reported in parentheses. To save space the coefficients and standard errors of the control variables are reported separately in Appendix Table A4. ** Significant at 5%; *** significant at 1%.

Table 5. The Mitigating Effect of Confucianism: Reduced Form and Instrumented Results

	Dependent variable is number of peasant rebellions					
	OLS	OLS	2SLS	2SLS	2SLS	2SLS
	(1)	(2)	(3)	(4)	(5)	(6)
Crop failure $_{t-1}$	0.00514	0.09754***	0.04201**	0.15246***	0.14240**	0.29267***
	(0.00391)	(0.03647)	(0.01654)	(0.04647)	(0.06351)	(0.09979)
Crop failure $_{t-1}$ × sages/area	-0.00082**	-0.00129***				
	(0.00034)	(0.00045)				
Crop failure $_{t-1}$ × ln(temples/area)			-0.01650**	-0.03344**		
			(0.00669)	(0.01332)		
Crop failure $_{t-1}$ × ln(chaste women/area)					-0.02140**	-0.04000**
					(0.00972)	(0.01594)
Crop failure $_{t-1}$ × controls	No	Yes	No	Yes	No	Yes
Year fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes
County fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes
County-specific time trend	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.21	0.22	0.20	0.21	0.20	0.21
Number of observations	27713	27713	27713	27713	27713	27713
Instrumental variable (first-stage results)						
Crop failure $_{t-1}$ × sages/area			0.04952***	0.03818***	0.03818***	0.03232***
			(0.00675)	(0.00933)	(0.01108)	(0.00763)
Kleibergen-Paap F-statistic			53.83	17.15	11.88	17.93

Notes: Controls include land suitability, urbanization, schools, *shengyuan*, imperial soldiers, land tax, granary, prefecture seat, treaty ports, missionary presence, Taoist and Buddhist temples, terrain ruggedness, and lagged rebellions. Robust standard errors clustered at the county level are reported in parentheses. * Significant at 10%; ** significant at 5%; *** significant at 1%.

Appendix

Figure A1. Shandong Province (shaded in green) of Qing China

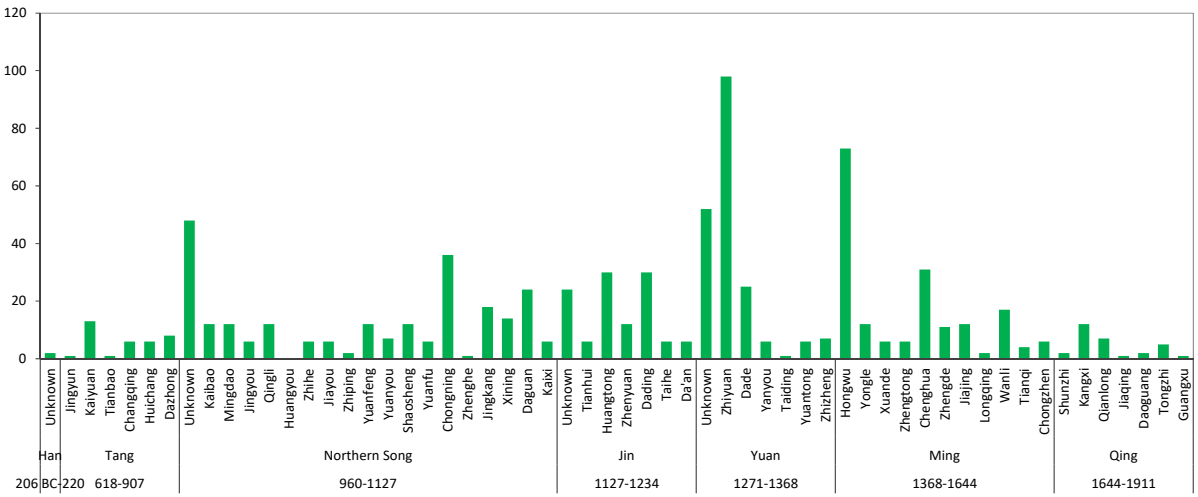

Figure A2. Number of Confucian Temples Erected, by Dynasty and Emperor Reign

Notes: Total number without normalization by years of emperor reign. Information on the year of erection is unavailable for 577 (42%) temples (not included in the figure). The data are obtained from *Shandong Tongzhi* (1934).

Table A1. Correlation between Variables of Confucianism and (County-level) Folk Customs

	Variables of folk customs pertinent to Confucianism				
	Respecting Confucianism	Observing propriety	Observing integrity	Observing loyalty	Confucian customs index
Confucian temples	0.303	0.158	0.193	0.264	0.334
	(0.002)***	(0.105)	(0.047)**	(0.006)***	(0.0004)***
Chaste women	0.331	0.211	0.248	0.181	0.333
	(0.001)***	(0.029)**	(0.010)**	(0.061)*	(0.001)***

Notes: Variables of folk customs are constructed based on the qualitative description in the "*fengsu* (customs)" volume of the *Shandong Tongzhi* (1934). "Respecting Confucianism", "observing propriety", "observing integrity", and "observing loyalty" are the dummy variables with a value = 1 if the local residents allegedly adhered to any of these customs. The four local customs are then aggregated to form an overall index of Confucian customs, which is graded on a scale of 0 to 4—with 4 indicating very strong Confucian customs. Correlation coefficients are reported with p-values in parentheses. * Significant at 10%; ** significant at 5%; *** significant at 1%.

