Social-economic change and its impact on violence: Homicide history of Qing China☆,☆☆

Zhiwu Chena,*, Kaixiang Pengb, Lijun Zhuc

a Yale University, University of Hong Kong, and School of Economics, Peking University, Yale School of Management, 165 Whitney Avenue, New Haven, CT 06511, USA
b Department of Economics, Henan University, Kaifeng, Henan, China
c Department of Economics, Washington University in St. Louis, One Brookings Drive, St. Louis, MO 63130, USA

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ABSTRACT

This paper constructs a quantitative history of the homicide rate in Qing China and investigates its social and economic drivers. Estimates based on historical archives indicate that this annual rate ranged between 0.35 and 1.47 per 100,000 inhabitants during the 1661–1898 period, a low level unmatched by Western Europe until the late 19th century. China’s homicide rate rose steadily from 1661 to 1821 but declined gradually thereafter until the turn of the century. Although extreme, homicide represents a random sampling of the entire distribution of interpersonal violence; hence the homicide rate serves as a proxy for overall violence, and its rise implies a decline in personal security. We use national and cross-provincial panel data to show that population density, state capacity, local self-governance, interregional grain market integration, and grain price level (which captures crop failure and other survival distress) are all statistically significant drivers of the homicide rate in 18th- and 19th-century China.

1. Introduction

Historians often divide China’s Qing Dynasty (1644–1911) into an early period of prosperity and a late period of stagnation or decline (Rowe, 2011). Starting from the Kangxi reign in 1661 and ending after the Qianlong reign (about 1813), the prosperous period was distinguished by high income growth and social tranquility (hence this period is often referred to as the “Kangxi–Qianlong Prosperity”); in contrast, the rest of the 19th century was marked by economic stagnation, or decline, and war. 1 This conventional view about the Qing is supported by standard economic measures such as GDP (Maddison, 2007), living standards (Allen et al., 2011), and population gain. According to Maddison, China’s population grew from 138 million in 1700 to 381 million in 1820 and to 437 million by 1913—a cumulative growth of 176% from 1700 to 1820 but only 15% for the century that followed. Thus, economic growth was far greater in the 18th than in the 19th century. China also experienced major humiliating wars in the latter...
period: the First Opium War (1839–1842), the Second Opium War (1856–1860), the Sino-Japanese Naval War (1894–1895), and the war against the Eight-Nation Alliance (1900).

Yet standard economic measures are only partial indicators of a society’s development progress and cannot reflect the full picture. In this paper, we construct China’s homicide rate history and investigate the socio-economic drivers of changes in violence during the period from 1661 to 1898. Our goals are to shed new light on Qing China’s economic history and to improve our understanding of the interacting dynamics between economic growth and social change. In particular, we focus on ordinary interpersonal violence by excluding war and other organized intergroup violent acts. Because the lack of suitable data makes it difficult to estimate general “ordinary” violence, we rely instead on the homicide rate as a proxy. In so doing, we assume that ordinary violence and the homicide rate are highly correlated. Although the homicide rate is not a performance measure in the vein of income growth, population change, or other economic measures, it does capture an important dimension of ordinary people’s well-being and living standards. A society in which the homicide rate rises is one characterized by reduced well-being of its members and increasingly insecure property rights. According to North et al. (2009), the use of violence is restrained by political and economic institutions that give individuals control over resources, which in turn shapes the incentives faced by those in a position to commit violent acts. It follows that the level of interpersonal violence is a good indicator of progress in institutional and economic development. The “civilizing process” theory of Elias (2000) holds that, at the individual level, humans have developed a higher level of self-control by way of literacy, education, and cultural consumption (e.g., reading and group learning). Because the homicide rate is driven by social, economic, and institutional factors, it is also an intertemporally and internationally consistent measure of interpersonal violence and associated insecurity (Baten et al., 2014). For these reasons, we seek to assess the different periods of Qing China by using the homicide rate’s level and trajectory.

Using sources kept at the First National Historical Archives of China, we offer the first estimate of interpersonal homicide rates for the period 1661–1898. Our main finding is that the national homicide rate ranged between 0.35 and 1.47 homicides per 100,000 population annually, which was much lower than in Western Europe at the time. More specifically, China’s homicide rate rose steadily from about 0.6 (per 100,000 population) in 1661 to about 1.47 in 1821—an increase of 145% over the 140-year period! Thus, underlying this increasing homicide rate was a significant increase in ordinary interpersonal violence during the Kangxi–Qianlong Prosperity. The opposite occurred from 1821 onward, when the national homicide rate was in decline.

In order to explain the intertemporal variation in China’s homicide rate, we propose—and use cross-provincial panel data to test—several hypotheses. Our population pressure hypothesis states that significant population growth and large-scale migration put considerable stress on society and cause more conflicts to occur until new norms are firmly established. This hypothesis is consistent with Buoye’s (2000) finding that, when large numbers of migrants enter a region, the effect of ambiguous property rights on disputes may be exacerbated until new norms emerge. Our survival distress hypothesis assumes that, when grain prices rise (because of crop failures or other risk events), the ability of ordinary people to survive is challenged and forces some individuals to seek violence. The link between crop failure and violence is well established in the literature (e.g., Anderson et al., 2013; Bai and Kung, 2011; Jia, 2013).

According to Elias (2000) and Eisner (2003), state formation represents both a civilizing and a pacifying process because social order is likely to improve once the state monopolizes the legal use of violence, imposes rules, and enforces them. Miller (2013a, 2013b) and Wakeman (1998) document that state power was on the rise—and civilian self-governance was in decline—during the Kangxi–Qianlong era, although these trends reversed starting early in the 19th century. We hypothesize that the level of state power must have effects on violence, though the net impact may be difficult to determine. There are at least three channels through which state power affects the level of violence.

First, state power might make government agencies more efficient and improve the overall society’s law and order, leading to lower violence rates. We refer to this as the state capacity channel, which in our empirical implementation is captured by a region’s “Chong” rating (applied to key administrative zones) by the Qing government; when a region was rated Chong, the government would likely send a more capable official to govern that region and in that way increase state capacity there (or at least signal such an increase). Second, the rise of state power might weaken local self-governance institutions and thus reduce the role of the gentry (Miller, 2013a, 2013b; Wakeman, 1998), leading to greater social disorder and more violence at the local level; we refer to this as the gentry channel. Third, newly gained state power might be directed at setting up regional border barriers to prevent grains and other goods from flowing between provinces or other administrative zones. Thus, for example, grain markets actually became less integrated across regions from the early 18th century to the early 19th century; as a consequence, ordinary people became less able to cope with crop failure (and other income shocks), which in turn led to more violence. We refer to this as the market integration channel.

Our empirical exercise uses Chinese cross-provincial homicide data to show that, during the 18th and 19th centuries, provinces with higher population density and higher grain prices (reflecting both population pressure and food supply conditions) experienced higher homicide rates—especially if these conditions were accompanied by less integration of grain markets, lower state capacity (as proxied by a sub-Chong rating at the provincial level), and fewer gentry in the province. These findings are largely consistent with

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2 According to Eisner (2003), Western European communities during the 17th–19th centuries had a homicide rate that ranged between 0.6 and 12. The European rates did not approach the low levels in China until the 19th century. Why did China have much less violence among ordinary people than did its Western counterparts? One could follow North et al. (2009) and develop a complete explanation of the contrast in homicide rates between China and the West, but that undertaking is beyond the scope of this paper.

3 The death rate due to war was probably falling (and lower) during the Kangxi–Qianlong period than during the post-1820 Qing period, which saw such deadly conflicts as the Taiping Rebellion. We follow Eisner (2003) and Elias (2000) in focusing on ordinary interpersonal violence.
our population pressure and survival distress hypotheses. At the same time, the channels of state capacity, local governance, and cross-regional market integration could all serve to reduce ordinary violence.

The cross-provincial regression results allow us to offer a partial explanation for the pre-1821 upward trend and the post-1821 downward trend of China’s national homicide rate. We demonstrate that, prior to 1821, China experienced fast population growth, rising grain prices, and increasing disintegration of the grain market; all these factors contributed to the observed continuous rise in the national homicide rate. After 1821, however, the opposite scenario obtained: population growth slowed down, grain prices stabilized or declined, grain markets became more integrated across regions, state power weakened, and local self-governance strengthened. As a result, the national homicide rate declined after 1821. Thus Chinese societal pressures due to rapid economic growth and institutional changes led to a rise in ordinary violence and property insecurity during the era of Kangxi–Qianlong Prosperity and up to 1821; but as population and economic growth pressures lessened and state power retreated for the rest of the 19th century, so did interpersonal violence and property insecurity.

