



THE LONDON SCHOOL
OF ECONOMICS AND
POLITICAL SCIENCE ■

Economic History Working Papers

No: 395

History as evolution: the case of China

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May 2026

History as Evolution: The Case of China*

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April 2026

Abstract

This paper studies cultural change in historical China. I ask how major economic, political, and social transformations reshaped cultural expression, and how these changes accumulated in later textual records. I use historical poetry to construct time-varying measures of religious and moral themes, including Buddhism, Daoism, folk religion, and filial piety, as well as attitudes toward markets, merchants, and emperors, and emotional expression. The long-run series show substantial movement over time. Buddhism, Daoism, folk religion, and filial piety follow distinct trajectories; favorable references to markets and merchants rise around the Song; favorable references to emperors decline; and emotional expression shifts with the living-standards chronology emphasized in the Great Divergence literature. I then use disaggregated poetry data to study the Song commercial revolution. Counties with denser Song *zhen* networks, a measure of commercial-administrative infrastructure, show clearer increases in the salience and favorable evaluation of merchants than in attitudes toward markets themselves. Finally, I use local gazetteers to study cultural change in a narrower time window and across a broader set of counties, focusing on antisociality before and after the Taiping Rebellion. Counties exposed to Taiping occupation recorded higher post-1850 antisociality, even after accounting for earlier antisociality and differences in gazetteer coverage.

Keywords: Cultural Evolution, Long-Run Development, Commercialization, Social Capital, Historical Text Analysis, China

*I thank Hoyt Bleakley, Loren Brandt, Joy Chen, Zhiwu Chen, Richard von Glahn, Mark Koyama, Joel Mokyr, John Nye, Peter Perdue, Mohamed Saleh, Moses Shayo, Clair Yang (discussant), Weiwen Yin (discussant) for their valuable comments. I also thank participants at the Economic History Association Annual Meeting (2025) for feedback on this paper. Parts of the research underlying this paper were presented at seminars at Aix-Marseille School of Economics, Fudan University, Helsinki GSE, and PKU INSE, and at the Harvard Workshop on Historical Kinship, Psychology, and Economic Prosperity (2023), HKU Conference on Asia and the Global Economy (2024), KCL Workshop in Comparative Politics and Political Economy (2024), and Oxford-Tsinghua Conference on Chinese Economic History from the Comparative Perspective (2024). I am especially grateful to Yueran Hou, Congshan Shen, and Runping Zhao for excellent research assistance. Taichi Komiyama and Zhipeng Qi also contributed to the project.

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I INTRODUCTION

Why do cultural differences persist, and why do they change? A growing literature in economics and related fields treats culture as socially transmitted information: knowledge, values, beliefs, norms, and practices that move across generations and between individuals. These traits help people make decisions in complex environments, accumulate over time, and sometimes remain in place after the environment that produced them has changed. This perspective builds on work on cultural transmission and cultural evolution in anthropology and economics, which models culture as capable of persistence, adaptation, and change across generations (Cavalli-Sforza and Feldman, 1981; Boyd and Richerson, 1985; Bisin and Verdier, 2001; Giuliano and Nunn, 2021).

This perspective also connects to a large body of historically oriented empirical work on long-run persistence. Historical shocks and institutions can leave durable traces in trust, gender norms, cooperation, political attitudes, and local development (Putnam, 1993; Nunn, 2008; Nunn and Wantchekon, 2011; Alesina, Giuliano, and Nunn, 2013; Guiso, Sapienza, and Zingales, 2016). Nunn (2021) argues that viewing history as evolution gives scholars a broader way to think about persistence, path dependence, environmental mismatch, innovation, gender roles, state formation, cooperation, and economic development.

The main obstacle to studying cultural evolution historically is data. Culture is difficult to observe over long periods, and most historical sources were created for literary, administrative, religious, or political purposes, not for measuring values and beliefs. China is unusual in this respect. It has one of the world’s longest continuous written traditions, and certain parts of that record are especially useful for studying cultural values. Poetry records symbolic language, emotion, and evaluation over many centuries. Local gazetteers record local society, customs, events, and institutions with increasing density in later periods. These sources make it possible to study cultural change across both time and space.

China has also become an important setting for empirical work on cultural values and related social institutions. Existing work examines whether Confucian norms reduced local conflict, how women’s high-value textile work changed beliefs about female capability and worth, how clan-based social organization differed from European corporate institutions, and how clan institutions shaped the development of formal finance (Kung and Ma, 2014; Xue, 2016; Greif and Tabellini, 2017; Chen, Ma, and Sinclair, 2022; Mokyr and Tabellini, 2024). These studies show that cultural values and social institutions in China can be studied empirically and that they

matter for economic and political outcomes. Most of this work, however, studies persistence, cross-sectional variation, or the consequences of particular historical institutions and shocks. We know less about how cultural themes rose, declined, and changed meaning over time. This study addresses that gap by using poetry and gazetteers to construct time-varying evidence on religion, commerce, political authority, emotional expression, and recorded antisocial norms.

This study examines cultural evolution in historical China. Over the past millennium, China experienced repeated episodes of commercial expansion, demographic pressure, political upheaval, environmental stress, religious change, and state-building. These episodes changed output, institutions, political boundaries, and everyday life. They also reshaped how people understood markets, hierarchy, religion, violence, and social order. The central premise is that culture in historical China was dynamic. It evolved through the cumulative imprint of large historical changes.

The analysis proceeds in three steps. First, I use a large corpus of Classical Chinese poetry to trace long-run changes in cultural expression. The poetry record spans roughly 1,500 years, which makes it possible to observe slow-moving cultural trajectories that would be difficult to recover from shorter sources. This long horizon allows the analysis to follow the rise and decline of religious and moral themes, changing attitudes toward commerce and imperial authority, and shifts in emotional expression over time. Poems are linked to authors, and authors are linked, where possible, to places of origin. I classify poems into pre-specified themes using large language models, then aggregate the resulting indicators to the poet level and to century-level series. The measures capture several domains: major religions and belief systems, including Buddhism, Daoism, folk religion, and filial piety; attitudes toward markets, merchants, and emperors, including positive and negative references; and emotional expression, especially happiness and sadness. Second, I use the same poetry data in disaggregated form to study cultural responses to the Song commercial revolution. This exercise illustrates how poetry can be used not only for aggregate long-run trends, but also for spatially uneven responses to commercialization. Third, I use local gazetteers to examine later-period local cultural change, focusing on antisociality before and after the Taiping Rebellion. The gazetteer exercise illustrates how a locally grounded source can be used to study changes around later historical shocks.

The long-run poetry series show substantial movement in religious and moral expression. Buddhism becomes especially visible in the century bins following Emperor Wuzong's 845 suppression of Buddhist institutions, partly as an object of criticism and controversy. Daoism is highly salient from the early medieval period through the Song, but declines over the later

imperial period. Filial piety rises around the Song, consistent with the consolidation of Neo-Confucian moral thought, while folk religion peaks earlier and then remains present at lower levels. These patterns point to a reordering of religious and moral themes over time, not a simple movement from belief to secularization or from one dominant tradition to another.

The poetry-based attitude series also show changes in how commerce and imperial authority were culturally evaluated. Positive references to markets and merchants rise around the Song, a period associated with major expansion in market exchange, urban commerce, and non-agricultural activity. Favorable references to emperors, by contrast, decline over the long run, while overtly negative references remain rare. The commerce pattern is consistent with the growing cultural visibility of markets and merchants during a period of major commercialization. The emperor pattern points to a different process: a gradual weakening of positive evaluation of imperial authority in a political setting where open opposition remained constrained.

The emotional series add a fourth piece of evidence. Sadness is lowest around the Song and rises in the later imperial period, while happiness shows a related, though weaker, decline after 1500. These patterns connect cultural expression to the living-standards chronology emphasized in the Great Divergence literature. The evidence should not be read as a direct measure of welfare. It suggests instead that poetry contains an emotional counterpart to broad changes in material conditions: periods of comparatively strong living standards and commercialization are associated with a more favorable emotional register, while later periods of demographic pressure and declining living standards are associated with darker emotional expression.

The second empirical exercise studies the Song commercial revolution more directly. I use logged county-level density of Song-period *zhen* as a proxy for local exposure to Song-era commercial and administrative infrastructure. In the Song context, *zhen* were not simply market towns in the later Ming–Qing sense. They were commercial-administrative towns, combining market activity with fiscal and administrative functions (Han and Sng, 2026). I interact Song *zhen* density with dynasty-period indicators in the poetry data and ask whether places more exposed to Song commercialization came to mention and evaluate markets and merchants differently. The main finding is that greater exposure to Song *zhen* density is associated with greater merchant salience and more favorable evaluation of merchants in later periods, especially when broader favorable classifications are included. Negative merchant references also move in some periods, but less consistently. The market results are weaker.

The third empirical exercise turns to local gazetteers. Gazetteers are less directly expressive than poetry, but they provide denser local coverage in later periods and are tied to specific

places and compilation dates. I use them as a complementary source for studying local cultural change, focusing on antisociality as an illustrative case. The measure captures references to antisocial norms and practices, including disorder, predation, exploitation, and weakened local social obligations in county gazetteers. Because a single gazetteer can contain multiple volumes, the measure is scaled by the total number of gazetteer volumes available for the county. The dated structure of gazetteers then makes it possible to compare local records before and after major late imperial shocks, especially the Taiping Rebellion.

The gazetteer evidence adds a second source-based measure of cultural change. Counties occupied during the Taiping Rebellion record higher post-1850 antisociality, even after accounting for pre-1850 antisociality, gazetteer volume, and geographic and historical controls. Poetry can in principle be disaggregated into short time windows, but county coverage becomes thin quickly when the data are split this way. Gazetteers provide more usable county coverage in the nineteenth and early twentieth centuries, while still being tied to specific local compilation dates. This makes them useful for comparing recorded local norms before and after specific historical shocks.

