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Article

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Merchant gang governance and earnings management

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ABSTRACT

This study integrates the multilateral punishment mechanism theory with the characteristics of Chinese society—"acquaintance," "face," and "relationship"—to analyze and test the governance mechanism of merchant gangs on earnings management for the first time. Findings reveal that (1) merchant gangs significantly reduce earnings management in Chinese listed companies, holding after various robustness checks; (2) companies more influenced by merchant gang governance face harsher multilateral punishments upon exposure of financial misconduct, with more complete conditions strengthening this effect; (3) merchant gangs have a stronger governance impact on firms with native management, and formal institutions enhance their governance role. This research provides empirical evidence for the multilateral punishment mechanism theory and contributes to understanding merchant gang governance in China.

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1. Introduction

Merchant gangs are loosely organised groups of merchants linked by geographical, familial, and business connections (Cai et al., 2008). An important economic phenomenon in China, merchant gangs were active for more than four centuries, from the implementation of the Kai Zhong system in the third year of the Ming dynasty until the end of the nineteenth century. The legends of outstanding representatives of merchant gangs during the Ming and Qing dynasties, such as the Hui merchants, Jin merchants, and the Thirteen Hongs of Canton, are still widely celebrated today.¹ Interestingly, although merchant gangs have been absent from the historical stage for nearly two centuries, the recent rapid development of the Chinese economy has enabled them to re-emerge and become increasingly active. In 2006, the first China Merchant Gang Summit was held in Hangzhou; the descendants of Qiao Zhiyong and Hu Xueyan were invited to participate in this event, which briefly drew a significant amount of attention. In 2019, the first New Merchant Gang Summit Forum was held in Wuhan, China, where nearly 1,000 business

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¹Popular media on this topic include books such as *Chinese Merchant Gangs* by Lang Xianping; well-known film and television works such as *Hu Xueyan*, *Qiao's Grand Courtyard*, *The Merchants of Qing Dynasty* and *QingHui Merchants*.

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elites, including Lei Jun, Liu Yonghao, and Feng Lun, gathered to enthusiastically discuss the development of new merchant gangs.

Together with the long period of prosperity experienced by Chinese merchant gangs during the Ming and Qing dynasties, the observation that modern merchant gangs are emerging and growing rapidly alongside recent economic development suggests an underlying governance system that is compatible with Chinese culture. Exploring this suggestion in greater depth will help establish a set of governance mechanisms that are integrated with Chinese society and culture. Unfortunately, few articles have discussed the mechanisms of governance within Chinese merchant gangs; one exception is Cai et al. (2008), who compared the internal governance of Hui and Jin merchants through a case study. Therefore, the questions we aim to answer are: what types of governance mechanisms exist within Chinese merchant gangs that are coupled with Chinese culture? What are the functional mechanisms of these governance mechanisms?

To explore the above issues, this study first integrates the multilateral punishment mechanism theory proposed by Greif (1989, 1993) with three major characteristics of Chinese society, namely 'acquaintance', 'face' and 'relationship', thus constructing a theoretical framework to analyse the internal mechanism of Chinese merchant gang governance and its functional mechanism. Our theoretical analysis shows that the main advantage of merchant gangs lies in their ability to reduce transaction costs among member companies. Multilateral punishment is the core governance mechanism that maintains this low transaction cost advantage over the long term. On one hand, the societal characteristics of acquaintance, face and relationship further reduce the transaction costs among member companies of a merchant gang by enhancing mutual trust within the 'circle', leading to 'no oath beforehand'. On the other hand, lower transaction costs require a more severe multilateral punishment mechanism, and acquaintance, face and relationship greatly increase the strength of multilateral punishment through moral condemnation and exclusion from the 'circle'.

Our empirical tests focus on the typical breach-of-trust behaviour exhibited by merchant gang members in earnings management activities, and we explore the actual effects and mechanisms of merchant gang governance in China. We find that companies more constrained by merchant gang governance have a significantly lower degree of earnings management, such that a one-standard-deviation increase in the intensity of merchant gang governance decreases the degree of corporate earnings management by 42.57%. To further confirm the reliability of our results, we conduct a series of robustness tests, such as changing the measure of earnings management, using alternative measures of accounting information quality, expanding our sample, and re-running regressions after introducing instrumental variables.