Our paper introduces historical China data–based insights to the literature on the economics of criminal behavior (Becker, 1968; Grossman, 1991). In particular, we examine the effect of grain price shocks on violence in the context of the 18th–19th century China while exploring how various factors influenced this effect. Higher grain prices could be a response to crop failure due to natural disasters, which reduced the returns to land-based labor and increased the gains from violent behavior. In addition, higher grain prices increased land values and so created more incentives for land-related disputes (Buoye, 2000). Given these effects, homicide rates tended to be higher when grain prices increased; yet the strength of these effects depended on the institutional environment. As our empirical work shows, a higher level of state capacity or more local gentry governance reduced these negative effects by increasing the cost of violence while reducing its benefits and also by increased sharing of risks through state and civilian granary networks. Trading networks that were better geographically integrated would provide a market alternative and improve the capacity of ordinary people to cope with food shortages, thus reducing the need for violence and (by extension) acts of homicide.

Besides expanding our knowledge of Qing China’s socio-economic history, our work contributes to the literature on the history of violence. Much research has addressed the history of interpersonal violence—in particular, the homicide rate—in Western Europe since the late Middle Ages. For example, Elias (2000) and Pinker (2011) document a remarkable long-term decline in interpersonal violence due to the “civilizing process” and to institutional, cultural, and market development. Gurr (1981) collects estimates of homicide cases for 30 English localities and finds that their annual homicide rates fell from about 20 per 100,000 inhabitants in the high and late Middle Ages to 10 by 1600 and to a mere 0.1 by the end of the 20th century. However, we are not aware of any published efforts at estimating China’s rates of homicide and other violence during different historical periods. It has therefore been difficult either to evaluate China’s process of civilization quantitatively or to compare China with other countries. Our paper fills this gap.

2. Data sources and description

In Qing China, local governors were required to report all homicide and other death-penalty cases to the central government, using a standardized template known as the Tiben, or ‘case memorials’ or simply ‘memorials’ in English. For each important case (and certainly for homicides), the local governor would submit a memorial (i.e., a General Report or Tongben) to the Grand Secretariat, where it was copied and transmitted to the Ministry of Justice; the latter would then return a memorial (i.e., the Ministry Report or Buben), along with its opinion on the case, to the Grand Secretariat. Thus for each case there were two memorial reports, the General Report and the Ministry Report. These reports were originally kept by the Red Book Archives (Hongben Ku) of the Grand Secretariat, and most of them ended up in the First National Historical Archives.

By a 1745 order of Emperor Qianlong, the Ministry of Justice began collecting statistics on key cases (including homicides) based on memorials submitted from the previous year into booklets that we refer to as Case Summary Books. The extant Case Summary Books are available for 39 years from 1744 to 1898. No summary statistics on homicide cases (and other criminal acts) are available before 1743. We therefore rely on the estimates of total Red Books (1661 being the first year with data available) based on information recorded by Fang (1935) for 1661–1743. Due to serval institutional changes after 1868, we used the extant Tiben case memorials, which are publicly available at the First National Historical Archives to estimate homicide rate from 1860 to 1898. Accessible are memorials on two types of homicide: (i) land- and debt-related homicide, and (ii) marriage- and adultery-related homicide. We refer to these two types of memorials as Land & marriage memorials. They represent about half of all surviving homicide case memorials.

Table 1 presents summary statistics for these three data sources, homicide cases from the Case Summary Books, annual estimates of Red Books, and number of Land & marriage memorials, as well as the annual number of death penalty executions as reported by the Qing Chronicles. The time series patterns are plotted in Fig. 1.

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Fig. 1 shows that the national homicide total, the Red Book total, the number of land/marriage memorials (combining both land/ debt and marriage/adultery cases), and the national death-penalty total all track each other closely from 1744 to 1860; this is the period for which data availability and quality are good for each of the four series. In particular, all these reported crimes increased during the 18th century and peaked after the start of the 19th century—suggesting a general rise in violence followed by a decline.

These books are also known “Yellow Books” (Huang Ce). Because this term was used with reference to many of the imperial court’s documents, we use the terminology Case Summary Books to avoid confusion.

Land/debt cases are further divided into two subcategories: disputes related to land, house sales, pawning, renting, and property or contractual rights; and debt-related disputes.
Collecting data from different sources allows us to cross-check the accuracy of these data, which is crucial for the discussion to follow. We will rely on this cross-validation when employing either the Red Books series or the land/marriage memorials series to approximate missing national homicide totals for earlier and later periods. More institutional background and comparisons are provided in the Appendix.

### 3. National homicide rate trend

Our homicide statistics for 1661–1898 are estimated separately for three subperiods: 1661–1743, 1744–1860, and 1861–1898. As explained in Section 2, annual homicide case counts for the 1744–1860 period are taken directly from the Case Summary Books. For the 1661–1743 subperiod (i.e., prior to the existence of Case Summary Books), we use the annual Red Book estimates to arrive at our approximation. In particular, we divide the annual Red Books (conditional on the number of Red Books being available for the year in question) by the average Red-Books-to-Homicide ratio from 1744 to 1850, when Red Book counts and the national homicide totals (from Case Summary Books) are both available for 16 years to obtain an estimate for that year’s homicide case total. Altogether, we have homicide estimates for 34 years for the 1661–1743 subperiod. To limit the effect of fluctuations in the Red Books series, we use the average annual homicide total over consecutive five-year periods.

Several changes were made after 1860 in response to the Taiping Rebellion and other conflicts. First, the emperors began issuing orders to pardon certain categories of alleged criminals, such as some homicide cases awaiting the Ministry of Justice’s review; these cases were excluded from the Case Summary Books. Hence the associated Case Summary Books statistics under-represent interpersonal violence for such years. Nonetheless, local governors should still have filed Tiben memorials with the Grand Secretariat. Fig. 1 shows no dramatic change around 1860 in the number of land/debt or marriage/adultery homicide. The Case Summary Books often stated outright that the reported statistics exclude cases in which the defendant was pardoned or had his sentence reduced.

![Fig. 1. Distribution and trend of homicide-related series, 1661–1898. Note: See note to Table 1 for descriptions of each variable.](image)

### Table 1

<table>
<thead>
<tr>
<th>Variable</th>
<th>First year</th>
<th>Last year</th>
<th>Obs. (years)</th>
<th>Mean</th>
<th>S.D.</th>
<th>Min.</th>
<th>Max.</th>
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<tr>
<td>Homicide cases</td>
<td>1744</td>
<td>1896</td>
<td>39</td>
<td>2,442</td>
<td>842</td>
<td>972</td>
<td>4,459</td>
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<td>Red Books</td>
<td>1661</td>
<td>1888</td>
<td>96</td>
<td>6,122</td>
<td>2,654</td>
<td>1,170</td>
<td>10,578</td>
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<tr>
<td>Land &amp; marriage memorials</td>
<td>1736</td>
<td>1898</td>
<td>163</td>
<td>1,477</td>
<td>517</td>
<td>178</td>
<td>2,573</td>
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<tr>
<td>Death penalty</td>
<td>1738</td>
<td>1849</td>
<td>82</td>
<td>913</td>
<td>271</td>
<td>296</td>
<td>1,662</td>
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</table>

Notes: “Homicide cases” is the total number of homicide cases concluded by local governors and summarized in the Case Summary Books. “Red Books” is the annual total of Red Books (in the Red Books Archives). “Land & marriage memorials” is the annual total of extant case reports concerning land/debt or marriage/adultery homicide. “Death penalty” is the annual total of death penalties carried out—through Qiushen and Chaoshen deliberations (see the Appendix) but excluding executions that proceeded without due process.

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6 See Appendix for details on our estimates of annual red books. Note that many non-memorial administrative files were also recorded in the Red Books Archives. So we can’t use that directly as homicide estimates.

7 We highlight the long-term trend by averaging out short-term fluctuations.

8 For example, the average value for 1661–1665 is used as the national homicide total for 1663.

9 The Case Summary Books often stated outright that the reported statistics exclude cases in which the defendant was pardoned or had his sentence reduced.
Subsequently, the *Tiben* template was no longer required for other categories of legal and bureaucratic matters or for less important criminal cases. This change in practice altered the meaning of aggregated Red Book counts after that year.

Given these two important changes, we did not rely either on the Red Books or *Case Summary Books* when estimating homicide statistics for the post-1860 Qing Dynasty. Instead, we approximated homicide rates by using the total number of land/marriage case memorials for each year, employing the same approach as the pre-1743 period. There are 38 annual observations estimated from 1861 to 1898, and averaging this series for each five-year interval generates eight homicide estimates for the post-1860 period.

In total, we have 53 data points concerning national homicide totals for the entire 1661–1898 period: 11 estimates for 1661–1743, 33 for 1744–1860, and 8 for 1861–1898. The homicide series is graphed in Fig. 2, where the plot clearly exhibits an inverted U-shape. From 1661 to 1821, the number of homicides rose from fewer than 1,000 annually to more than 4,000, a threefold increase; however, homicides gradually declined in number after 1821 and for the rest of the 19th century.