Together, the poetry and gazetteer evidence show that cultural change occurred at different temporal and spatial scales. Poetry reveals long-run movements in cultural expression, attitudes, and emotions over many centuries. Gazetteers add a more localized and time-varying source for later periods, when many counties have at least some surviving local records and when the poetry record becomes thin once split into short county-period windows. The evidence points to a cumulative process: cultural themes inherited from earlier periods remained visible, but their salience, evaluation, and local expression shifted as economic conditions, state power, violent shocks, and religious competition changed. The long-run trends therefore help explain not only what Chinese culture looked like at a point in time, but how different layers of culture accumulated and changed across historical settings.

The evidence also places cultural change inside China's long-term economic and political development. The Song evidence shows how commercialization entered cultural expression through merchants, who became more visible and more often evaluated favorably in places with higher Song *zhen* density. The long-run emotional series moves with the chronology of historical living standards. The gazetteer evidence suggests that violent political disruption changed recorded local norms around cooperation, obligation, and antisociality. These patterns show that economic development, state institutions, and political disruption were reflected not only in output, population, fiscal capacity, and institutions, but also in cultural expression.

This study is closely related to earlier work using folklore to measure cultural values. Michalopoulos and Xue (2021) use global folktale traditions to recover cultural traits embedded in oral narratives and compare those traits across societies. Xue (2024) instead turns to Chinese folktales collected in the 1980s and constructs county-level measures of local cultural values within a single historical setting. Folktales are especially useful for studying accumulated cultural memory: past experiences entered stories, were transmitted across generations, and persisted as local values. The present study focuses on the historical process behind such accumulation. It turns to the past itself, using poetry and gazetteers to trace how cultural themes became more or less salient over time.

The study also builds on earlier work using historical poetry to measure cultural values in China. Xue (2020) uses poetry to study beliefs about women. I generalize that approach to a broader set of cultural dimensions and use the long time span of poetry to study religion, markets, political authority, and emotional expression. I then use gazetteers to move from long-run cultural expression to localized cultural change in later periods.

The contribution is therefore methodological as well as substantive. Methodologically, the study shows how large historical text corpora can be used to construct time-varying measures of culture. This approach is related to work that uses names to measure cultural identity, assimilation, and individualism, as well as work that uses historical printed texts to study cultural change before industrialization. Naming choices are useful because they are widely observed, dated, and often made within families. Prior work uses names to study distinctively Black names in the United States, media-induced cultural change in France, individualism on the American frontier, and cultural transmission among immigrants in France (Fryer and Levitt, 2004; Disdier, Head, and Mayer, 2010; Bazzi, Fiszbein, and Gebresilasse, 2020; Algan et al., 2022). Closest in spirit on the text side, Almelhem et al. (2026) use a large corpus of printed works to trace changes in the language of science, religion, political economy, and progress before the British Industrial Revolution. The approach here uses poetry and gazetteers to recover a wider range of cultural themes in China, including religion, commerce, political authority, emotional expression, and recorded local norms. Poetry is useful for long-run movements in symbolic expression, attitudes, and emotions. Gazetteers are useful for studying recorded local norms across many counties in later periods.

Substantively, the results trace how major historical changes entered cultural expression in China. Religious and moral themes, attitudes toward commerce and imperial authority, emotional expression, and recorded antisocial norms all changed over time. These movements

correspond to major historical developments, including commercial expansion, shifts in living standards, state power, religious competition, and violent shocks. The evidence therefore treats culture as a historical object: inherited from earlier periods, but repeatedly reshaped as economic, political, and social conditions changed.

The study asks how cultural expression changed over time and how major historical shocks became visible in the cultural record. Why did some themes become more prominent, while others receded? How did commercialization, state power, religious competition, living standards, and violent disruption reshape attitudes toward markets, merchants, and emperors, emotional expression, and recorded local norms? The premise is that culture changes through the interaction between transmission, adaptation, and historical shocks. The same broad cultural domains can persist across long periods, but their salience, evaluation, and local expression can shift as economic, political, and social conditions change. The purpose of this study is to trace that movement empirically.

The remainder of the study is organized as follows. Section II explains why historical poetry is informative about cultural change in China, emphasizing its long temporal coverage, its evaluative and emotional content, and its connection to place. Section III describes the construction of the poetry-based measures, including the geographic assignment of poets, author-level aggregation, LLM-based classification of themes and emotions, century-level series, and an unsupervised topic-model diagnostic. Section IV uses these measures to document long-run movements in religious and moral expression, attitudes toward markets, merchants, and emperors, and emotional expression. Section V turns from aggregate trends to a more disaggregated exercise, using Song *zhen* density to examine whether places more exposed to the Song commercial revolution mentioned and evaluated markets and merchants differently. Section VI introduces local gazetteers as a complementary source for studying later-period changes in recorded local norms. Section VII uses gazetteers to construct an antisociality measure and examines whether counties exposed to the Taiping Rebellion later recorded more references to antisocial norms. Section VIII discusses what can and cannot be learned from poetry and gazetteers as evidence on cultural evolution. Section IX concludes.

II WHY POETRY IS INFORMATIVE ABOUT HISTORICAL CULTURE

Historical poetry provides a useful source for studying culture in China. It offers unusually long temporal coverage and preserves the language through which contemporaries expressed evaluation, sentiment, and moral judgment. Poetry was not a marginal literary form in pre-

modern China. It was closely connected to education, examination culture, commemoration, friendship, travel, political reflection, and public life (Owen, 1996; Elman, 2000; Cai, 2008). For that reason, it captures aspects of historical culture that are difficult to observe in administrative records, economic data, or formal intellectual writings.

A first advantage is temporal coverage. The corpus spans roughly 1,500 years, which makes it possible to trace cultural movement over a horizon long enough to capture slow changes in religion, commerce, political authority, and emotional expression. Many of the objects of interest in this study changed slowly and unevenly. Shorter textual sources can capture particular moments, but poetry provides a more continuous record of how cultural themes rose, declined, or reappeared across dynastic periods.

A second advantage is that poetry preserves evaluative language. Many historical sources record events, institutions, or administrative facts. Poetry often records how those events and social worlds were experienced and judged. Poems contain praise and condemnation, grief and joy, fear and aspiration, nostalgia and resentment. They also record moral language: what was admired, what was regretted, what was treated as corrupt, fragile, admirable, or lost. This makes poetry especially useful for studying attitudes and emotions, which are among the dimensions closest to culture.

The written record also understates the social life of poetry. Poems did not circulate only as fixed written texts. They were recited, copied, exchanged, inscribed, remembered, and recombined in social settings. Poetry was part of friendship, travel, official service, religious life, and local commemoration. This matters for the present study because poetry was not only a preserved archive of writing. It was also a medium through which phrases, images, emotions, and judgments circulated socially (Nugent, 2011).

This feature also distinguishes poetry from books, treatises, and other formal prose genres. Books are valuable sources for studying authored ideas, doctrines, intellectual programs, and learned argument. They are less well suited to the purpose here, which is to trace cultural expression in a broader social register. Poetry occupied a different place in premodern Chinese life. It was written, recited, exchanged, copied, and remembered across many social occasions. Even though the surviving corpus is also literati-authored, poems preserve dispersed forms of sentiment, evaluation, symbolic association, and everyday judgment. For that reason, I use poetry as the main source for studying cultural salience, attitudes, and emotional expression, while treating book-based evidence as closer to intellectual history.

Poetry was also connected to place. Chinese literary production was deeply entangled

with locality, regional identity, and social life (Hymes, 1986; Bol, 2001). Poets wrote about landscapes, temples, markets, local customs, social disorder, kinship, officeholding, exile, and travel. Even when a poem was not literally composed in the poet’s place of origin, a poet’s recorded native place remains informative about the local milieu with which he was historically associated. Poetry is therefore useful both for describing broad intellectual trends and for tracing how cultural expression varied across regions.

This feature is important for the empirical design. The study does not assume that every poem directly reports conditions in the poet’s home county. Rather, the geographic link is used to connect authors to places of origin and local social background. The resulting measures should be interpreted as place-linked cultural expression, not as direct observations of county-level behavior. This is still useful, because many forms of culture are transmitted through education, family background, regional networks, and shared literary conventions. This interpretation is consistent with models of cultural transmission in which preferences, beliefs, and norms are shaped within families and communities and then persist, adapt, or change across generations (Bisin and Verdier, 2001; Giuliano and Nunn, 2021).

The source has limits, but these limits mainly clarify interpretation. Poetry is shaped by genre conventions, literary training, and the social background of its authors and compilers (Elman, 2000; Cai, 2008). The corpus is therefore especially informative about educated writers and the cultural forms that circulated through education, commemoration, friendship, official life, and local society. This does not reduce poetry to private authorial opinion. Culture is expressed and transmitted at the community level, through families, schools, institutions, social networks, and shared expressive forms (Bisin and Verdier, 2001; Nugent, 2011; Giuliano and Nunn, 2021). Poetry is therefore useful for tracing long-run movements in cultural salience, values, beliefs, attitudes, and emotions, even though it is not a random sample of the population. It complements sources such as gazetteers, which provide denser local coverage in later periods but were compiled for different purposes.

III CONSTRUCTING THE POETRY-BASED MEASURES

III.A Poetry corpus and geographic assignment

The poetry analysis begins with a large corpus of Classical Chinese poems spanning more than a millennium. Poems are linked to named authors, and authors are in turn linked, where possible, to places of origin using historical biographical sources, primarily the China Bio-

graphical Database (CBDB, 2024). The resulting data make it possible to examine long-run movements in cultural expression across both time and space.