We next perform a mechanism test and heterogeneity analysis. The mechanism test indicates that companies in the treatment group, which are more constrained by merchant gang governance compared to those in the control group, face harsher multilateral punishments and experience a significantly greater decline in business credit after their financial misconduct is exposed. This result provides direct evidence for the existence and effectiveness of multilateral punishment mechanisms within merchant gangs. Heterogeneity analysis shows that the more complete the implementation of the multilateral punishment mechanism (i.e. the stronger the regional informal relationship network, and the higher the degree of sharing of regional

customs and social norms), the more obvious the constraining effect of merchant gang governance on earnings management. This finding further supports the existence and effectiveness of multilateral punishment mechanisms within merchant gangs.

Finally, we discuss the impact of local management and formal institutions on the effect of merchant gang governance. We first consider two scenarios wherein non-local management changes to local management or vice versa and find that merchant gangs have a stronger governance effect on companies with local management. Second, by observing the interactions between a company's external governance mechanism and the legal environment in the company's registered region and merchant gang governance, we find that formal institutions facilitate merchant gang governance. In other words, merchant gang governance does not appear to lose efficacy as the presence of formal institutions increases. Rather, the more perfect the formal institutions, the stronger the effect of merchant gang governance.

We make three main contributions to the literature. First, we systematically analyse and examine the internal governance mechanism of Chinese merchant gangs for the first time. Compared with enthusiasm for the creation and development of new merchant gangs in practice, academic exploration of this topic is insufficient. By integrating the multilateral punishment mechanism theory with the three major Chinese societal characteristics of acquaintance, face and relationship, this paper explores the intrinsic mechanism of Chinese merchant gang governance. We not only analyse and verify the governance effect of Chinese merchant gangs but also provide empirical evidence from a large sample to support the multilateral punishment mechanism theory proposed by Greif (1989, 1993) and develop this theory from the perspective of the coupling of the cultural environment with governance mechanisms. Second, by revealing the causes and effects of merchant gangs as an alternative governance mechanism in China, we provide the first theoretical and empirical support for the related assertions of Allen et al. (2005), who pointed out that China's economy has experienced extremely rapid growth despite its imperfect legal and financial systems. These authors implied that some alternative governance mechanisms and alternative financing channels may be coupled with Chinese social values. Since Allen et al. (2005), the alternative financing channels hypothesis has been supported by several studies in China (F. Liu et al., 2009; Y. Wang, 2014; Yu & Pan, 2010), but alternative governance mechanisms have not been explored further. By analysing and testing the governance mechanisms of Chinese merchant gangs, we help to fill this research gap and expand the classical study of Allen et al. (2005). Third, we contribute to the literature on the factors contributing to corporate earnings management behaviour. The literature has investigated earnings management factors from the perspectives of a formal legal environment and government regulation; formal internal and external corporate governance mechanisms; and informal institutions such as culture, religion and customs (Chen et al., 2013; Chen et al., 2019; Liu et al., 2017). By focusing on the role of the merchant gang as an informal governance mechanism, we add new evidence to this field.

The rest of this paper is organised as follows. Section 2 describes the theoretical analysis. Section 3 describes the research design. Section 4 reports and analyzes the results of empirical tests. Section 5 presents the mechanism tests and further analysis. Section 6 concludes the paper.

2. Theoretical analysis and research hypothesis

2.1. *Multilateral punishment as the core mechanism of merchant gang governance*

Mediterranean trade has developed rapidly since the 10th century AD due to active maritime policies enacted during the Fatimid dynasty and the post-Umayyad dynasty periods. However, maritime trade is highly uncertain, with high transaction costs between partners. Surprisingly, the Maghreb merchant gang, which did not migrate from the Abbasid caliphate until the first half of the 10th century AD, succeeded in mitigating the agency problem between partners and thus flourished in Mediterranean trade. This achievement has attracted much interest from economists. Among them, Greif (1989, 1993) analyse the governance mechanisms of the Maghreb merchant gang in the 11th century using Genoese texts, the most famous Western historical documentary dataset. Specifically, Greif (1989) initially challenge the idea that trust is the core mechanism through which the agency problem among Maghreb merchant gang members was mitigated, suggesting that trust should only result from a governance mechanism within the Maghreb merchant gang. Greif (1993) later formalise the multilateral punishment mechanism theory in the context of Maghreb merchant governance via mathematical modelling.