China’s population fluctuated considerably during the Qing Dynasty. Cao (2001) provides detailed population estimates for six selected years during the Qing Dynasty: 1678, 1776, 1820, 1851, 1880, and 1910. We obtain the country’s population for other years via interpolation (while assuming a constant growth rate between any two data points). We then divided the homicide counts reported in Fig. 3 by the estimated population for the corresponding year, thereby obtaining the (unadjusted) homicide rate series. Yet we must bear in mind that infanticide, as well as killing the killing of a wife or concubine by her husband, were not treated as homicide in Qing China, so it is not included either in the *Case Summary Books* or in the extant homicide case archives. We inflated the unadjusted homicide rate series for China (as just derived) by 25% (see the Appendix for details).

The adjusted values are presented in Fig. 3. This homicide rate—like the homicide totals plotted in Fig. 2—exhibits an inverted U-shape. From 1661 to 1821, China’s homicide rate increased from about 0.6 during the 1661–1665 period to 1.47 in 1821 (a two-fold increase). Our estimates indicate that, in China, the homicide rate at the end of the 19th century was comparable to that of the 1660s.

Estimates by Eisner (2003) indicate that the average European homicide rate started to decline around 1500 and continued to do so until the 20th century. Western European cities had average homicide rates of about 6 per 100,000 population during the late 17th century, 5 to 4 in the late 18th century, and 2 to 3 before 1900. During the same periods, China’s corresponding homicide rates were much lower: respectively 0.6, 1.5, and 0.6. European homicide rates did not approach China’s low level until late in the 19th century.

There are several factors that could account for this difference between China and the West. First, state formation in China began in the Qin Dynasty from 221BCE onward—long before state formation in Western Europe. According to Elias (2000) and Eisner (2003), state formation is both a civilizing and a pacifying process because the state monopolizes the legal use of violence while imposing and enforcing law and order. Given China’s much longer history of centralized governance, these civilizing and pacifying processes likely explain the lower ordinary violence there than at the same time in Europe. Second, Confucianism might have contributed to lower levels of violence (Miller, 2013a, 2013b). Confucianism emphasizes community governance by local elites or gentry as well as on ancestor worshiping within each clan, so there was no ambiguity about whom was vested with authority. Clear authority often goes hand in hand with order, which may be why Confucian societies in general (even today) have less violence.

The late introduction of guns to Qing China may also have played a role in China’s low homicide rate. Guns were invented and widely available throughout Western Europe in the 16th century. Yet even though Ming Dynasty soldiers encountered Western matchlock guns in 1521 (when fighting the Portuguese in Canton), handguns were not widely available in China until the late 19th century. Fig. 4, which is based on the 49,627 *Case Summary Books* cases we examined, plots the fraction of cases (by category) in which weapons were used. Prior to 1850, only 0.29% of criminal cases involved the use of a weapon (e.g., knife or gun). After 1850, however, the use of weapons rose significantly; this increase resulted mainly from the introduction of rifles to China in the late 19th century. Even so, China’s homicide rate did not rise significantly during that time.

### 3.1. Verification and cross-checking

It could be that the decline of homicide during the 19th century is due to under-reporting and deterioration of local government efficiency (as opposed to real changes in homicide rate). The Qing state increased its power from the reign of Emperor Kangxi to that of Qianlong (i.e., from 1661 to 1795), so there are reasonable grounds for believing that local officials during the so-called Kangxi–Qianlong Prosperity would not dare to under-report. Yet after Emperor Jiaqing began his reign in 1796, the state’s grip on power gradually loosened and compliance with reporting requirements became less reliable—a trend that continued well into the 19th century. Thus, we must be cautious interpreting the Qing period data;

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10. i.e. multiplying land/marriage memorials for 1860–1898 by the average ratio of Homicide totals to land/marriage memorials between 1744 and 1850.

11. One difference between our homicide series and those reported in Eisner’s work is that our estimation is at the national level and is based on statistics collected by the Qing Ministry of Justice, whereas Eisner’s (2003) pre-modern estimates are all local (mainly at the county level).

12. According to Baten et al. (2014), the homicide rate for 2000–2010 is 0.7 (per 100,000 population) in France, 1.4 in U. K.; 2.5 in Italy, and 6.1 in U. S.; it is 1.6 in China and 0.5 in Japan. According to the “intentional homicide” data compiled by the World Bank [http://data.worldbank.org/indicator/VC.IHR.PSRC.P5], homicide rates for South Korea and Hong Kong are (respectively) 1.0 and 0.0. Thus homicide rates in today’s societies that were influenced by Confucianism (China, Hong Kong, Japan, Korea) are generally lower than elsewhere.

13. The first recorded use of a firearm, in 1364, was in Europe. Handguns were present across Europe by 1380, and the matchlock gun was invented in the 1400s; rifles were popular in Europe by the mid-16th century [http://www.pbs.org/opb/historydetectives/technique/gun-timeline/].

14. Interpretative caution is advised, however, since these country estimates are from different types of data sources: those for China (resp., Western Europe) are based on national (resp., local) data. Because the reporting of homicides and the administrative dealing with cases is fairly homogenous within a given country, interregional comparisons within a country are more robust than those across countries.
century (Miller, 2013a, 2013b; Sng, 2014; Wakeman, 1998). Thus many homicide cases may not have been reported to the central government in the 19th century as local governors shirked their responsibilities, creating a false impression of reduced violence during that time. That being said, the Qing Code explicitly threatened local officials with punishment for non-performance. Local governors failing to report homicide cases would be dismissed, and those who knowingly misreported homicide cases would be demoted and perhaps charged with a crime.

For the 49,627 cases drawn from the Case Summary Books, we calculated the time lag between the date violence occurred and the date of Tiben reporting to the Grand Secretariat; our aim was to see whether there had been structural changes in reporting practices over time. The average lag, displayed in Fig. 5, was 15.19 months for the 1717–1795 period and 15.43 months from 1795 to 1850. There is no clear evidence of any decline in administrative efficiency or state capacity (as reflected in reporting lag) from the 18th to the 19th century. However, the average time lag did increase to 21.32 months after 1850. There are a number of reasons for
this increase, which include the Taiping Rebellion’s impact as well as changes to (and the eventual abolishment of) the Tiben memorial system—since those changes led local officials to be less compliant with reporting standards.

We can cross-check to see whether our collected homicide statistics are consistent with Qing China’s social conditions as perceived by officials at the time. The Qing government created a system for rating each prefecture along four dimensions.15 In particular, a prefecture was labeled Fan (corresponding to a value of 1 for our Fan indicator variable) if its administrative burden was heavy and cumbersome. In Fig. 6 we present both the average annual homicide total from 1744 to 1860 and the average Fan measure across prefectures for each of 17 provinces.16 The chart demonstrates a significant and positive correlation between the two. Note that the Chong, Fan, Pi, and Nan ratings were made and recorded independently of the Tiben case reporting system. This simple correlation exercise suggests that our homicide data series is consistent with the Qing government’s original ratings of each province’s governability.

4. Social and economic drivers of the homicide rate

Violence occurs in a social, economic, and institutional context. Before attempting to explain the homicide rate trends during Qing China, we use cross-provincial data to identify the social and economic drivers of differences across the provinces: population density, grain prices, market integration, state capacity, and local gentry governance.

4.1. Homicide rates across Qing provinces

Table A.1 in the Appendix presents statistics on homicide cases and homicide rates for 18 provinces in China Proper from 1774 to 1849, all based on the Case Summary Books.17 There are about 30 annual observations for each province. To avoid the bias problems discussed previously, we exclude data after 1850.

Sichuan had the highest average number of homicide cases per year: 357, or almost 3 times the average for other provinces. Its homicide rate was also the highest (1.67), followed by Guizhou; of all the provinces, these two absorbed the most migrants before 1850. Peripheral provinces—such as Guangxi, Gansu, and Yunnan—experienced fewer homicides (owing to their relatively sparse populations), but their homicide rates were in the middle of the distribution. The most developed provinces (in the Yangtze River delta) had the lowest homicide rates. For example, Jiangsu’s rate was 0.39, or about one quarter of that for Z. Chen et al.

Fig. 5. Occurrence–reporting time lag of Case Summary Books cases. Notes: The occurrence–reporting time lag is defined as the number of months from the day a crime occurred to the day of its being reported, via Tiben, to the Grand Secretariat. The dark horizontal line inside each shaded box (which represents half of the respective subperiods’ observations) indicates the average time lag.

15 These dimensions are: Chong (if the prefecture was geographically and/or strategically important); Fan (if it was administratively burdensome); Pi (if tax compliance/collection was difficult); and Nan (if social order and local institutions presented challenges).
16 Sichuan is not included in this figure. The average annual number of homicide cases for Sichuan was 355 yet the average annual number for the other 18 provinces was 125; hence Sichuan was clearly an outlier. It had both a large number of homicide cases and a high prevalence of Fan. We plot provincial-level data owing to the sparsity of county- and prefectural-level cases and to the nonavailability of county population data.
17 Since many Case Summary Books were damaged or lost over the past three centuries, our search of available sources at the First National Historical Archives yielded the required details for only some years. For other years, there are no (or only partial) data available for homicide and non-homicide cases. For the years 1755, 1761, 1823, 1835, and 1848 (and, in some provinces, also for 1748 and 1777), the total numbers of Case Summary Books cases—that is, including both homicide and non-homicide cases—are available; however, we are unable to distinguish between these case types because the data are not sufficiently detailed. For those years, we estimate the homicide total for a province in two steps: (i) calculate the average ratio of the Case Summary Books case total to actual homicide total for that province in the years for which both types of case counts are available; (ii) divide the Case Summary Books case total by this average ratio to obtain that year’s homicide estimate for the province. The highest standard deviation for this ratio is 0.14 for Zhejiang (with a mean of 1.2), and the lowest is 0.03 for Jiangxi (with a mean of 1.1).
Sichuan; Anhui and Zhejiang enjoyed similarly low violence rates.