I use ancestral hometown (*jiguan*) as a proxy for a poet’s place of origin and local social background, not as the literal place where each poem was written. The relevant assumption is that a poet’s recorded origin is informative about the local milieu with which he was historically associated. I do not require poems to have been composed in the poet’s hometown. Instead, the geographic assignment relies on the idea that early socialization, family background, education, and local networks shape the cultural repertoire that authors carry with them.

In the spatial analysis, counties enter the sample only when they have at least one geocoded poet; counties without geocoded poets are treated as missing rather than as zeros. Appendix Figure A.1 maps the counties with at least one geocoded poet.

The approach extends the use of historical poetry to a broad set of themes, including religion, markets, imperial authority, and emotional expression, and applies it over a long historical horizon.

III.B Poet-level aggregation

The unit of aggregation is the poet. This choice is important because the number of poems varies enormously across authors. Some poets wrote only a few poems, while others left behind very large corpora. If each poem were treated as a separate observation, a small number of highly prolific writers would dominate the long-run series. I therefore first classify poems into thematic categories, then compute poet-level averages, and only afterward aggregate across poets.

Formally, let p index poems, i index poets, and k index a cultural theme. Let d_{pik} be an indicator equal to one if poem p by poet i is classified as containing theme k , and zero otherwise. For poet i , the poet-level measure is

$$M_{ik} = \frac{1}{N_i} \sum_{p=1}^{N_i} d_{pik}, \quad (1)$$

where N_i is the number of surviving poems by poet i . Thus, M_{ik} is the share of poet i ’s poems that contain theme k . This construction gives each poet one observation for each theme, regardless of the number of poems that survive for that poet.

In the baseline long-run series, I aggregate these poet-level measures across poets within each century, so that each observed author receives equal weight. In robustness checks, I also

aggregate first to county-century cells and then across counties. This county-weighted version gives each county one observation in a century and reduces the influence of poet-rich counties on the descriptive trends.

III.C LLM-based theme and emotion measures

Theme measurement proceeds in two stages. First, individual poems are classified into pre-specified cultural themes using large language models. Second, the resulting poem-level classifications are converted into poet-level measures using equation 1. Appendix B.1 describes the prompt and processing steps in more detail, and Figure A.2 summarizes the workflow.

The analysis constructs three sets of poetry-based measures. The first set captures religion and belief systems. These variables indicate whether a poem contains explicit references to Buddhism, Daoism, folk religion, or filial piety. The corresponding poet-level variables are the shares of a poet’s poems classified as containing each theme.

The second set captures attitudes toward markets, merchants, and emperors. For these themes, the LLM classification records both whether the theme is mentioned and whether the poem expresses a positive, negative, or unclear evaluative direction toward the theme. I construct poet-level variables for mentions, positive references, and negative references. Thus, the main variables in this group include mentions of markets, merchants, and emperors, as well as positive and negative references to each theme. The mention variables capture whether the theme appears at all, while the positive and negative variables capture the direction of evaluation.

The third set captures emotional expression. The main analysis focuses on happiness and sadness. For each emotion, I construct a poem-level indicator for whether the emotion is explicitly present, and then aggregate this indicator to the poet level. Appendix C.4 reports related series for anxiety, fear, and pessimism.

Appendix B.2 reports translated examples for the main annotation categories, including theme presence, positive and negative evaluation, and the emotion indicators used in the analysis. Appendix B.3 provides a validation check for the mention measures by comparing the LLM-based indicators with keyword-based indicators for the same themes. The correlations are positive and statistically significant across all mention categories used in the analysis.

The LLM-based classifications are used to construct consistent measures of the presence and evaluative direction of pre-specified themes across a large corpus. Applying LLM-based classification to Classical Chinese poetry remains exploratory, and I treat this part of the analysis

as an early attempt to use these tools for historical cultural measurement. The religion measures are also related to recent work using language data to reconstruct the spread of religion over time (Blouin and Dyer, 2024).

III.D Century-level series

After constructing M_{ik} for each poet and theme, I assign poets to centuries using birth year, or the CBDB index year when birth year is unavailable.¹ The century-level analysis is restricted to poets assigned to centuries between 500 and 1900, where the corpus has sufficient coverage to construct century-level estimates. The century-level series for theme k is then

$$\bar{M}_{kt} = \frac{1}{N_t} \sum_{i \in \mathcal{I}_t} M_{ik}, \quad (2)$$

where \mathcal{I}_t is the set of poets assigned to century t between 500 and 1900, and N_t is the number of poets in that set. The resulting series traces long-run changes in the salience of each cultural theme over time. The baseline figures report author-level connected century means. Because the dataset contains one observation per author, each observed author contributes equally within a century.

The baseline series use all available poets in each century and do not impose a balanced county-by-century structure. This choice maximizes the historical information in the corpus, while allowing the set of represented counties to change across centuries. The long-run figures should therefore be interpreted as descriptive trends in the observed author-linked corpus, rather than trends from a fixed set of counties observed in every century.

In robustness checks, I construct equal-county-weighted connected century means. For each theme and century, I first average author-level measures within county-century cells and then average across counties. I report three versions of this construction: one using all available county-century cells, one restricting the sample to counties with at least ten observed poets between 500 and 1900, and one excluding poets who held office.

The distinction between century and dynasty assignment matters for the more disaggregated exercise in Section V, where the treatment varies at the county level. Authors without a birth year or CBDB index year cannot be used in the century-level series. By contrast, poets and poems can be assigned to broad dynasty periods more consistently. Splitting the data into century-by-county cells would make the author-level sample sparse in many counties and

¹CBDB defines the index year as an artificial year used for analysis. In practice, it places a person in time using the person’s birth year or the database’s best estimate of it.

periods. I therefore use dynasty-period indicators in that section. Dynasty-period bins pool more information within counties than shorter time windows, while still allowing the relationship between Song *zhen* density and the poetry-based outcomes to vary across broad historical periods.

III.E Unsupervised topic model as a diagnostic

I use the same poet-level aggregation logic in a separate unsupervised topic analysis. In that exercise, d_{pik} indicates whether poem p by poet i is assigned to topic k , so M_{ik} is the share of poet i 's poems assigned to that topic. The topic analysis is used only as a diagnostic of the lexical structure of the corpus. The substantive results are based on the pre-specified LLM-derived theme measures described above.²

IV LONG-RUN TRENDS IN ATTITUDES AND EMOTIONS FROM POETRY

This section documents long-run movements in poetry. I focus on three sets of outcomes: major religions and belief systems, attitudes toward markets, merchants, and imperial authority, and emotional expression. The exercise is descriptive. The figures plot connected century means after first aggregating poem-level classifications to the author level, so each observed author contributes equally within a century.

Appendix C.2 reports three equal-county-weighted versions of the long-run series. In each case, I first average author-level measures within county-century cells and then average across counties, so that poet-rich counties do not receive disproportionate weight. The first version uses all available county-century cells. The second applies the same county-weighted construction after restricting the sample to counties with at least ten observed poets between 500 and 1900. The third applies the same county-weighted construction after excluding poets with recorded official positions.

IV.A Rise and fall of major religions & belief systems

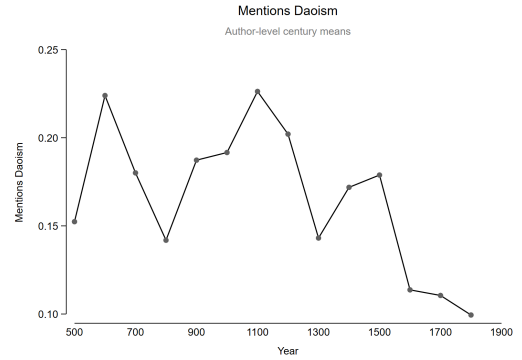
Figure I summarizes long-run change in religious and moral expression. This is a natural setting in which to study Buddhism, Daoism, folk religion, and filial piety because many classical poets drew on these traditions as part of ordinary literary and social life. Poems could invoke

²Appendix B.4 reports the unsupervised topic analysis. The topic model is included as a diagnostic check on the corpus and is constructed using the same poet-level aggregation logic. It is separate from the pre-specified theme measures used in the analysis.

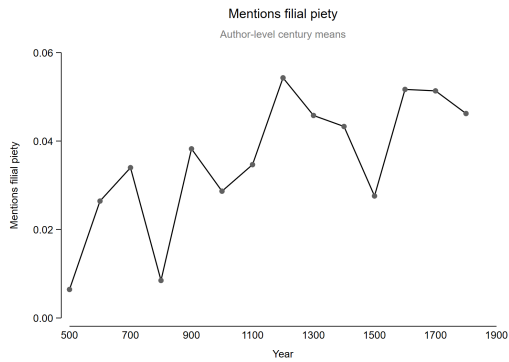
monks, temples, reclusion, immortals, ritual, karma, emptiness, transcendence, local gods, or filial duty without being doctrinal texts in any narrow sense. The measures therefore capture how the presence and importance of these religious and moral themes changed over time.



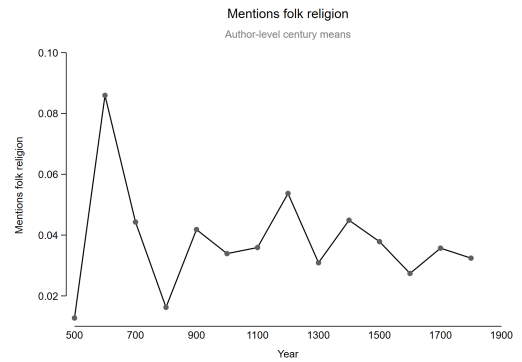
(a) Buddhism



(b) Daoism



(c) Filial piety



(d) Folk religion

Figure I: Long-run trends in major religions and belief systems in poetry. Author-level connected century means.