Multilateral punishment, the core governance mechanism identified by Greif (1989, 1993) as a means of reducing merchant gangs' transaction costs, is conceptualised as opposed to bilateral penalty mechanisms. Specifically, in a typical contract-based transaction, both contracting parties have the power to penalise the defaulter (i.e. bilateral punishment) according to the terms of the contract. However, this power is limited solely to the contracting parties. In contrast, in a multilateral punishment mechanism, the defaulter is not only penalised by the direct trader but also can be subjected to collective punishment imposed by other members of the merchant gang who are not involved in the transaction; such punishment may include suspending or terminating existing transactions and significantly reducing the probability of future transactions.

This imposition of multilateral punishment on the defaulter is a common demand of all member companies of a merchant gang. A high degree of mutual trust within a merchant gang can greatly reduce the transaction costs among member companies. Under this condition, the costs of screening companies before, monitoring during, and coordinating after a transaction between member companies of a merchant gang are all very low. However, a high degree of mutual trust within a merchant gang depends on the effectiveness of the multilateral punishment mechanism. A situation wherein the defaulter is not subjected to multilateral punishment would seriously undermine or even eliminate the foundation of this high degree of mutual trust. This loss of trust can lead to a sharp increase in transaction costs among the member companies of the merchant gangs, thus jeopardising the companies' interests. Therefore, all member companies of a merchant gang have sufficient incentive to impose severe multilateral punishments on defaulters, thus maintaining the deterrent effect of the multilateral punishment mechanism and keeping transaction costs low.

Group pressure within the merchant gang further motivates implementation of the multilateral punishment mechanism. When the defaulter's behaviour is made known

within the merchant gang and the multilateral punishment mechanism is activated, member companies that do not actively participate in multilateral punishment are thought to have sympathy or even empathy for the defaulter and may themselves be treated like defaulters. Consequently, the integrity of these companies is questioned, and their transaction costs will be greatly increased. Therefore, group pressure within the merchant gang further encourages the member companies to actively participate in multilateral punishment to quickly demonstrate their attitude and draw a clear line against the defaulter.

The resulting multilateral punishment mechanism is actually very severe. The defaulter's losses due to multilateral punishment are significantly higher than those due to bilateral punishment and may even be higher than those due to the class action system promoted in the United Kingdom and United States. In a class action system, the most important feature is that victims other than the lead plaintiff do not have to participate directly and are legally considered to be automatic participants. Ultimately, therefore, the class action system often results in defendants facing very large compensation targets and awards and thus has a strong *ex ante* deterrent and governance effect. In comparing the two systems, multilateral punishment mechanisms have a distinctive collective punishment characteristic similar to that of a class action system. Unlike the class action system that requires that the punisher be a direct victim, however, multilateral punishment mechanisms allow and urge all non-directly victimised member companies of merchant gangs to participate in punishment. Thus, multilateral punishment mechanisms involve more punishers and are likely to cause greater damage to the defaulter than a class action system.

As shown in Figure 1, the main advantage of a merchant gang lies in its ability to reduce transaction costs among member companies. Multilateral punishment is the core governance mechanism that maintains this advantage over the long term. As mentioned previously, all member companies within a merchant gang have sufficient incentive to participate in multilateral punishment to protect this advantage. Greif (1993) cited the Maghreb merchant gang as an example. The gang members Joseph and Samhun were business partners. Unfortunately, Joseph discovered that Samhun was intentionally delaying payments. Joseph then sent a long letter filled with condemnation of Samhun's unethical behaviour to each of the other members of the Maghreb merchant gang. This was a devastating blow to Samhun; when he saw that condemnation letter, he lamented that 'My honour has been ruined in a day'. H. Wu (2010) provide a similar example in his book *The Dreaded Wenzhou People*. In Wenzhou, relatives and friends or recommended investors are willing to lend money to entrepreneurs and may even tolerate a loss within a certain amount. However, once an entrepreneur breaches their trust by intentionally failing to pay back the money, the multilateral punishment mechanism is triggered. As