We can also examine the time trends of provincial homicide rates and make comparisons across provinces. Fig. 7 presents the homicide rate history of four provinces: Guangdong, Sichuan, Jiangsu, and Shandong. For 1860–1895, we estimate homicides based on land/marriage memorials data in the same way as for the post-1860 national homicide rates. The Tiben memorial counts are averaged for each 10-year span from 1856 to 1895, resulting in homicide rate averages for the decades of 1860, 1870, 1880, and 1890.18

All four provinces experienced rising homicide rates from 1744 until about 1821 and a decline thereafter, although the slopes of the rise and fall differed among them. Sichuan stood out in this regard also, as its rise and fall were the sharpest among these provinces. The implication is that the dramatic demographic changes due to migration indeed shook up Sichuan and led to more violence there (Buoye, 2000). By the 19th century, the early migrants to Sichuan and other regions had settled in to their new homes, after which the pressures inciting violence probably decreased relative to the early Qing decades. Thus the costs and consequences of violence increased as its impetus declined, and these developments led to a reduction in homicide from the 1820s onward. Population change likely has a strong effect on homicides, a hypothesis that we test next. Yet because the other provinces also exhibited a “rise then fall” pattern in homicide trends, it is likely that other drivers of violence were also at play.

4.2. Explanatory variables of provincial homicide rates

To explain differences across provinces, we need to identify the likely drivers of interpersonal violence. Our population pressure hypothesis (and first explanatory variable) concern population change. As an agrarian society, China had limited ability to cope with

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18 Provincial homicide rates are not extended to the pre-1744 years because Red Books statistics cannot be disaggregated into provinces.
rapid population growth. A rapidly increasing population density could result in degraded living conditions and hence in Malthusian stress for ordinary people, causing conflict to arise. There was substantial variation in population growth across the provinces. During the 17th–18th centuries, the largest migration wave was the movement of “filling Sichuan with people from Hunan and Hubei” (Huang guang tian Sichuan). Sichuan’s population was destroyed in the civil war of 1630–1640 and so, when the Qing Dynasty was founded, the government encouraged millions of peasants from nearby provinces (e.g., Hubei, Hunan, Jiangxi) to migrate there. From the mid-18th century onward, hilly and mountainous areas were the main destinations for migrant peasants as the population pressure in the Sichuan plains intensified (Buoye, 2000).

In agrarian societies, interpersonal trust and behavioral norms are generally established through repeated exchanges and interactions; that dynamic makes cost–benefit calculations work, howsoever gradually, against violence. For this reason, large-scale migration will not only disrupt established bonds and norms in the communities left behind; it will also create frictions both among newcomers from different regions and between migrants and established residents. In a new environment, there are fewer costs to a perpetrator of violence against strangers. Over time, however, new norms will emerge that curb incentives for violence. Using land homicide Tiben memorials, Buoye (2000) shows that—as the primary destination of migrants during the 17th–18th centuries—Sichuan indeed experienced many homicide cases.

Cao (2001) provides provincial population estimates for five years during Qing China: 1776, 1820, 1851, 1880, and 1910. Since our annual cross-sectional regressions focus on the 1744–1849 period, there are only two independent population-growth data points for each province (1776–1820 and 1820–1851). So for the years during, say, 1776–1820, the annual population growth rate does not vary; hence the annual provincial population growth is too similar (for estimation purposes) to the province fixed effect. We therefore use each province’s annual population density as a proxy for population pressure. Province populations for each year are obtained by interpolating between Cao’s estimates for the two years closest to the focal year, and population density—denoted PopDense—in log value—is calculated as population per square kilometer of land.

Our survival distress hypothesis concerns grain prices. We use each province’s price of grains (averaged across its prefectures), which are probably the most important goods in agrarian societies, to approximate the overall distress level of that province’s inhabitants. The effect of grain prices on overall homicide occurs through two main channels. First, a short-term increase in grain prices may reflect crop failure due to drought, flood, or other natural disasters; in that case, high grain prices proxy for food-supply stress that can induce otherwise law-abiding citizens to steal, rob, or commit even worse crimes. High grain prices can also result from wars that cut off normal supply chains of grains and other materials. The connection between natural disasters and violence is well documented in the literature (e.g., Anderson et al., 2013; Bai and Kung, 2011; Jia, 2013; Miguel et al., 2004). The second channel is that higher grain prices make land worth more and thereby lead to more land disputes and related violence—especially when land property rights are ambiguous (Buoye, 2000). In addition, grain price changes may also be a response to population pressure, thus capturing a different type of survival distress.

During the Qing Dynasty, grain prices were reported by local officials on a monthly basis; these price reports are now kept in the Grain Price Database for Qing Dynasty at Academia Sinica’s Institute of Modern History in Taiwan. We use the average grain price across a province’s prefectures as its provincial grain price, denoted by $G_{\text{Price}}$ (in log value).

We advance three hypotheses related to the three main channels through which state power affects violence. First is the “state capacity channel” whereby, according to Elias (2000) and Eisner (2003), the law and order supported by state power both reduces the benefits of violence and increases its costs. For example, Buoye (2000) demonstrates that whether the government created and maintained an unambiguous property rights system made a significant difference in the occurrence of homicide. Buoye uses this public good to explain the homicide rate’s inverted U-shaped pattern in 18th-century Guangdong. According to Buoye, Sichuan’s increase in property rights–related homicide continued well into the 19th century because this province did not provide similar public goods.

A direct measure of each province’s state capacity is not possible, so we use the Chong “governability” rating (averaged across the prefectures within each province) as a proxy. Our assumption is that a higher Chong rating implies greater geographic and strategic importance of that province to the national government; this would increase the likelihood of an imperial court assigning a more capable governor to that province, from which should follow better state capacity. Our data for the Chong variable is from Liu (1994).

Second is the “gentry channel”, reflecting the governance of local communities by local gentry together with clan leaders. As explained by Miller (2013a, 2013b) and Wakeman (1998), the rise of state power often forced a retreat of local self-governance—notwithstanding the possibility, at least in theory, that high state capacity could co-exist with meaningful local self-governance by the gentry. Our hypothesis is that more local self-governance is associated with greater social order and less violence. We use the number

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19 Sichuan’s population was decimated by warfare prior to the Ming Dynasty’s collapse in 1644. In 1776, migrants and their descendants accounted for some 60% of Sichuan’s 10 million inhabitants (Buoye, 2000). By 1851, Sichuan’s population was nearly 30 million.

20 Maddison (2001) provides national population estimates for only three non-Qing years, whereas Cao (2001) reports estimates of provincial populations.

21 Buoye (2000) focuses on the ratio between the occurrences of property rights–related homicide and all land/debt homicide; in Guangdong, that ratio rose steadily from the early to the mid-18th century and then began to decline. He reports that land rights were ambiguous in rural Guangdong even before rapid population growth increased the population-to-land ratio and hence the value of land. The combination of ambiguous property rights and increasing land values created a context for conflicts to rise in the first half of the 18th century. At the same time, higher land values also incentivized communities and officials to establish previously absent boundaries and rights of land. After the Guangdong governor and local leaders did just that in the mid-18th century, the number and severity of land disputes declined.

22 Chong represents that the prefecture was geographically and/or strategically important; See footnote 15 and texts there for detailed explanations of the various ratings.
of local gentry figures in Qing dynasty, denoted by Gentry, to capture the extent of local self-governance in each province. Data from Zhang (1991) is used to calculate the Gentry variable for each province.

Third is the “market integration channel”, through which market development reduces violence as interregional and interpersonal exchanges improve households’ ability to handle distress and reduce the impetus for resorting to violence. When population pressure was rising from the mid-17th century onward—or in the wake of natural disasters and crop failures—not all regions felt the same impact. Well-developed and unconstrained interregional markets should help households absorb negative shocks. The literature documents that commercial networks were indeed expanding beyond local areas in the 17th–19th centuries, although these developments characterized only some of the provinces.

Our analysis proceeds by approximating, for each year, the degree of market disintegration within a province by the coefficient of variation in grain price across its prefectures (PriceCV): the more integrated the regional grain markets, the lower the PriceCV. Although the rules and order imposed via state power likely reduce violence, such power may actually impede the cross-regional integration of grain markets if state agencies hinder or block the movement of goods (Anderson et al., 2013). In this sense, then, increased state power could spur more violence and hence a higher homicide rate—especially during times of distress.