The Buddhism panel shows two waves of increase. The first appears in the 900–1000 century bins, shortly after the anti-Buddhist movement of 845, when the Tang state under Emperor Wuzong launched a major suppression of Buddhist institutions (Ch'en, 1964; Gernet, 1995).³ At first glance, this timing may seem counterintuitive if Buddhist references are read as favorable attention. The appendix figures suggest a different interpretation. Negative references to Buddhism rise sharply in the same period, indicating that Buddhism became more visible partly as an object of criticism and controversy after the suppression.

The Daoism panel shows a long decline in explicit Daoist references. Daoist themes are frequent from 500 through 1200, with local peaks around the 600 and 1100 century bins. This

³The timing should be interpreted at the century level. Since the figures plot century means, the increase appears in the century bins following 845, not exactly at the year of the suppression. Appendix C.3 shows that this early post-845 rise is driven mainly by negative references to Buddhism.

fits periods when Daoism was highly visible in elite religious and political life: Tang rulers claimed descent from Laozi and gave Daoism substantial court patronage, while Song Daoism developed influential traditions of internal alchemy, ritual, and synthesis with Buddhist and Confucian ideas (Robinet, 1997; Kohn, 2001). The series falls around 1300, partially recovers between 1400 and 1500, and then declines much more sharply after the 1500 century bin. The graph therefore suggests that Daoist themes became less prominent over the later imperial period.

The filial piety panel captures one Confucian moral theme in the poetry record. Mentions of filial piety rise especially between the 1100 and 1200 century bins and remain relatively high through the Yuan and early Ming. This timing is consistent with the Song consolidation of Neo-Confucianism. In the late Northern Song and Southern Song, thinkers such as Cheng Hao, Cheng Yi, and Zhu Xi placed family ethics, ritual discipline, and moral self-cultivation at the center of a more systematic ethical and social program. Zhu Xi’s synthesis later became central to the examination curriculum and to the moral framework of late imperial governance (Bol, 2008; Jia and Kung, 2025). The rise in filial piety is therefore consistent with a Song-period strengthening of Confucian moral expression in poetry.

The folk religion panel shows a sharp early peak around the 600 century bin. Mentions then fall by 800 and remain at lower but persistent levels afterward, with smaller increases around 900, 1200, 1400, and 1700. The early peak is also present in the robustness figures, which suggests that it is not just a feature of the baseline sample. A plausible reading is that the peak reflects the religious world of the Sui and early Tang. This followed several centuries in which local gods, communal cults, mountain and river deities, and spirit practices had expanded alongside Buddhism and Daoism. The early Tang also saw greater state recognition of selected local gods and temples. After 800, folk religion remains present, but no longer reaches the same intensity as in the early peak.

IV.B Attitudes toward markets, merchants, and imperial autocracy

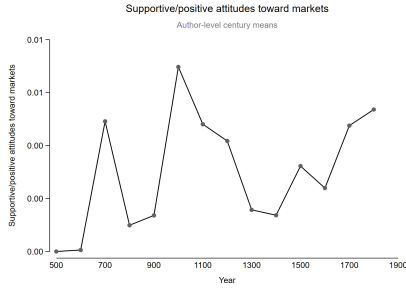
Over the past 1,500 years, China experienced large changes in the relationship between the emperor, the population, and the educated class. Unlike Europe, where political fragmentation remained a persistent feature of the institutional landscape, China was repeatedly organized around large unified empires (Fernández-Villaverde et al., 2023). Within this imperial setting, the expansion of the examination system tied literati careers more closely to the state (Elman, 2000). This process also involved the incorporation of local elites into imperial political order

(Huang and Yang, 2022; Chen, Wang, and Zhang, 2025). At the same time, the Ming and Qing saw an intensification of autocratic rule, including episodes of political repression and high-profile literary inquisitions (Huang, 1974; Dardess, 1983; Guy, 1987; Rowe, 2009; Koyama and Xue, 2015; Xue, 2021). These developments may have affected how educated writers experienced political life and imperial authority.

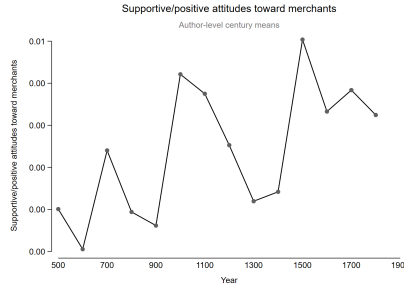
Attitudes toward markets and merchants also speak to a long-standing debate about commerce and Chinese culture. A classic Weberian argument emphasized the uneasy position of commerce within Confucian status hierarchy and literati moral thought (Weber, 1964). Historical work has emphasized the scale and social integration of commerce in imperial China, including urban markets, merchant networks, philanthropy, lineage institutions, and local society (Brook, 1998; Glahn, 2016). The poetry-based series add a time dimension to this literature. They suggest that attitudes toward markets and merchants were historically variable, not static or uniformly hostile, and that favorable evaluations became more visible around periods of commercial expansion.

Figure II reports long-run patterns in attitudes toward markets, merchants, and emperors. Positive references to markets and merchants both rise around the Song period, with visible increases around the 1000 century bin. This timing fits the Song commercial revolution, when market exchange, urban commerce, long-distance trade, and monetization became increasingly central to Chinese economic life (Brook, 1998; Glahn, 2016). The two series do not move identically afterward, but both point to greater favorable commercial expression around the Song than in the earlier part of the series.

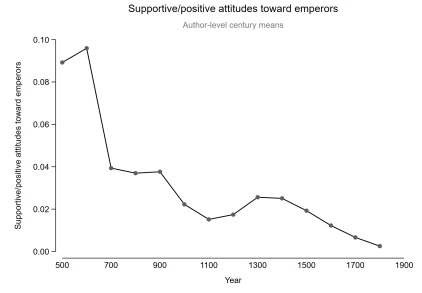
The emperor panels show a decline in positive references from the early part of the series to the later imperial period. This is consistent with a long-run reduction in favorable evaluation of imperial authority as the state became more centralized and autocratic. The same broad pattern appears in the equal-county-weighted series and in the version restricted to counties with at least ten observed poets between 500 and 1900 (Appendix Figures A.4 and A.7). It is less stable when poets with recorded official positions are excluded (Appendix Figure A.10), suggesting that part of the main trend reflects changes among poets more closely tied to official life. The negative emperor series remains low on average and fluctuates without a clear upward trend. The evidence therefore points more to a decline in positive political sentiment than to a rise in overt anti-emperor expression.



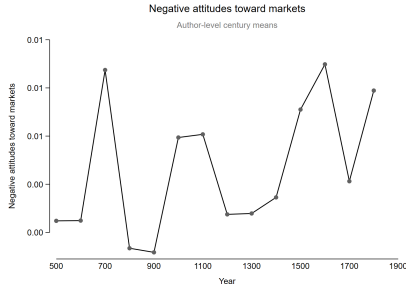
(a) Markets, positive



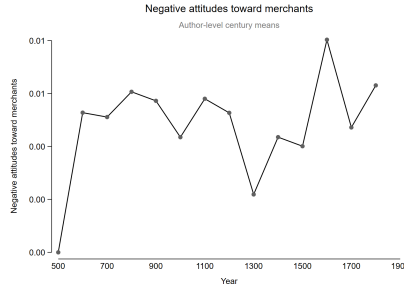
(b) Merchants, positive



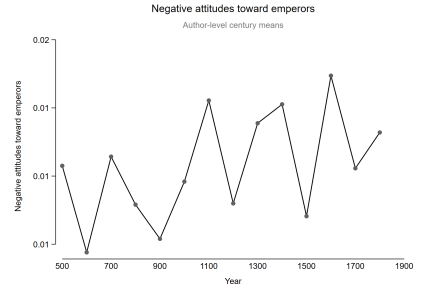
(c) Emperors, positive



(d) Markets, negative

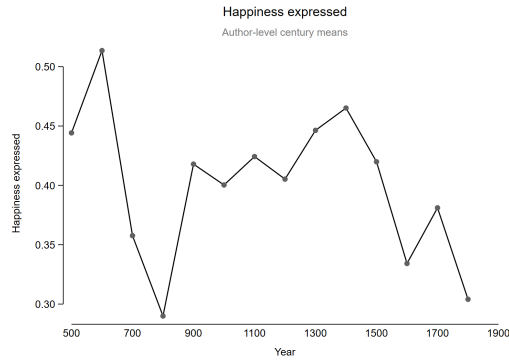


(e) Merchants, negative

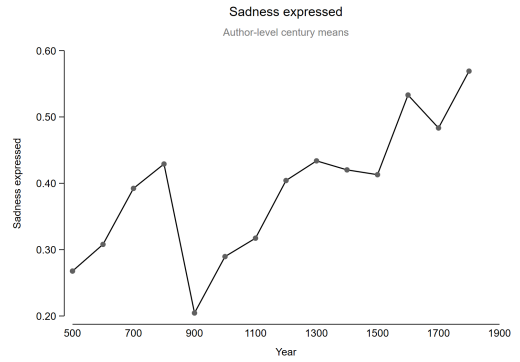


(f) Emperors, negative

Figure II: Long-run trends in attitudes toward markets, merchants, and emperors. Author-level connected century means.



(a) Happiness



(b) Sadness

Figure III: Long-run trends in emotional expression in poetry. Author-level connected century means.

IV.C Living standards and emotional expression

Figure III turns from beliefs and attitudes to emotional expression. The sadness series reaches its lowest point around the Song period and rises shortly afterward, reaching much higher levels in the later imperial period. The happiness series shows a related, though weaker, late-imperial pattern. It remains relatively high through parts of the Song, Yuan, and Ming,

but declines after 1500. Taken together, the two panels suggest a more favorable emotional register around the Song and parts of the Ming, followed by a less favorable emotional tone in the later imperial period.