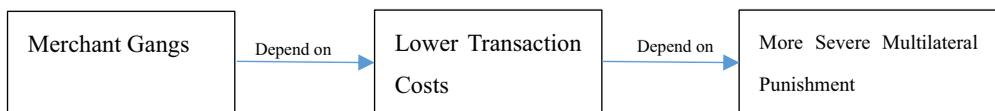


Figure 1. The underlying logic of merchant gang governance.

a result, the defaulter becomes the object of scorn in both business and life circles and will find it difficult to survive.

2.2. Reinforcement of the mechanism of merchant gang governance in the Chinese context

As shown in Figure 2, the three major characteristics of Chinese society, namely acquaintance, face and relationship, greatly strengthen the above-mentioned mechanism of merchant gang governance.

First, these three characteristics of Chinese society further reduce the transaction costs among the member companies of a merchant gang. The characteristic of acquaintance enhances mutual trust between insiders within the merchant gangs. China is a typical acquaintance society, in which people's trust in others is gradually extrapolated from family members to acquaintances to strangers, forming one circle after another (Fei, 1985). A distrust of 'outsiders' in turn reinforces the high level of trust in insiders. Because merchant gangs are formed by gradually extending and expanding the core circle of fellow townsmen, and most managers and employees of the member companies are acquaintances, the characteristics of Chinese acquaintance society enhance mutual trust between the member companies and further reduce their transaction costs. Additionally, the characteristics of face and relationship lead to the concept of 'no oath beforehand' during transactions between the member companies of a merchant gang. Chinese people emphasise face-saving and relationships: if the member companies of a merchant gang who intend to cooperate propose to implement pre-supervision procedures with characteristics that imply a lack of trust, such as an independent audit or due diligence, this is tantamount to making light of face-saving. In China, such a slight can be as serious as injuring someone physically or even threatening their life (Yi, 1996), and it often has a negative impact on subsequent cooperation between the parties. Moreover, other member companies of a merchant gang may believe that the party proposing the pre-supervision procedures does not prioritise relationships. In China, a failure to

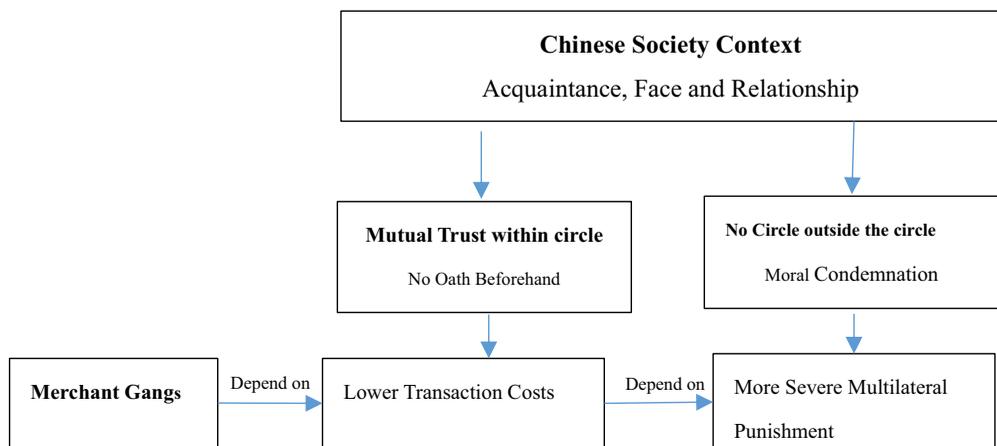


Figure 2. Reinforcement of the mechanism of merchant gang government in the Chinese context.

prioritise relationships is viewed very negatively; it is interpreted as destroying the premise of 'courtesy demands reciprocity', allowing others to do the same (Zhai, 2004). In other words, if you deprioritize another's face-saving today, you cannot blame others for deprioritizing your face-saving in the future. As recorded in the *Jin Records*, 'Once a man pays the capital, all the other merchants will confer together, and though there is no oath between them, there is no concealment'. That is, cooperation between the member companies of a Chinese merchant gang does not require a cumbersome contracting procedure. The situation of 'no oath beforehand', resulting from face and relationship, further reduces transaction costs within a merchant gang.