In our regressions, we use the PriceCV averaged over the most recent five-year period to measure the degree of market disintegration for each province in a given year. We also construct a market integration dummy, Mkt, which is set to 1 if PriceCV is in the lowest quartile (and set to 0 otherwise).

Our War variable represents the portion of a province’s counties at war in each given year; the data for this calculation are from The Chronological Timetable of Wars for Qing China. Our regressions include, as additional controls, each province’s “governability” rating as assigned by the central government. Three “emperor” dummies are used to control for heterogeneity (in strength of law enforcement, bureaucratic efficiency, etc.) across the periods during which different emperors ruled: LateQianlong for 1766–1795, Jiaqing for 1796–1820, and Daoguang for 1821–1849. Table A.2 in the Appendix reports summary statistics for all of our variables.

4.3. Cross-provincial regressions

The panel data used for our regressions cover 15 provinces for about 30 nonconsecutive years during the period 1744–1849 (depending on data availability). As already mentioned, all post-1850 observations are omitted to preclude any bias due to the Taiping Rebellion.

Our regression results are summarized in Table 2. The baseline regression in column (1), which excludes provincial fixed effects (FEs), shows a positive correlation between GPrice, PriceCV, and the homicide rate; in contrast, the effect of PopDense on provincial homicide rates is statistically insignificant. In column (2) of the table, where we control for both province and emperor fixed effects, the coefficients for PopDense, GPrice, and PriceCV are all positive and statistically significant. In other words: an increase in population density, grain prices, or grain market disintegration is associated with an increase in homicide rate. This finding is consistent with our hypotheses that (a) high grain prices proxy for food-supply stress that leads some individuals to commit crimes and (b) high population density creates distress and increases violence among residents.

To see how different institutions can help mitigate the impact of food shocks to violence, columns (3)–(6) investigate how the interaction of grain prices with institutional variables affects the impact of food distress. The regression results reported in column (3) include a term for the interaction between Chong and GPrice. The coefficient for this interaction term is both negative (~2.26) and statistically significant. Recall that Chong represents state capacity in that this rating reflects the imperial court (presumably) assigning a more capable official to govern that region. Thus, even as higher grain prices lead to higher homicide rates, that relation is weaker when state capacity is stronger. This result supports our hypothesis that greater state capacity effectively lowers conflict and violence.

The Gentry×GPrice interaction reported in column (4) of the table yields a similar result. The negative (and statistically significant) coefficient for this term implies that more local self-governance (as proxied by more gentry members) improves social order and diminishes the effect of food distress on violence at the local level.

In column (5) we add the interaction term between Mkt and GPrice. This term’s coefficient is also negative and statistically significant, confirming our hypothesis that a grain market that is better integrated across regions reduces the impact of food shocks on violence. The notion of a well-connected trading network reducing violence is supported by several recent studies. For example, Burgess and Donaldson (2010) use data from 1875 to 1919 and conclude that “the arrival of railroads in Indian districts dramatically constrained the ability of rainfall shocks to cause famine in colonial India.” Cao and Chen (2016) treats the 1826 abandonment of China’s Grand Canal as a natural experiment; these authors find that the abandonment significantly

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23 Sen (1982) argues that famine occurs not only from the lack of food but also from poor mechanisms for food distribution. For instance, the Bengal famine of 1770 was due to an urban boom that raised food prices, after which millions of rural workers starved because of lagging wages.

24 Wu (1983) states that, by the mid-19th century, 10% of China’s rice output, 26% of its cotton, 52% of silk, and 92% of tea were sold for profit on the market instead of being consumed locally. However, that research does not address the evolution of China’s regional market integration.

25 Results are similar to those presented here when our emperor dummy variables are replaced with decade dummies.

26 We follow Yan and Liu (2011) in excluding Sichuan, Yunnan, and Gansu because grain price data for these three provinces are incomplete and of low quality.

27 Because Mkt is generated from PriceCV, these two variables are highly correlated. We therefore exclude PriceCV from column (5) because the main purpose of that regression is to derive the coefficient for the Mkt×GPrice interaction.
increased the frequency of rebellions in counties bordering the canal—a result of the subsequent collapse of the interregional trade network.

The regression whose results are reported in column (6) of Table 2 includes all interaction terms in addition to our War variable. In this regression, the coefficients for the interactions of GPrice with Mkt, Chong, and Gentry are robust and similar to those seen in columns (3)–(5). The coefficient for War is negative but statistically insignificant—perhaps because our period of study here ends in 1849 and so does not include the Taiping Rebellion. Because there are only 15 (of 420) provincial observations for which the War dummy is nonzero, one can hardly expect that variable to have a first-order effect on the homicide rate during this period (i.e., from 1744 to 1849).

For the regression in column (7), we use the first-difference terms for homicide rate, PopDense, GPrice and War in order to address the issue due to the potential presence of unit roots. The basic conclusions from the previous regressions remain robust, except that the interaction term of GPrice with Chong now becomes statistically insignificant.

5. Explanatory narrative of the national homicide trend

In the previous section we relied on provincial panel data to investigate drivers of differences in homicide rate among the provinces. In this section we use those cross-sectional findings to shed light on the upward and downward trends in the national homicide rate of Qing China.

First of all, the Chinese population suffered heavy losses during the civil wars that raged from the mid-16th to the mid-17th century; this warfare led to the Ming Dynasty’s demise and to the Qing Dynasty’s founding in 1644. According to Cao (2001) and as shown in Table 3, China’s population was 160 million in 1678 and thereafter grew at an annual rate of 0.664%, reaching 306.6 million by 1776. Population growth continued until the Taiping Rebellion during the 1850s–1860s, when large-scale casualties caused the population to decline by 17% between 1851 and 1880. Population growth resumed after 1880 and recovered all of the civil war losses by 1910. Table 3 shows that China’s population increased by 35% between 1678 and 1820 and then declined by 5.8% between 1820 and 1880. It follows from our results in Section 4 that the pre-1821 rise in national homicide was likely due, at least in part, to the rapid rise in population pressure during that time, whereas the post-1821 decline in homicide was due to slower increase in population density.

Notes: Standard errors are reported in parentheses. “Other controls” include Longitude and Latitude (for provincial capital cities), three governability ratings (Chong, Pi, and Nan; see Section A.2 in the Appendix), a dummy variable for southeastern provinces, and year.

* * * * p < 0.01.
* * * p < 0.05.
* * p < 0.1.
* * p < 0.15.
* p < 0.15.

The Fisher-type unit root test for our dependent variable which we conducted can’t reject the null hypothesis that there exists a unit root. The homicide rate series, however, is difference-stationary, that is, its first difference does not have a unit root. The results in column (7) are obtained under standard robust errors. We have also tried to add year and year squared into the regression in column (6), but the results are qualitatively robust to the inclusion of these extra terms.

Our estimation results in Table 2 show that a 1% increase in population density is associated with an increase of 1.19% in homicide rate. By multiplying the population-density coefficient with the actual rate of change in population density, we estimate that from 1721 to 1821, the population change increased the homicide rate by 0.56 cases per 100,000 population. Since the actual homicide rate went from 0.36 in 1720 to 1.47 in 1820, the population-pressure effect probably accounted for 50.4% of the period’s net increase in homicide rate.

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Table 2
Cross-provincial panel regression results.

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PopDense</td>
<td>-0.07</td>
<td>1.15***</td>
<td>1.15***</td>
<td>1.13***</td>
<td>1.21***</td>
<td>1.19***</td>
<td>3.47***</td>
</tr>
<tr>
<td></td>
<td>(0.06)</td>
<td>(0.25)</td>
<td>(0.25)</td>
<td>(0.25)</td>
<td>(0.25)</td>
<td>(0.25)</td>
<td>(0.72)</td>
</tr>
<tr>
<td>GPrice</td>
<td>0.33**</td>
<td>0.15†</td>
<td>1.85***</td>
<td>0.54†</td>
<td>0.15†</td>
<td>2.39***</td>
<td>1.22***</td>
</tr>
<tr>
<td></td>
<td>(0.10)</td>
<td>(0.098)</td>
<td>(0.42)</td>
<td>(0.24)</td>
<td>(0.098)</td>
<td>(0.49)</td>
<td>(0.34)</td>
</tr>
<tr>
<td>PriceCV</td>
<td>0.89†</td>
<td>0.76†</td>
<td>0.82†</td>
<td>0.78†</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.50)</td>
<td>(0.44)</td>
<td>(0.44)</td>
<td>(0.43)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mkt×GPrice</td>
<td></td>
<td>-0.014†</td>
<td></td>
<td>-0.017†</td>
<td>-0.34***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.008)</td>
<td></td>
<td>(0.008)</td>
<td>(0.17)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chong×GPrice</td>
<td>-2.26***</td>
<td></td>
<td></td>
<td>-2.41***</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>(0.55)</td>
<td></td>
<td></td>
<td>(0.05)</td>
<td>(0.02)</td>
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<tr>
<td>Gentry×GPrice</td>
<td></td>
<td>-0.09†</td>
<td></td>
<td>-0.11†</td>
<td>-0.19***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.05)</td>
<td></td>
<td>(0.05)</td>
<td>(0.02)</td>
<td></td>
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</tr>
<tr>
<td>War</td>
<td></td>
<td></td>
<td></td>
<td>-0.06</td>
<td>2.77***</td>
<td></td>
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</tr>
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<td></td>
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<td></td>
<td></td>
<td>(0.05)</td>
<td>(2.46)</td>
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<tr>
<td>Other controls</td>
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<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Emperor FEs</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<td>Yes</td>
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<tr>
<td>Province FEs</td>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>R2</td>
<td>0.53</td>
<td>0.36</td>
<td>0.19</td>
<td>0.15</td>
<td>0.36</td>
<td>0.13</td>
<td>0.09</td>
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<td>N</td>
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<td>361</td>
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growth (or no growth) in population for several decades.