Table A2. The Main Effect of Confucianism on Peasant Rebellions

	Dependent variable is number of peasant rebellions							
	Random-effects (GLS)				County level regression (OLS)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crop failure	0.01010***	0.01275***	0.01075***	0.01227***	0.06592***	0.07786***	0.05015***	0.06798**
	(0.00411)	(0.00339)	(0.00402)	(0.00387)	(0.01780)	(0.02581)	(0.01341)	(0.02723)
ln (temples/area)	-0.00389	-0.00512***			-1.66540*	-2.56943**		
	(0.00357)	(0.00185)			(1.00022)	(1.06049)		
ln (chaste women/area)			-0.00857***	-0.00538**			-2.12664**	-1.51505*
			(0.00319)	(0.00267)			(0.84429)	(0.79691)
Controls	No	Yes	No	Yes	No	Yes	No	Yes
Year fixed effects	Yes	Yes	Yes	Yes	No	No	No	No
R-squared	0.18	0.20	0.18	0.20	0.08	0.40	0.11	0.38
Number of obs.	27713	27713	27713	27713	107	107	107	107

Notes: Columns (1)-(4) are panel data random-effects regressions. Controls include land suitability, urbanization, schools, *shengyuan*, imperial soldiers, land tax, granary, prefecture seat, treaty ports, missionary presence, Taoist and Buddhist temples, terrain ruggedness, and lagged rebellions. Columns (5)-(8) are cross-sectional (county-by-county) regressions, in which all time-varying variables are organized at the county level. Controls include land suitability, urbanization, schools, *shengyuan*, imperial soldiers, land tax, granary, prefecture seat, treaty ports, missionary presence, Taoist and Buddhist temples, and terrain ruggedness. Robust standard errors clustered at the county level are reported in parentheses in columns (1)-(4), and the Huber-White robust standard errors are reported in parentheses in columns (5)-(8). * Significant at 10%; ** significant at 5%; *** significant at 1%.

Table A3. The Mitigating Effect of Confucianism: Robustness to Different Methods of Clustering Standard Errors

	Dependent variable is number of peasant rebellions			
	(1)	(2)	(3)	(4)
Crop failure $_{t-1}$	0.02313	0.07348	0.12109	0.15909
Conley S.E.	(0.01332)*	(0.02982)**	(0.05171)**	(0.05744)***
S.E. clustered by county and year × prefecture	(0.01134)**	(0.02950)**	(0.04824)**	(0.05326)***
S.E. clustered by county and year	(0.01420)	(0.03601)**	(0.05279)**	(0.06256)**
Crop failure $_{t-1}$ × ln(temples/area)	-0.00872		-0.01607	
Conley S.E.	(0.00498)*		(0.00701)**	
S.E. clustered by county and year × prefecture	(0.00406)**		(0.00586)***	
S.E. clustered by county and year	(0.00448)*		(0.00628)**	
Crop failure $_{t-1}$ × ln(chaste women /area)		-0.01090		-0.01336
Conley S.E.		(0.00432)**		(0.00458)***
S.E. clustered by county and year × prefecture		(0.00430)**		(0.00536)**
S.E. clustered by county and year		(0.00505)**		(0.00631)**
Crop failure $_{t-1}$ × controls	No	No	Yes	Yes
Year fixed-effects	Yes	Yes	Yes	Yes
County fixed-effects	Yes	Yes	Yes	Yes
County-specific time trend	Yes	Yes	Yes	Yes
Number of observations	27713	27713	27713	27713

Notes: Controls include land suitability, urbanization, schools, *shengyuan*, imperial soldiers, land tax, granary, prefecture seat, treaty ports, missionary presence, Taoist and Buddhist temples, terrain ruggedness, and lagged rebellions. Conley S.E. refers to the standard errors adjusted for two-dimensional spatial autocorrelation based on Conley (1999, 2008). We use Hsiang's (2010) Stata codes to calculate the panel version Conley S.E.. Specifically, standard errors are constructed assuming a window with weights equal to one for observations less than 100 kilometers apart and zero for observations further apart in the cross section. The White robust standard errors are used to address the heteroskedasticity and autocorrelation in the time series. * Significant at 10%; ** significant at 5%; *** significant at 1%.