This timing connects the poetry evidence to the economic chronology at the center of the Great Divergence debate. Work on long-run living standards emphasizes that China was not on a smooth path of decline. The Northern Song appears as a period of relatively high income and commercialization, and the Ming also compares favorably in several reconstructions. The sharper decline comes in the Qing, when population growth and pressure on land reduced living standards despite continued commercial activity (Pomeranz, 2000; Allen, 2001; Broadberry and Gupta, 2006; Allen, 2009; Allen et al., 2011; Glahn, 2016; Broadberry, Guan, and Li, 2018). The emotional series fits this broad chronology. Sadness is lowest near the Song-era high point and rises in the later imperial period. Happiness provides weaker evidence in the baseline series, but it also declines after 1500.

The connection is especially clear when the emotional series is compared with historical estimates of income, wages, and living standards. Broadberry, Guan, and Li (2018) estimate that Chinese GDP per capita fluctuated at a relatively high level during the Northern Song and Ming before trending downward during the Qing. Broadberry and Gupta (2006) use wage and price evidence to argue that the early modern Great Divergence was already visible before 1800, while Allen et al. (2011) show that Chinese real wages and living standards in the eighteenth and nineteenth centuries were low relative to northwestern Europe. The poetry evidence should not be read as a new estimate of real income. Its value is different: it shows that the emotional content of cultural expression changed in a way that tracks the same broad chronology emphasized in the economic history literature. Periods associated with higher living standards, especially the Northern Song, appear with lower sadness in poetry, while the later imperial period, especially the Qing, shows a darker emotional register.

This interpretation is purely inductive. The emotional series should not be read as causal evidence that changes in living standards produced changes in happiness or sadness in poetry. Many other forces could have shaped emotional expression across these centuries, including climate variation, warfare, disease, demographic pressure, political repression, and religious change. The more limited point is that the timing of the happiness and sadness series is consistent with the broad living-standards chronology emphasized in the economic history literature. A causal analysis would require a different framework, built around more specific shocks and explicit estimates of their effects on emotional expression.

This comparison also connects to the literature on income and subjective well-being. That literature generally finds a positive relationship between material living standards and reported well-being, while also debating the strength and interpretation of that relationship (Easterlin, 1995; Deaton, 2008; Stevenson and Wolfers, 2008). In this setting, the income–well-being literature provides a useful benchmark for interpreting why periods of stronger economic performance might also be associated with a more favorable emotional register in cultural expression. Appendix C.4 reports related series for anxiety, fear, and pessimism.

Appendix C.2 reports parallel equal-county-weighted versions of the long-run poetry series. In all three versions, I first average within county-century cells and then across counties. The appendix reports this construction for all available county-century cells, for counties with at least ten observed poets between 500 and 1900, and for a sample that excludes poets who held office. These exercises help address concerns that the descriptive patterns are driven by poet-rich counties, very thinly observed locations, or office-holding elites.

V CULTURAL RESPONSES TO THE SONG COMMERCIAL REVOLUTION

This section moves from aggregate time-series patterns to spatially uneven cultural adaptation. The connected century means in Section IV show that attitudes toward commerce changed over time in the poetry corpus as a whole. I now use county-level variation to examine whether attitudes toward merchants and markets were spatially uneven and historically malleable, and whether any changes remained visible in later periods.

The Song commercial revolution was one of the major turning points in Chinese economic history. Song China saw a major expansion of markets, urbanization, monetization, long-distance trade, and non-agricultural activity. Towns, transport networks, and market exchange played a larger role in everyday economic life. Classic work treated the Song as a period of commercial and technological transformation, while more recent work has placed the Song at the center of debates over living standards, commercialization, and China’s premodern economic dynamism (Elvin, 1973; Liu, 2015; Glahn, 2016; Broadberry, Guan, and Li, 2018; Ma and Von Glahn, 2022).

Separately, attitudes toward merchants and markets have been central to debates about commerce and Chinese culture. A classic Weberian view emphasizes the low formal status of merchants in the Confucian social hierarchy and treats suspicion toward profit-seeking as one reason China did not experience a transition to modern capitalism (Weber, 1964).⁴ This

⁴Historical work gives a more complex picture of commercial life in late imperial China. Commerce was

raises a natural question: were anti-commercial views prevalent, spatially uneven, or historically malleable?

This issue also matters beyond China. Work on the cultural foundations of modern growth emphasizes changes in the social legitimacy of commerce, profit-seeking, and bourgeois activity. Hirschman (1977) traces how commercial interests came to be viewed as socially useful rather than morally suspect, while McCloskey (2006, 2010) emphasizes the moral approval and dignity accorded to bourgeois life.

I measure local exposure using the county-level density of Song-period *zhen*.⁵ This is a composite measure of commercial-administrative infrastructure. Higher *zhen* density captures commercial activity, but also the fiscal and administrative reach of the Song state. The estimates should therefore be read as responses to a local environment in which commerce and state administration were jointly more developed.

The empirical analysis asks whether poets from counties with denser Song *zhen* networks came to mention or evaluate markets and merchants differently across historical periods. I interact county-level Song *zhen* density with dynasty-period indicators in the author-level poetry data, using the Tang as the omitted period. Because this analysis uses county-level variation, the data become much thinner than in the aggregate long-run series. Many counties have enough poets to contribute to national century-level trends, but too few observations once the data are split by county and dynasty. I therefore restrict the main specification to counties with at least ten authors with dynasty information. I also require each author to have at least two poems, since author-level theme shares are especially noisy when they are based on a single text. These restrictions keep the analysis focused on counties and authors with stronger coverage and reduce the influence of very thinly observed locations or idiosyncratic single-poem records.

I use dynasty-period bins because century-by-county cells would be too sparse for many places. Broader dynasty periods pool more information within counties while still allowing the relationship between logged Song *zhen* density and the poetry-based outcomes to vary over

deeply embedded in local society, and merchants participated in institutions, philanthropy, urban life, and elite networks (Brook, 1998; Glahn, 2016). A low formal status for merchants could coexist with substantial commercial integration.

⁵The measure is constructed from the Digital Gazetteer of the Song Dynasty, version 1.1. The underlying database records Song-period *zhen* and related administrative and settlement information. It should not be read as a complete count of all markets or all commercial activity. The interpretation follows recent work emphasizing that Song *zhen* differed from later Ming–Qing market towns. In Ming–Qing usage, *zhen* was often close to *shi* or *shizhen*, meaning a market town without formal bureaucratic oversight. In Song China, by contrast, *zhen* referred to a state-administered town, while *shi* more directly denoted a market town without direct state involvement (Han and Sng, 2026).

time. This is not a formal difference-in-differences or event-study design. It is closer to a long-difference specification with dynastic interactions: a fixed historical county characteristic is interacted with period indicators, and the coefficients are interpreted as conditional differences across periods. The pre-Song coefficient provides a useful balance or placebo check on whether counties with higher logged Song *zhen* density already differed before the Song, but it is not a formal parallel-trends test. This logic is similar to historical panel designs that interact fixed historical characteristics with period indicators (Jha, 2013).

Formally, I estimate

$$Y_{i(c),t}^k = \sum_{\tau \neq \text{Tang}} \beta_{\tau}^k (\text{SongZhenDensity}_c \times \mathbf{1}\{t = \tau\}) + \delta_c + \eta_t + \varepsilon_{i(c),t}^k, \quad (3)$$

where $Y_{i(c),t}^k$ denotes the poetry measure for author i , from county c , in dynasty period t . The outcomes capture whether markets and merchants are mentioned at all, as well as whether those references are positive or negative. SongZhenDensity_c is logged county-level Song *zhen* density, defined as

$$\text{SongZhenDensity}_c = \log \left(0.01 + \frac{\#\{\text{Song-period } zhen \text{ in county } c\}}{\text{Land area}_c} \right).$$

County fixed effects δ_c absorb time-invariant differences across places, and dynasty fixed effects η_t absorb common shifts across historical periods. Because the historical exposure varies at the county level, standard errors are clustered at the county level. The figure also reports 95 percent confidence intervals based on Conley standard errors to allow for spatially correlated errors. The omitted period is the Tang, so each coefficient β_{τ}^k captures how the relationship between logged Song *zhen* density and outcome k differs in dynasty τ relative to the Tang baseline.

Figure IV reports the results. The clearest pattern concerns merchants. Counties with higher logged Song *zhen* density show greater merchant salience in later periods: poets from these counties were more likely to refer to merchants. They also show more favorable references to merchants, especially when the broader “probably positive” category is included. The positive merchant coefficients are mostly above the Tang baseline in the post-Tang periods.