Our second insight is illustrated in Fig. 8, which plots two time series for the 1736–1895 period: the annual homicide rate and the national grain price (each averaged over 10-year intervals). Here the national grain price for a given year is defined as grain prices averaged across all prefectures. The grain price exhibits a rising trend with considerable volatility. Yet close examination reveals co-movement in the two measures except during the civil war years. Based on estimation results in Table 2, when grain prices increase by 1%, the homicide rate goes up by 0.15%.

The national grain prices rose by 48.6% from 1744 to 1821, which translates into an increase of 0.07 cases in homicide rate, accounting for about 11% of the actual homicide-rate increase for the period. Similarly estimated, the decline in grain prices during the 1821–1850 period contributed 3% to the period’s net decline in homicide rate.

A positive correlation between homicide and the overall price level is also found for England, where the homicide rate declined in periods with stable prices but increased in periods of grain price instability (Fischer, 1996, p. 309). As grain and other prices increased, wages remained “sticky” and did not increase as fast or by as much; the result was a decline in real purchasing power for ordinary people, which in turn led to more violence and homicide. In this sense, the long-term historical experience was similar in England and Qing China.

Third, changes in Qing China’s interregional market disintegration may also have contributed to homicide rate variations. Fig. 6 shows the decadal average national PriceCV of grain prices across all prefectures (for which data are available). Two patterns stand out. First, PriceCV and the national homicide rate exhibited significant co-movement during the 18th–19th centuries. Second, market disintegration became increasingly more severe in the 18th century until about 1821—in sharp contrast to the literature’s consensus view that China’s market development was improving rapidly prior to the 19th century. As explained in Section 4, grain market disintegration makes it more difficult for cross-regional arbitrageurs to transport grains to areas hit by crop failure or other natural disasters; the result is an increase in interpersonal violence. Economically, the estimation results in Table 2 suggest that the change in market disintegration accounted for 17% of the increase in homicide rate from the 1740s to the 1810s and for 10% of the decrease from the 1820s to 1849.

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Table 3

<table>
<thead>
<tr>
<th>Year</th>
<th>1678</th>
<th>1776</th>
<th>1820</th>
<th>1851</th>
<th>1880</th>
<th>1910</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population (millions)</td>
<td>160.0</td>
<td>306.6</td>
<td>377.1</td>
<td>428.2</td>
<td>355.0</td>
<td>421.6</td>
</tr>
<tr>
<td>Annual Growth (%) until next estimation point</td>
<td>0.664</td>
<td>0.471</td>
<td>0.410</td>
<td>−0.646</td>
<td>0.573</td>
<td>−</td>
</tr>
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</table>

Note: Reported figures are based on data in Cao (2001).

Fig. 8. Grain price, coefficient of variation, and national homicide rate. Notes: “Homicide rate” represents the annual rates in Fig. 8 averaged over 10-year intervals. “Grain price” is the decadal average grain price of all prefectures (units: silver tael per shi). “PriceCV” is the decadal average coefficient of variation for grain prices across prefectures.

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31 Note that changes in grain prices affect the homicide rate both directly and indirectly through the interaction terms. In our estimation exercise here on the effect of the grain price changes, we only use the direct effect for simplicity.

32 According to Pomeranz (2000, p. 70), “18th-century China... came closer to resembling the neoclassical ideal of a market economy than did western Europe” (cf. Wu, 1983). That description is clearly at odds with our findings.

33 Here, the exact cutoff year used is 1814 as PriceCV rose until the 1810s but dropped in the 1820s. From Table 2, we take 0.8 as the coefficient for PriceCV.

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To understand why regional markets were becoming more disintegrated in 18th-century China, we refer to work by Bernhofena et al. (2015). These authors also find that China experienced a prolonged process of market disintegration from 1740 to 1821. This disintegration trend is robust and holds even after removing, from the prefectural price series, the effects of common exogenous shocks within regional and agro-climatic boundaries. Despite the Qing state's innovations meant to liberalize markets by establishing both government and civilian granaries to stabilize the grain supply, government power was also employed to interfere with markets in a number of ways: direct control of supply and marketing, policing of supplies, forced sales at reduced prices, and disaster relief (Li and Dray-Novey, 1999). In particular, Bernhofena et al. (2015) conclude that physical barriers—such as setting up checkpoints along borders (between provinces or across prefectures) to prevent grain transportation by speculators—were among the most significant drivers of disintegration. The Qing government outlawed grain hoarding and speculation because such arbitrage activities were viewed as being harmful to society in the long run.

Of course, Qing officials could restrict market flows only if the state had enough power and control. The balance of power between the state and society (as represented by the rural gentry) went through fluctuations that mirrored the rise-then-fall pattern in both homicide and market disintegration during Qing China. Miller (2013a, 2013b) reports that, from 1572 until the collapse of the Ming Dynasty in 1644, Ming emperors repeatedly but unsuccessfully tried to consolidate power in the state by weakening the governance roles of the gentry and other non-official players. Emperors of the new Qing Dynasty inherited the Ming Dynasty's governance structure, under which the state had little control over local affairs. Hence the Qing emperors soon faced the same struggle with local gentry and the larger civil society. Starting in 1661, the emperors Kangxi (1661–1722), Yongzheng (1722–1735), and Qianlong (1735–1796) launched a series of successful efforts to concentrate power in the state. By the end of the 18th century, China's state power was at its peak and civil society had shrunk considerably (Wakeman, 1998). In this process of power consolidation by the state, which spanned nearly 150 years, not much room was given to develop bottom-up, self-governing institutions and rules. It follows that societies dominated by a powerful state may be poorly equipped to deal with distress events, which makes it more likely that the society's members will employ violence as a means of securing their ends (Anderson et al., 2013; Bai and Kung, 2011; Jia, 2013).

So even though the rise in state power from 1661 until the end of the 18th century should have led to a declining homicide rate via the “state capacity” channel, the negative effect of state power on local self-governance and on grain market integration probably made it harder for Chinese localities to cope with food distress. Thus the overall effect of increased state power may actually have contributed to the homicide rate’s rise from 1661 until the early 19th century.

Near the start of the 19th century, state power in China began to retreat and so the balance of power shifted once again in favor of market and self-governing institutions (Miller, 2013a, 2013b; Wakeman, 1998). Fig. 8 reveals that this is about when market disintegration, grain prices, and the national homicide rate all began to decline. The 19th-century experience is therefore largely consistent with our hypothesis that more room for market and self-governance institutions permits both market and social solutions to offer relief, reducing the impetus for citizens resorting to violence. Market development is typically an adaptive process characterized by many trial-and-error steps. That is, market institutions and rules that are more egalitarian do not appear automatically; rather, they are innovative responses to conflicts that arise because of their absence (“conflict then order”). Hence it is not surprising that the increase in homicides from the mid-17th to the early 19th century was followed by a decline in homicides.

6. Conclusion

In this paper we have constructed Qing China’s homicide history, examined its trends, and used cross-provincial data to investigate possible drivers of its evolution. This exercise is largely supportive of five hypotheses concerning how population change, food distress, state capacity, gentry governance, and cross-regional grain market integration affect incentives for violence and homicide. Although rapid population growth and rising grain prices probably contributed to the increased violence in 19th-century China, the steady rise of state power during that period may have stifled both local self-governance and cross-regional market integration, thereby undermining the ability of the local community and the market to mitigate the impact of risk events on ordinary people’s lives—thus leading more people, especially those who experienced marginalization, to resort to violence for survival. By the same token, weakening state power in the 19th century may have resulted in more room both for the gentry and for market forces to play their civilizing and pacifying roles, reducing the extent of violence during that period. Our work has thus shed new light on Qing China’s history: the rapid economic and population growth throughout the Kangxi–Qianlong Prosperity was at the cost of increased property insecurity and rates of violence. These findings have also enriched our understanding of the socioeconomic drivers of violence.

Our paper contributes to the literature not only by establishing China’s homicide rate history from 1661 to 1898 but also in other ways. We establish that, at least from the mid-17th century to the late 19th century, China enjoyed a lower homicide rate than Western Europe—with the latter not approaching the former until late in the 19th century. This quantitative finding has implications.