Table A4. The Results of Control Variables

	Dependent variable is number of peasant rebellions	
	(1)	(2)
Crop failure $_{t-1}$	0.12109***	0.15909***
	(0.03891)	(0.04385)
Crop failure $_{t-1}$ × ln(temples/area)	-0.01607***	
	(0.00509)	
Crop failure $_{t-1}$ × ln(chaste women/area)		-0.01336**
		(0.00509)
Crop failure $_{t-1}$ × land suitability	-0.00141**	-0.00125**
	(0.00055)	(0.00053)
Crop failure $_{t-1}$ × urbanization 1770s	-0.00212	0.00125
	(0.00565)	(0.00508)
Crop failure $_{t-1}$ × ln(schools)	0.00186	0.00084
	(0.00794)	(0.00797)
Crop failure $_{t-1}$ × *shengyuan*	-0.00034	0.00003
	(0.00033)	(0.00029)
ln(imperial soldiers/area)	0.00019	0.00052
	(0.00141)	(0.00143)
Crop failure $_{t-1}$ × ln(imperial soldiers/area)	0.00332	0.00202
	(0.00318)	(0.00284)
Crop failure $_{t-1}$ × land tax	-0.42144**	-0.38327*
	(0.19952)	(0.21806)
Crop failure $_{t-1}$ × ln(granary/area)	0.01088**	0.00637
	(0.00431)	(0.00409)
Crop failure $_{t-1}$ × prefecture seat	0.00797	-0.00865
	(0.02234)	(0.01959)
Treaty ports	-0.00026	-0.00024
	(0.00037)	(0.00037)
Crop failure $_{t-1}$ × treaty ports	-0.00006	0.00105
	(0.00147)	(0.00147)
Missionary presence	0.00281***	0.00279***
	(0.00053)	(0.00053)
Crop failure $_{t-1}$ × missionary presence	-0.00105**	-0.00104**
	(0.00042)	(0.00041)
Crop failure $_{t-1}$ × ln(Taoist and Buddhist temples/area)	-0.00469	-0.00186
	(0.00711)	(0.00765)
Crop failure $_{t-1}$ × ln(terrain ruggedness)	0.00962	0.01071
	(0.00650)	(0.00681)
Peasant rebellions $_{t-1}$	0.15626***	0.15620***
	(0.02941)	(0.02933)
Crop failure $_{t-1}$ × peasant rebellions $_{t-1}$	-0.07494**	-0.07492**
	(0.03456)	(0.03438)
Year fixed-effects	Yes	Yes
County fixed-effects	Yes	Yes
County-specific time trend	Yes	Yes
R-squared	0.22	0.22
Number of observations	27713	27713

Notes: Robust standard errors clustered at the county level are reported in parentheses. * Significant at 10%; ** significant at 5%; *** significant at 1%.

Table A5. Correlation among Variables

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	ln(temples/area)	1															
2	ln(chaste women/area)	0.54***															
3	Land suitability	-0.22**	0.09														
4	Urbanization 1770s	0.09	0.16*	0.00													
5	Agricultural output 1930s	-0.12	0.09	0.23**	-0.03												
6	Urbanization 1920s	0.11	0.30***	0.09	0.65***	-0.06											
7	ln(schools)	0.07	0.13	0.15	0.36***	-0.11	0.31***										
8	*Shengyuan*	0.04	0.19**	0.03	0.57***	0.06	0.36***	0.46***									
9	ln(imperial soldiers/area)	0.45***	0.39***	0.10	0.51***	0.12	0.37***	0.30***	0.53***								
10	Land tax	0.17*	0.21**	-0.08	0.02	-0.21**	0.07	0.06	-0.13	-0.02							
11	ln(granary/area)	0.55***	0.45***	-0.01	0.17*	0.08	0.21**	0.13	0.23**	0.35***	0.00						
12	Prefecture seat	0.14	0.19*	0.04	0.80***	-0.01	0.46***	0.40***	0.80***	0.62***	-0.02	0.17*					
13	Missionary presence (years)	-0.15	0.20**	0.13	0.21**	-0.10	0.16*	0.04	0.19*	0.01	0.23**	-0.15	0.23**				
14	Treaty ports (years)	-0.03	0.27***	0.18*	0.01	-0.04	0.46***	0.04	-0.04	0.06	0.13	0.10	-0.04	0.28***			
15	ln(Taoist & Buddhist temples/area)	0.19*	0.32***	0.12	0.34***	0.03	0.32***	0.28***	0.23**	0.26**	0.11	0.15	0.33***	0.06	0.14		
16	ln(terrain ruggedness)	-0.22**	0.06	0.74***	0.12	0.15	0.22***	0.29***	0.12	0.04	0.00	-0.07	0.12	0.03	0.13	0.31***	
17	Sages/area	0.40***	0.27***	-0.05	0.04	-0.04	0.03	0.24**	0.25**	0.27**	0.02	0.20**	0.16	-0.15	-0.07	-0.09	-0.01

Notes: Correlation coefficients are reported. * Significant at 10%; ** significant at 5%; *** significant at 1%.