Negative references to merchants also move in some periods, but the pattern is weaker and less precisely estimated. The broader pattern is therefore best read as an increase in merchant visibility and, more clearly, in favorable evaluation of merchants. This is consistent with the idea that Song-era commercialization increased the practical and cultural importance of people

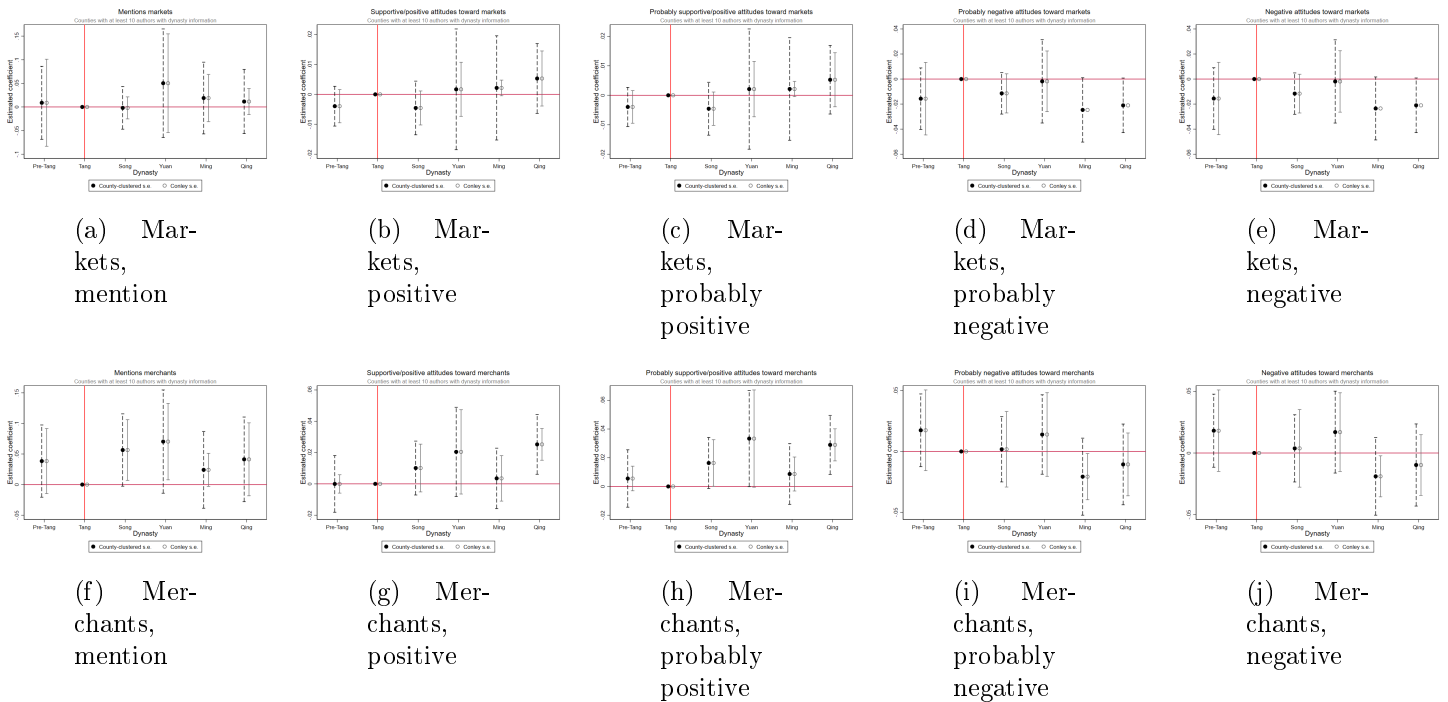


Figure IV: Song *Zhen* Density and References to Markets and Merchants in Poetry. The omitted period is the Tang.

Note: The figure reports coefficients from regressions interacting logged county-level density of Song-period *zhen*, defined as $\log(0.01 + \#zhen/\text{land area})$, with dynasty-period indicators. Outcomes are author-level poetry measures. The sample is restricted to counties with at least ten authors with dynasty information, and authors represented by only one poem are excluded. The mention variables indicate whether a poem refers to the relevant theme. Positive, probably positive, probably negative, and negative references are constructed from LLM-based classifications of whether a poem expresses support for or opposition to the theme. Regressions include county fixed effects and dynasty fixed effects. Each panel reports the same point estimates with 95% confidence intervals based on both county-clustered and Conley standard errors; Conley standard errors use a 600 km distance cutoff.

engaged in trade, mobility, transport, and exchange.

For markets, the pattern is more limited. Counties with higher logged Song *zhen* density do not show a stable increase in market mentions or favorable references to markets. The estimates for unfavorable references to markets are generally lower in later periods, especially in the Ming and Qing, but this pattern is less stable than the merchant results. I therefore interpret the market findings more cautiously. This may partly reflect the nature of the *zhen* measure: it bundles commercialization with fiscal administration and state presence, and may map more directly onto merchants as a social group than onto favorable references to markets as an institution.

Taken together, the results suggest that Song-era commercialization left its clearest cultural

trace through references to merchants.⁶ Merchants became more visible in poetry and were more often evaluated favorably, especially under the broader favorable classification. The evidence for changes in attitudes toward markets themselves is weaker.

VI GAZETTEERS AS A COMPLEMENTARY SOURCE

Poetry is one window into historical culture. Local gazetteers provide another. Gazetteers occupy a central place in Chinese local history: in practice, much of what historians know about local society, institutions, customs, and regional variation comes from the information preserved in these compilations (Bol, 2001). If poetry is especially useful for tracing long-run movements in attitudes, emotions, and symbolic expression, gazetteers are useful in a different way. They offer denser local coverage in later periods and are explicitly organized by place and date, making them well suited to the study of regional variation and temporal change, especially in the eighteenth century and after.

The gazetteer material used here is drawn from nearly 4,000 historical local gazetteers compiled before 1949. Coverage extends back to the eleventh century, but the source becomes much more useful only after 1700, when gazetteers become far more numerous and geographically extensive. Appendix E.1 reports summary statistics on gazetteer coverage by period and on the distribution of gazetteer volumes.⁷

Several features make gazetteers especially useful as a complement to poetry. First, they are tied to specific administrative units, which allows cultural traits to be linked more directly to counties and prefectures. Second, they have compilation dates, making it possible to distinguish earlier from later local records and to study how local profiles changed over time. Poetry can also be dated, but the timing is assigned mainly through the poet's birth year; gazetteers instead provide dates for locally compiled documents themselves. Third, gazetteers become abundant across a much wider set of localities in later periods, which makes them especially useful for constructing county-level measures of local social and cultural conditions.

Recent work has used Chinese gazetteers systematically as evidence on local cultural and social history. Xue (2016) uses gazetteers to document local customs and family practices,

⁶The same pattern appears when I collapse the classifications into net evaluation measures. A broad net measure, defined as positive or probably positive references minus negative or probably negative references, and a strict net measure, defined as positive references minus negative references, produce similar results. The merchant pattern remains positive in later periods, while markets also show somewhat stronger positive effects on net.

⁷For related discussions of uneven gazetteer coverage and the late concentration of local gazetteers, see Xue (2016) and Li, Liu, and Ma (2026).

including uxori-local marriage, while Chen et al. (2025) use gazetteer text to study psychological change and kinship intensity over the very long run. These examples build on the broader historical use of gazetteers as records of local society and illustrate their value for measuring local cultural and social patterns across space and time.

These advantages are particularly important in later periods, when gazetteers become far more abundant and spatially extensive, as shown in Appendix Figure A.14. They also help address an important limitation of the poetry approach. Historical poetry offers unusually rich evidence on attitudes and emotions, but it does not provide uniform county-level coverage. The full geocoded poet record links poets to 963 counties. Within China proper, roughly 70 percent of counties have at least one geocoded poet. This coverage is substantial, but still incomplete. Some places left behind little recoverable poetry, and this may be especially problematic for studying adverse events. If counties repeatedly exposed to disasters, famine, or other negative shocks also had lower human-capital accumulation and weaker literary production, then those places may be underrepresented in the poetic record from the outset. Gazetteers help mitigate this problem because they were compiled for administrative units as such and become increasingly abundant across a much wider set of places in later periods.

At the same time, gazetteers should be read with their source context in mind. They were compiled by local degree holders and officials, often under official sponsorship, and their content reflects the priorities of those compilers. Local gazetteers sat between local society and state administration: they carried official authority, served administrative purposes, and depended on local elite knowledge and participation (Lee, 2015; Dennis, 2015). Work on Ming–Qing transition gazetteers further shows that compilation could be part of reconstructing local order and articulating the relationship between local society and dynastic rule (Zeng, 2018). Their frequency and quality also vary substantially across regions and periods. Although many gazetteers include material on customs and social behavior, they were usually written to document local conditions, institutions, and administrative knowledge, so their evidence differs from the more directly expressive material found in poetry.

One feature of gazetteer compilation is that later editions often drew on earlier local records and previous gazetteers. Editors copied, abridged, rearranged, and supplemented inherited material rather than always producing a wholly new account from scratch (Dennis, 2015). This cumulative structure is useful because it helped preserve local knowledge across generations. For the analysis of change, however, it makes sharp shifts harder to detect: when later editions carried forward earlier material, the source would tend to make earlier and later local records

look more similar.

For these reasons, gazetteers are best understood as a complementary source. They add a different kind of evidence: evidence compiled for particular counties and prefectures, intended to document local conditions and local society, and increasingly abundant in later periods. The analysis below uses gazetteers on their own terms, focusing on recorded antisocial norms and weakened local obligations. The dated nature of gazetteers then makes it possible to compare records compiled before and after major late imperial shocks.

VII GAZETTEER EVIDENCE ON LOCAL CULTURAL CHANGE

The poetry evidence above traces long-run movements in cultural expression. Local gazetteers provide a different kind of evidence. They are less directly expressive than poetry, but they offer denser local coverage in later periods and are tied to specific places and compilation dates. This makes them useful for studying whether cultural traits changed locally in response to a major shock.

VII.A *Antisociality and the Local Evolution of Social Capital*

I focus on antisociality as an illustrative case. By antisociality, I mean local norms and evaluative categories through which compilers described violations of cooperative social life: predation, exploitation, disorder, and failures of reciprocal obligation. The concept is related to low social capital, since weak trust, reciprocity, and informal constraints can make such violations harder to deter (Lipset, 1959; Skocpol, 1979; Coleman, 1990; Fukuyama, 1995; Portes, 1998; Paxton, 2002). Gazetteers are useful for this purpose because many include evaluative descriptions of local customs, moral conduct, and the perceived quality of local social relations.