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34 Cheung (2008) reports many instances, during the second half of the 18th century, where the emperor warned provincial governors to permit cross-regional grain exports lest they be punished for imposing export bans. These instances indicate that barriers to the movement of cross-regional goods must have been widespread, since otherwise the emperor would not have felt impelled to speak against them so frequently.

35 North et al. (2009) theorize that violence ultimately leads to political and economic institutional development that creates a more stable social order that has less violence but could be either better or worse for economic development. Adaptive institutional development can require multiple trial-and-error rounds before violence is significantly reduced.
for researchers in the field of comparative civilizations and also for the intellectual debate on the divergence between East and West. Local gentry-based governance structure for communities below the county level may have contributed to China’s lower violence rates.

As China’s First National Historical Archives and other archival sources have become more available in digital formats, new research efforts are clearly feasible. These sources not only offer new opportunities for research on various economic aspects of Qing China (e.g., financial contracting, interest rates, marriage patterns, family structures) but also allow us to re-examine some conventional beliefs about life in China during that era. So even though the Kangxi–Qianlong Prosperity may have been the best “boom” period ever experienced by the Chinese economy, it was characterized also by increasing homicide and general violence (although the homicide rate during this period was not especially high). More efforts are required to establish causal linkages and to gain a fuller understanding of China’s long-term history of interpersonal violence and economic development.

Appendix A. Homicide reporting and characteristics

A.1. Homicide and institutional background

In Qing China, local governors assumed administrative authority and also adjudicated legal cases. Under the traditional Chinese legal practice of “life for life” sentencing, the offender in a homicide would typically receive the death penalty. During normal times, local governors were required to report all homicide and other death-penalty cases to the central government (using a standardized template called Tiben), since death penalties had to be reviewed and approved by the emperor.

The Case Summary Books are all based on the cases that were submitted by local governors in the previous year—whether or not they had been reviewed by the emperor and regardless of the case’s final outcome. These books are currently maintained at the First National Historical Archives and are available for 39 (nonconsecutive) years. For each of these 39 years, the associated Case Summary Books include case totals by province (in China Proper, excluding Tibet, Xinjiang, Mongolia, and Manchuria; the same exclusion applies to all the statistics studied in this paper) and by type of offense. We subtract the reported non-homicide case total from the number of total cases in order to obtain each year’s national number of homicides. Non-homicide cases account for about 9% of the reported “homicide/robbery” cases. We employ this procedure for each individual province.

The Case Summary Books do not include cases from the national capital (Beijing) or those handled directly by the Ministry of Justice. Each year, the Ministry of Justice organized two rounds of case reviews: the Qiushen or Autumn Deliberations, which reviewed death-penalty cases submitted from the provinces; and the Chaoshen or Imperial Court Deliberations, which took place shortly after the Autumn Deliberations and reviewed death-penalty cases that originated in Beijing or were handled by the Ministry of Justice. These deliberations involved the classification of each case into one of several categories (e.g., “facts confirmed” or Qingshi, probated, and undecided). Cases labeled “facts confirmed” would be delivered to the emperor for his final ruling on whether to immediately implement the death penalty. Cases approved by the emperor and concluded by the Ministry were recorded in Qing Shilu (the Qing Chronicles). The data in the Chronicles indicate that Chaoshen cases accounted for about 6% of the total before 1790 and for 3% thereafter. We adjust each year’s original Case Summary Books homicide total by these ratios to obtain the estimated national homicide total for each of the Books’ 39 years.

During the Qing Dynasty, the time allowed for the legal process before a Tiben filing with the Grand Secretariat was six months—excluding evidence collection time and business travel time for the relevant officers. Because these activities (and other official delays) were excluded from the time limit, it could actually take much longer before a local governor would conclude a case. Fig. A.1, which is based on 49,627 cases from the Case Summary Books, plots the distribution of the time lag between a crime’s occurrence and the case’s conclusion by local governors for both homicide and non-homicide cases. For homicide, more than 75% of the cases were concluded within 18 months and more than 90% of them within 24 months; in contrast, the time-lag distribution for important but non-homicide cases (illustrated by the dash-outlined bars) was relatively flatter. The implication is that homicide cases were taken more seriously by officials and handled with greater urgency, which increases our confidence in the reliability of Tiben-based homicide estimates.

There were exceptions to the procedures just described. For some homicide cases, there could be several rounds of back-and-forth communication between the local and central governments, resulting in multiple sets of memorials for the same case. Jiang (1988) reports that, in the 114 years under the consecutive reigns of Qianlong, Daoguang, and Guangxu, cases with repeated rounds of memorials accounted for less than 5% of the total Red Book reports. Note also that such cases would not affect the Case Summary Books statistics because the counts therein included only new cases that were concluded at the province level and submitted to the Grand Secretariat in the prior year.

During times of civil war or major rebellions, local governors and generals might be given special authority to execute serious criminals (who violated military rules or caused major social disorder) without due process. As a result, these periods led to under-representation (in the memorial Archives) of the violence actually committed. Provided such periods of conflict did not last too long, these extrajudicial executions are not likely to distort the overall violence trend—especially since we approximate homicide occurrences for these years using data from adjacent years.

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36 The figure’s horizontal axis is truncated at 120 months.
It should be noted that “Summary Execution without Due Course” (Jiu Di Zheng Fa) was practiced mostly during and after the Taiping Rebellion of the 1850s–1860s. Summary executions occurred primarily for non-homicide cases (e.g., robbers and rebels). And even if a homicide offender was executed without due process, the case would still be reported and included in the Case Summary Books by the Ministry of Justice—although that procedure was largely ignored during the chaotic period from the 1850s to the 1880s, when most such executions occurred.

In traditional China, infanticide was not treated as homicide in Qing China, so it is not included either in the Case Summary Books or in the extant homicide case archives. According to Cockburn (1991), infanticide accounted for 10%–20% of all homicides in Kent (England). During the Middle Ages, high rates of infanticide in the Christian West reflect the Church’s prohibition against—and severe punishment of—infidelity and pre-marital sex. Although China was not a Christian nation and hence not subject to religion-based infanticidal behavior, the Chinese people inhabited a patriarchal social system with a strong and long-standing preference for boys over girls. As a result, infanticide was concentrated on newborn baby girls; hence infanticide, as a percentage of total homicide, should be higher in China than in Europe. There were also other China-specific biases that led to the under-reporting of homicide. For example, the Confucian tradition viewed children as the father’s property and wives as the property of their respective husbands. That tradition explains why the killing of children (including adult children) by the father, and the killing of a wife or concubine by her husband, were often not treated as serious offenses and thus were not reported or prosecuted according to normal legal procedures (Cheung, 1972). Similarly, the killing of slaves or maids by their masters was treated more lightly than other homicides. For all these reasons, including unreported infanticide, we inflated the unadjusted homicide rate series for China (as just derived) by 25%.

A.2. Estimates of annual red books and homicide cases

No Case Summary Books statistics on homicide cases (and other criminal acts) are available for the period 1661–1743. We therefore rely on the estimates given by Fang (1935) as follows. We mentioned above that two copies of Tiben memorials are reserved in the Red Books Archives. The Tiben memorials submitted to the Grand Secretariat were mostly about homicide cases, although some non-homicide (but serious) crimes were also included. Fang calculated, for each month, the total number of Red Books returned from the Department of Punishment to the Archives; he thus derived summary totals for each of the 540 months spanning nearly the entire Qing Dynasty (except for 18 months that he labeled “incomplete”). For certain years, data were given for some months but not for all 12 months.

Based on these 540 monthly observations from Fang (1935), we run a simple regression with dummies for each month and year (to control for seasonal effects)—and also with a dummy for whether the observation is incomplete. The coefficient for a year’s dummy represents the year’s monthly average of Red Books, so multiplying this coefficient by 12 yields the estimated total number of Red Books for that year. We repeat this procedure for the years 1661–1898 and thus derive the annual Red Books estimates reported in Table 1 and plotted in Fig. 1.

From 1744 to 1850, the Red Book counts and the national homicide totals (from Case Summary Books) are both available for 16

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37 The Grand Secretariat had six departments with access to the Red Books Archives. For the purposes of this paper, we focus on those cases returned from the Department of Punishment.

38 For the year 1712, Fang (1935) estimated the number of Red Books for only one month and labeled that year as incomplete. However, the estimate for that month is more than twice as high as for months in 1711 and 1713. Since reporting errors may have led to this discrepancy, we instead take the respective totals for 1707 and 1713 and use linear interpolation to obtain an estimate for 1712. This approach does not affect the overall homicide trend discussed in the text.
of these 107 years. The 16 years are 1748, 1751, 1755, 1759, 1760, 1762, 1809, 1823, 1826, 1830, 1834, 1835, 1837, 1844, and 1850. We use 1850 as the stop year because—even though statistics from the Case Summary Books are reliable with regard to homicide cases during 1851–1860, the Taiping Rebellion may have distorted the relation between their homicide count and the Red Book count. For those 16 years, the average ratio of the Red Books estimates to the national homicide totals is 2.95. This ratio is relatively stable across these years, with a variance of 0.29. Note that this number is higher than 2 since many non-memorial files were also recorded in the Red Book Archives.