This interpretation is consistent with how local norms were discussed in Chinese historical records. Work on *fengsu* emphasizes that local customs were not treated as neutral descriptions of behavior alone, but as evaluative categories used to describe the moral and social quality of local life. Kishimoto, for example, discusses the “customs” sections of local gazetteers and the vocabulary used to characterize local social conditions. The relevant object is therefore not a behavioral crime rate, but the local recording and evaluation of antisocial norms and practices.⁸ The example entries in Appendix F.1 further suggest that the measure captures

⁸The keyword list is informed by historical work on *fengsu* and local norms. Kishimoto (2002) discusses the “customs” sections of local gazetteers and emphasizes that *fengsu* was an evaluative category. I use this literature to guide the selection of keywords associated with antisocial norms, disorder, predation, exploitation, and weakened local obligations.

everyday problems of local cooperation and obligation, not direct descriptions of wartime destruction. Gazetteer passages typically concern predation, disorder, local conflict, weakened obligations, and exploitative conduct. They are therefore useful for studying how local records described antisociality after a major rupture, even though they should not be read as direct accounts of battlefield violence or physical destruction.

The measure is constructed from the Chinese Historical Gazetteer Database (Beijing Eru-dition Digital Technology Research Center, 2017), which contains roughly 4,000 local gazetteers compiled before 1949. The database does not provide downloadable full text for each gazetteer. Instead, I use its searchable interface to identify references to antisociality using the historically grounded keywords described above. For the county-level analysis, I retain 434,558 keyword-hit records drawn from county gazetteers, where a record is a gazetteer entry containing at least one keyword term. I exclude records from higher-level gazetteers, such as prefectural and provincial gazetteers, because they cannot be assigned to counties in the same way. Since a single county gazetteer can contain multiple volumes, I scale the number of keyword mentions by the total number of gazetteer volumes available for the county. This adjustment accounts for differences in the amount of gazetteer material available across counties and is especially important here because the Taiping Rebellion may itself have affected record availability through occupation, population loss, and administrative disruption. Appendix E.1 reports summary statistics on gazetteer coverage and the distribution of volumes per gazetteer. The resulting measure is an index of antisociality as recorded and evaluated in local gazetteers, adjusted for differences in the amount of gazetteer material available for each county.

Figure VI maps antisociality using the available county gazetteer records compiled before 1949. The measure varies substantially among counties with gazetteer coverage. The map also makes clear that source coverage is uneven. Cream-colored counties have no county gazetteer coverage in the database and should be read as missing, not as places with low antisociality.

Because gazetteers are dated, the same source can be split by compilation period. I use 1850 as the cutoff because it marks the beginning of the Taiping Rebellion and the broader period of late imperial disruption studied below. The split is necessarily coarse, but it separates local records compiled before this rupture from those compiled afterward. In the regression analysis, counties enter the relevant sample only when they have county gazetteer coverage on the corresponding side of 1850; counties without coverage are treated as missing, not as zeros.

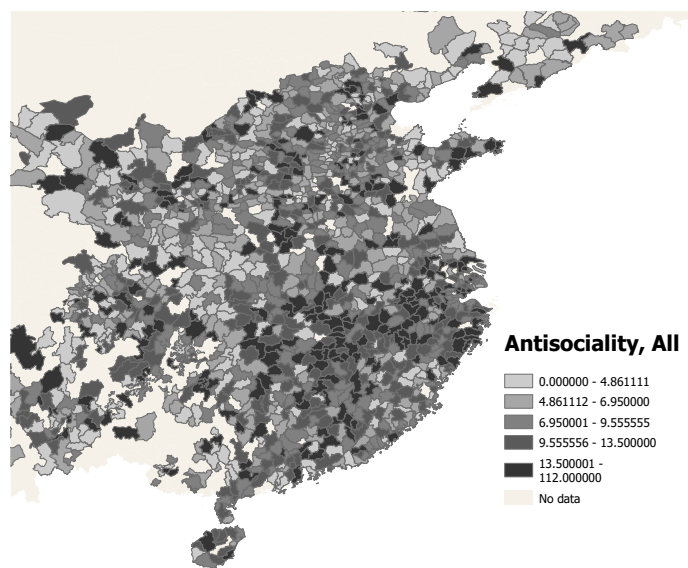


Figure VI: Antisociality in Historical Gazetteer Records

Note: Antisociality is measured by the number of mentions of key terms in county gazetteers, divided by the total number of gazetteer volumes for the county. The mapped area roughly corresponds to China proper rather than present-day China. Cream-colored counties have no county gazetteer coverage in the database and should be read as missing, not as counties with zero antisociality.

VII.A.1 *The Taiping Rebellion*

The Taiping Rebellion (1850–1864) was the largest civil war of late imperial China and one of the most destructive conflicts of the nineteenth century. It began in Guangxi under the leadership of Hong Xiuquan and developed into a millenarian political and religious movement that challenged the Qing state. After moving north and east, Taiping forces captured Nanjing in 1853 and made it the capital of the Taiping Heavenly Kingdom. For more than a decade, the conflict affected large parts of central and eastern China, especially the Lower Yangzi and neighboring provinces (Platt, 2012).

The rebellion could have affected the local foundations of cooperation through mortality, displacement, militarization, fiscal stress, and the weakening of ordinary administration. Taiping occupation and Qing reconquest exposed many communities to extraction, flight, reprisals, population loss, and postwar in-migration. These shocks could weaken the relationships and informal obligations that sustained trust, reciprocity, lineage ties, and local restraint. The estimates should therefore be read as capturing recorded antisociality after a broader episode of violence, displacement, and social reconstitution, not the effect of military occupation alone. Historical work treats the Taiping Rebellion as a major rupture in late imperial society, with

consequences for local militarization, social organization, collective memory, and the reconstruction of local order (Kuhn, 1970, 2002; Platt, 2012; Meyer-Fong, 2013).

Recent work in economics has also used the Taiping Rebellion as a large historical shock. Hao and Xue (2017) study how post-rebellion migration and migrant-native cultural distance shaped public goods provision in the Lower Yangzi. Bai, Jia, and Yang (2023) show how Zeng Guofan’s elite networks shaped war mobilization and shifted the postwar distribution of political power. Lai, Xu, and Yang (2026) examine the rebellion’s lasting effects on property rights, fiscal capacity, and social capacity. More broadly, work on civil war and violence shows that exposure to conflict can have persistent effects on trust, cooperation, market exchange, and social preferences (Blattman and Miguel, 2010; Voors et al., 2012; Cassar, Grosjean, and Whitt, 2013). These studies motivate the empirical question here: did places exposed to Taiping occupation subsequently record more antisociality in local gazetteers?

Table I: The Taiping Rebellion and Antisociality in Gazetteers

	Post-1850 Antisociality				Change in Antisociality
	(1)	(2)	(3)	(4)	(5)
Occupied During Taiping Rebellion	0.465***	0.171**	0.377***	0.196**	0.200***
Robust s.e.	(0.0589)	(0.0816)	(0.0662)	(0.0970)	(0.0759)
Conley s.e.	(0.0810)***	(0.0978)*	(0.0611)***	(0.126) ⁺	(0.0472)***
Gazetteer-volume controls	✓	✓	✓	✓	✓
Pre-1850 antisociality			✓	✓	–
Geographic and historical controls		✓		✓	–
Historical macroregion FE		✓		✓	–
R^2	0.114	0.186	0.148	0.170	0.102
Observations	1,112	1,110	796	795	796
Mean of Dep. Var.	2.021	2.022	2.041	2.040	-0.132

Note: The table examines the relationship between Taiping occupation and antisociality in local gazetteers. Columns 1–4 use post-1850 antisociality as the dependent variable. Column 5 uses the change in antisociality between the post- and pre-1850 gazetteer records. The sample is restricted to counties with at least one county gazetteer in the corresponding period: columns 1–2 require at least one post-1850 county gazetteer, while columns 3–5 require at least one county gazetteer both before and after 1850. Gazetteer-volume controls refer to the relevant volume of gazetteer text: post-1850 volume in columns 1 and 2, both pre- and post-1850 volume in columns 3 and 4, and the change in gazetteer volume in column 5. Dashes in column 5 indicate controls that are not applicable in the first-difference specification. Geographic and historical controls include agricultural suitability, log distance to coast, access to major trade networks, log ruggedness, log population density in 1840, latitude, longitude, and latitude interacted with longitude. The main coefficient row reports point estimates. Robust standard errors are reported in the first standard-error row. Conley standard errors are reported in the second standard-error row, using a 600 km distance cutoff, with significance stars recalculated using Conley standard errors. ⁺ $p < 0.15$, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

I use Taiping occupation during 1850–1864 as the measure of exposure. The rebellion clearly caused massive mortality, displacement, and destruction, although aggregate casualty

estimates remain debated. For the empirical design, the limitation is that comparable county-level measures of mortality, displacement, postwar in-migration, and physical destruction are not available. Occupation is therefore the most useful spatially consistent measure of direct exposure to the rebellion. It should be read as a proxy for a broader bundle of wartime and postwar disruption, including rebel rule, military contestation, administrative breakdown, occupation, and reconquest. The occupation measure is based on the historical geography of Taiping occupation in Hua (1991), mapped to the county-level analysis units used here. The measure varies geographically within the late imperial core, making it possible to compare places that were and were not directly exposed to the rebellion. The outcome is antisociality measured separately in gazetteers compiled before and after 1850. The pre-1850 outcome provides a check on whether later Taiping-occupied counties already had higher recorded antisociality before the conflict, while the post-1850 outcome captures antisociality in the local record after the rebellion.

The pre/post design is intentionally coarse. Gazetteers are dated local records, which makes it possible to compare county records before and after major shocks. However, most counties do not have enough gazetteer titles to support a high-frequency county-level panel. I therefore use broad pre- and post-1850 measures. The Taiping analysis is restricted to counties with at least one county gazetteer in the relevant period. Columns using only post-1850 antisociality require post-1850 county gazetteer coverage, while the pre/post specifications require county gazetteer coverage on both sides of 1850. This preserves the within-county comparison where it is available while retaining enough counties for systematic analysis.

Table I reports the relationship between Taiping occupation and antisociality in gazetteers compiled after 1850. Across specifications, counties occupied during the Taiping Rebellion record more antisociality in the post-1850 gazetteer record. The coefficient remains positive and statistically significant after controlling for gazetteer volume, geographic and historical characteristics, historical macroregion fixed effects, and pre-1850 antisociality. Column 5 uses the change in antisociality between the post- and pre-1850 records and again finds a positive relationship with Taiping occupation. The estimates are also broadly similar when I allow for spatially correlated errors using Conley standard errors.

The pattern is consistent with the interpretation that the rebellion weakened the local foundations of cooperation, including trust, reciprocal obligations, and informal restraints on predation. The result is not driven simply by Taiping-affected counties having higher recorded antisociality before the conflict: the relationship remains after controlling for pre-1850 antisociality and also appears in first differences. Since later gazetteers often incorporated material from

earlier local records, this pre/post comparison is likely conservative. Inherited material would make post-1850 gazetteers partly resemble earlier records, making sharp post-shock changes harder to detect.

VIII DISCUSSION

The evidence in this study supports a cumulative view of cultural change. Earlier values, beliefs, and evaluative categories remained visible over long periods, but their prominence and evaluation shifted with commercialization, religious competition, state power, living standards, and violent disruption. Historical texts can therefore reveal both persistence in cultural expression and later changes associated with economic, political, and social conditions.

The three empirical exercises recover this process at different scales. The long-run poetry series characterize broad movements in religious and moral expression, attitudes toward commerce and imperial authority, and emotional tone. The Song commercial revolution exercise then asks whether one major economic transformation produced spatially uneven changes in the visibility and evaluation of commercial life. Places more exposed to Song-era commercialization and state presence later referred to merchants more often and evaluated them more favorably, especially under the broader favorable classification. Negative merchant references also move in some periods, but less consistently. The gazetteer exercise uses local records to study later-period change around violent disruption: counties occupied during the Taiping Rebellion later recorded more antisociality. Together, these results place culture inside the historical process, as something shaped by inherited material and by later economic, political, and social conditions.

VIII.A What do the textual measures capture?

The measures in this study use historical texts to recover the changing presence and evaluation of cultural themes across time and space. Poetry and gazetteers differ in genre, purpose, and social location, but both preserve forms of cultural expression that mattered historically. The religion series capture the changing presence of Buddhism, Daoism, folk religion, and filial piety in poetry. The market, merchant, and emperor measures distinguish between mentions and positive or negative evaluations. In the Song exercise, this distinction helps show how commercialization appeared in the poetry record: merchants became more visible and were more often evaluated favorably, especially under the broader favorable classification. Negative merchant references also move in some periods, while the market results are weaker and less stable.

Gazetteers provide a different kind of evidence. They were compiled for local documentation and administrative knowledge, often by local elites involved in record-making. Their strength lies in place, date, and local coverage. They become much more abundant in later periods and are tied directly to counties or prefectures, which makes them useful for studying local change in more specific historical windows. In this study, I use gazetteers mainly to examine recorded antisociality. The antisociality measure captures references to norms and practices associated with violations of cooperative local life, including disorder, predation, exploitation, and weakened local obligations. The measure is scaled by the amount of gazetteer material available for each county.

A related issue is migration. The analysis is location-based: it tracks cultural expression associated with counties, not the beliefs of fixed descent groups whose members necessarily remained in the same place over the entire period. County is nevertheless a reasonable unit for this exercise. Counties were durable administrative units with local governance functions (Qu, 2003), and they also served as the place-based units around which many local records were organized. For much of the period, household registration, landholding, and lineage-based mutual support also made mobility costly, especially in long-settled core regions (Greif and Tabellini, 2017). The sources used here are organized around place: poets are linked to recorded places of origin, while gazetteers are compiled for local administrative units. In practice, the observed poetry sample is concentrated in China proper, where most geocoded poets in the corpus are located. The estimates therefore mainly describe place-linked cultural expression in these observed counties, not the cultural trajectories of all populations that moved across the empire.

This interpretation requires more caution in periods of large population movement. Chinese history saw major migration before 1000 AD, and the Jurchen conquest and Jin period (1115–1234) also involved substantial displacement and population movement (Tao, 1976). Comparisons across the pre- and post-1000 periods should therefore be read with particular care, since changes in county-level cultural expression may reflect changes in local population composition as well as changes in transmitted local culture. In later periods, migration was often directed outward from the long-settled core toward frontier regions. Such movements could transmit cultural traits to new places and reshape frontier societies, but they are less likely to imply large-scale replacement in the older counties that dominate the poetry and gazetteer records. Thus, migration affects interpretation in different ways across periods: in periods of major population movement, county-level changes may partly reflect changing population composi-

tion; when migration was mainly outward, the observed counties are better read as older local cultural records whose influence may also have traveled elsewhere.

The location-based design clarifies how the spatial results should be read. A separate issue is what these textual sources can and cannot measure. Poetry covers many domains, but it is not an exhaustive record of historical moral values. It is rich in evaluation, emotion, religious imagery, and attitudes toward social and political life, while moral values often appear indirectly, through praise, criticism, analogy, or emotional tone. Gazetteers have broader local coverage in later periods, but their content reflects the purposes of local compilation and the concerns of compilers.

The measurement strategy also has technical limits. Current large language models are useful for identifying relatively explicit themes, references, and evaluative tone, but they remain less reliable for complex ideas in poetry, especially when meaning depends on layered allusion, irony, compressed syntax, or historical context. I therefore focus on pre-specified categories that can be classified at scale and interpreted transparently. As language models improve, historical poetry may become usable for measuring more subtle cultural concepts that are currently difficult to classify reliably.

VIII.B Why use both poetry and gazetteers?

The main difference between poetry and gazetteers lies in the scale and structure of the evidence they provide. Poetry offers a long horizon and is especially useful for tracing cultural expression across many centuries. Because poems are linked to authors, and authors can often be linked to places of origin, the corpus can also be used to study spatial variation. That advantage has limits: county-level coverage becomes thin once the data are split into short time windows.

Gazetteers have a complementary strength. They provide denser local coverage in later periods and are tied to specific compilation dates. This makes them useful for later-period local comparisons, especially when the question requires dated records for many counties. Used together, poetry and gazetteers make it possible to study both broad movements over time and county-level relationships between historical exposure and later cultural expression. The Song exercise uses poetry to relate earlier commercialization to later attitudes toward merchants and markets. The Taiping exercise uses gazetteers to study a later shock over a shorter window, with dated records and broader county coverage.

The source comparison also connects this study to related work using oral traditions. Folk-

tales and proverbs are often closer to everyday moral instruction, practical judgment, and social obligation, while they usually preserve accumulated culture without revealing the timing of its formation. Related work using Chinese folktales recovers cross-sectional variation in inherited cultural values (Xue, 2024). The present evidence serves a different purpose: poetry and gazetteers make it possible to trace movement over time. Together, these sources help connect inherited cultural stocks to the historical processes through which they accumulated.

More broadly, the evidence speaks to the two-way relationship between culture and development. This study examines how cultural expression changed over time, including long-run movement, gradual adaptation, and responses to major economic and political shocks. Other work studies how inherited values, beliefs, and norms shape later outcomes. The two lines of work are complementary: culture can shape historical trajectories, while those trajectories can, over the long run, change the cultural traits that later generations inherit.

IX CONCLUSION

This study uses historical poetry and local gazetteers to trace cultural change in China in historical time. The contribution is empirical: it uses long-run textual records to make cultural evolution observable in concrete historical settings. The analysis follows cultural expression across episodes central to Chinese history, including religious competition, Song commercialization, imperial state-building, changes in living standards, and the Taiping Rebellion. These episodes are often studied through output, population, markets, institutions, fiscal capacity, and political disruption. The evidence here shows that they also left traces in attitudes, emotions, religious and moral expression, and recorded local norms.

The poetry evidence shows substantial long-run movement in cultural expression. The corpus spans roughly 1,500 years, which makes it possible to trace slow changes in religious and moral themes, attitudes toward commerce and imperial authority, and emotional tone. Buddhism, Daoism, folk religion, and filial piety follow distinct trajectories. Favorable references to commercial life rise around the Song, while favorable references to emperors decline over the long run. Emotional expression also shifts with the chronology emphasized in the economic history literature: sadness is lowest around the Song and rises in later imperial periods, while happiness weakens after 1500.

The Song commercial revolution analysis is an application of the poetry data in a more spatially disaggregated setting. It studies whether places with higher Song *zhen* density, a measure that combines commercial activity with state presence, later mentioned and evaluated

commercial life differently. The clearest pattern concerns merchants: poets from high-*zhen* counties refer to merchants more often, and favorable references to merchants increase, especially when broader favorable classifications are included. Negative merchant references also move in some periods, but less consistently. These results suggest that Song-era commercialization changed how commerce entered the cultural record, especially through references to merchants.

The gazetteer evidence adds a second source-based measure of cultural change. Gazetteers provide broader county coverage in later periods and are organized around local administrative units, with each text tied to a compilation date. As an application of the gazetteer data, the analysis uses antisociality to compare local records before and after the Taiping Rebellion. Counties occupied during the rebellion recorded more antisociality in post-1850 gazetteers, even after accounting for pre-1850 antisociality, gazetteer volume, and geographic and historical controls. The result shows that gazetteers can recover changes in recorded antisocial norms across a broad set of counties.

The analyses add cultural change as another observable dimension of long-run historical development. They also show that cultural expression provides a lens on parts of development that are hard to see in output, population, wages, or fiscal data alone. The Song commercial revolution changed how commercial life entered the cultural record, especially by making merchants more salient and more favorably evaluated. The living-standards chronology appears in emotional expression. Changes in imperial state power are visible in references to emperors. Counties exposed to the Taiping Rebellion later recorded more antisociality in local gazetteers. Poetry and gazetteers therefore connect major economic and political changes to attitudes, emotions, and recorded local norms.

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