Between 1744 and 1850, there are 27 years with homicide data from both the Case Summary Books and the land/marriage memorials. For these 27 years, the average ratio of the national homicide total (from the Case Summary Books) to the number of land/marriage memorials is 1.66 with a variance of 0.07.

### A.3. Post-1860s institutional change

Several changes were made after 1860 in response to the Taiping Rebellion and other conflicts. First, the emperors began issuing orders to pardon certain categories of alleged criminals, such as some homicide cases awaiting the Ministry of Justice’s review. In order to evaluate the impact of increased pardons on different types of crime, in Fig. A.2, we plot the number of cases per year for different types of crime (i.e., robbery, adultery and rape, murder, ordinary dispute-related killings, and offenses against Confucian values) as summarized in the surviving Case Summary Books. It is clear that reports of pardonable offenses, such as “robbery” and “ordinary dispute-led killing”, declined much more after 1860 than did such serious and non-pardonable crimes such as “murder” and “adultery and rape”. We therefore conclude that these changes in pardon policy rendered the Case Summary Books less useful, for our purposes, as regards years after 1860. Yet because the land/marriage Tiben case counts were not affected, they remain reliable indicators for inferring rates of homicide violence.

### B. Provincial data and tables

See Tables A1 and A2.

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39 We did not use data for 1789 and 1846 even though homicide statistics from both the Case Summary Books and the Land & marriage memorials are available. After comparing total memorials in these two years with their respective neighboring years, we suspected significant archive-associated losses for 1789 and 1846 and therefore excluded those years.

40 As Emperor Qianlong stated: “Pardons of criminals may sometimes be issued during national celebrations or during drought, flood or other natural calamity as a way to provide relief” (Xue, 1905, vol. 2). As for pardons of death-penalty offenders, the 1861 rules allowed for sentencing to be reduced by one “degree” or more—for example, from “death by hanging” to “remote-area exile”—and for the death penalty to be removed except for certain types of offense (e.g., treason, anti-government rebellion, killing of parents by their children, killing of grandparents, organizing civil war, husband killing, killing of a household head by a slave or maid, massacring a family, murder, manslaughter, robbery, and witchcraft; see Qing Huidian, vol. 731). After 1860, pardons by the emperor became more frequent and the Case Summary Books practice was changed to exclude certain cases (e.g., criminal sentences reduced by the Ministry of Justice without the emperor’s review).
Table A.1
Homicide Cases and Homicide Rates across Provinces.

<table>
<thead>
<tr>
<th>Province</th>
<th>No. of cases</th>
<th>Rate</th>
<th>Obs.</th>
<th>Province</th>
<th>No. of Cases</th>
<th>Rate</th>
<th>Obs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anhui</td>
<td>141</td>
<td>0.48</td>
<td>26</td>
<td>Shaanxi</td>
<td>121</td>
<td>1.21</td>
<td>29</td>
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<tr>
<td>(46)</td>
<td>(0.12)</td>
<td></td>
<td></td>
<td></td>
<td>(56)</td>
<td>(0.51)</td>
<td></td>
</tr>
<tr>
<td>Jiangsu</td>
<td>138</td>
<td>0.39</td>
<td>27</td>
<td>Yunnan</td>
<td>73</td>
<td>0.78</td>
<td>29</td>
</tr>
<tr>
<td>(28)</td>
<td>(0.10)</td>
<td></td>
<td></td>
<td></td>
<td>(27)</td>
<td>(0.20)</td>
<td></td>
</tr>
<tr>
<td>Zhejiang</td>
<td>110</td>
<td>0.44</td>
<td>32</td>
<td>Guizhou</td>
<td>102</td>
<td>1.50</td>
<td>30</td>
</tr>
<tr>
<td>(28)</td>
<td>(0.12)</td>
<td></td>
<td></td>
<td></td>
<td>(41)</td>
<td>(0.41)</td>
<td></td>
</tr>
<tr>
<td>Fujian</td>
<td>117</td>
<td>0.81</td>
<td>31</td>
<td>Henan</td>
<td>170</td>
<td>0.67</td>
<td>31</td>
</tr>
<tr>
<td>(48)</td>
<td>(0.40)</td>
<td></td>
<td></td>
<td></td>
<td>(32)</td>
<td>(0.12)</td>
<td></td>
</tr>
<tr>
<td>Sichuan</td>
<td>357</td>
<td>1.70</td>
<td>31</td>
<td>Guangdong</td>
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<td>0.88</td>
<td>32</td>
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<tr>
<td></td>
<td>(148)</td>
<td>(0.56)</td>
<td></td>
<td></td>
<td>(51)</td>
<td>(0.31)</td>
<td></td>
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<tr>
<td>Hunan</td>
<td>134</td>
<td>0.77</td>
<td>30</td>
<td>Shansi</td>
<td>183</td>
<td>1.40</td>
<td>30</td>
</tr>
<tr>
<td>(47)</td>
<td>(0.22)</td>
<td></td>
<td></td>
<td></td>
<td>(52)</td>
<td>(0.47)</td>
<td></td>
</tr>
<tr>
<td>Hubei</td>
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<td>0.77</td>
<td>28</td>
<td>Shandong</td>
<td>150</td>
<td>0.49</td>
<td>30</td>
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<tr>
<td>(33)</td>
<td>(0.20)</td>
<td></td>
<td></td>
<td></td>
<td>(44)</td>
<td>(0.12)</td>
<td></td>
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<tr>
<td>Guangxi</td>
<td>76</td>
<td>0.87</td>
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<td>Jiangxi</td>
<td>142</td>
<td>0.70</td>
<td>29</td>
</tr>
<tr>
<td>(32)</td>
<td>(0.27)</td>
<td></td>
<td></td>
<td></td>
<td>(31)</td>
<td>(0.15)</td>
<td></td>
</tr>
<tr>
<td>Gansu</td>
<td>78</td>
<td>0.45</td>
<td>30</td>
<td>Zhili</td>
<td>199</td>
<td>0.98</td>
<td>26</td>
</tr>
<tr>
<td>(35)</td>
<td>(0.18)</td>
<td></td>
<td></td>
<td></td>
<td>(65)</td>
<td>(0.33)</td>
<td></td>
</tr>
</tbody>
</table>

Note: Homicide cases and rates refer to annual total of homicide and homicides per 100,000 population, respectively, for each province from 1744 to 1849. Numbers in brackets stand for standard deviation.

Table A.2
Summary Statistics for Provincial Panel Data.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min.</th>
<th>Max.</th>
<th>Obs.</th>
</tr>
</thead>
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<td>Homicide rate</td>
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<td>0.43</td>
<td>0.16</td>
<td>2.60</td>
<td>439</td>
</tr>
<tr>
<td>Panel Data</td>
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<td></td>
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<td></td>
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<tr>
<td>PopDense</td>
<td>124</td>
<td>87</td>
<td>26</td>
<td>422</td>
<td>445</td>
</tr>
<tr>
<td>GPrice</td>
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<td>50</td>
<td>82</td>
<td>329</td>
<td>429</td>
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<tr>
<td>PriceCV</td>
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<td>0.05</td>
<td>0.04</td>
<td>0.41</td>
<td>445</td>
</tr>
<tr>
<td>Mkt</td>
<td>0.27</td>
<td>0.45</td>
<td>0</td>
<td>1</td>
<td>445</td>
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<tr>
<td>War</td>
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<td>0.33</td>
<td>0</td>
<td>2.98</td>
<td>445</td>
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<tr>
<td>Cross-sectional Data</td>
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<td></td>
</tr>
<tr>
<td>Chong</td>
<td>4.20</td>
<td>1.44</td>
<td>2.22</td>
<td>8.39</td>
<td>15</td>
</tr>
<tr>
<td>Gentry</td>
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<td>0.12</td>
<td>0.52</td>
<td>0.94</td>
<td>15</td>
</tr>
</tbody>
</table>

Note: Homicide rate refers to homicide cases per 100,000 population. Panel A contains variables with panel data. PopDense is population divided by total area (square kilometers), with population data from Cao (2001). GPrice is average grain price of each province in the unit of tael per shi; grain price data if from the Grain Price Database for Qing Dynasty, Institute of Modern History at the Academia Sinica. PriceCV is coefficient of variation for grain prices across prefectures, averaged over the last 5 years. Mkt values 1 if PriceCV is below the 25th percentile, and 0 otherwise. War denotes the percentage of counties in war, data from The Chronological Timetable of War for Qing China. Gentry denotes number of local gentry in Qing dynasty (unit: 10,000) from Zhang (1991). Chong is the average value of Chong ratings (geographic/strategic importance) across prefectures for each province.

Appendix B. Supporting information

Supplementary data associated with this article can be found in the online version at doi:10.1016/j.eeh.2016.12.001.

References