Second, lower transaction costs require a harsher multilateral punishment mechanism, which is substantially enhanced by the characteristics of acquaintance, face and relationship. Chinese acquaintance society leads to the concept that 'there is no "circle" outside the "circle",' making it very difficult for a defaulter to escape punishment by changing their circle. The mode of association in an acquaintance society makes it difficult to enter a circle. In China, it is already extremely difficult for strangers to progress to acquaintances, and it is even more difficult to progress to family members, as such relationships are mostly formed by marriage or other opportunity. If one carries a reputation for immorality acquired in their original circle, then the likelihood that they can successfully escape to another circle is very low. Accordingly, this situation greatly increases the strength of multilateral punishment within merchant gangs in China, as the defaulter often can only choose to bear the multilateral punishment and make great efforts to rebuild their reputation thereafter, which is a lengthy process. As recorded in the *Jin Records* written by Shen Sixiao in the Ming dynasty, 'Grandparents sometimes lend money to others on a principal and interest basis, and eventually the cooperative business operation goes bankrupt. Although the borrower has not been in business for decades, his children and grandchildren are alive and aware of this and will work hard to pay back the loan he owed'.

Furthermore, the characteristics of face and relationship in Chinese society extend the multilateral punishment mechanism beyond money to moral condemnation. In China, the trust demonstrated by 'no oath beforehand' can only be rewarded by honesty after the event; otherwise, defaulting companies face even harsher punishment. As stated in the *Qu Li of the Book of Rites*, 'Friendship cannot stand always on one side'. That is, according to the rules of Chinese relationship society, the unconditional trust of member companies of a merchant gang before an event should be repaid by stricter self-discipline and greater integrity to show that the trust before the event was given correctly. This is very important because, in Chinese culture, payback is more important and fundamental than an exchange of benefits, and the former is a necessary condition for the latter (Zhai, 2004). A company's breach of the unconditional trust given by other member companies in the merchant gang before an event is then interpreted as heartlessness or even betrayal. In China, the cost of betrayal cannot be calculated monetarily. Therefore, it is necessary to impose a severe punishment beyond money; namely, morality must be imposed to cause the heartless defaulter to have an uneasy conscience and lose face for the rest of their life due to condemnation by the public and moral authority (Zhai, 2004). It is clear that the moral condemnation arising from the societal characteristics of face and relationship also greatly enhance the strength of multilateral punishment within a merchant gang.

2.3. Effect of merchant gang governance on earnings management

According to the cost – benefit analysis framework proposed by Correia (2014), the degree of corporate earnings management is an increasing function of earnings management behaviour intended to achieve gains or avoid losses. It is also a decreasing function of the predicted discovery probability and the anticipated penalties of earnings management behaviour. For the convenience of analysis, the above logic is expressed in the following equation:

$$EM = f(EA + AL - p \times F) \quad (1)$$

where EM is the degree of a company's earnings management. EA and AL are the additional assets gained and losses avoided by the company through earnings management, respectively, which jointly constitute the benefits of earnings management. p represents the probability that earnings management is discovered. F represents the punishment that the company suffers after this discovery. After considering the influence of the mechanism of merchant gang governance, we modify the above equation as follows:

$$EM = f[EA + AL - (p + \Delta\mu) \times (F + \Delta\lambda)] \quad (2)$$

where the new variables $\Delta\mu$ and $\Delta\lambda$ denote the change in the value of the probability of a company's earnings management behaviour being detected and the penalty suffered by the company if detected, respectively, after taking into account the effect of the merchant group governance mechanism. The larger the values of $\Delta\mu$ and $\Delta\lambda$, the lower the degree of corporate earnings management. We expect merchant gang governance to increase both $\Delta\mu$ and $\Delta\lambda$, thus restraining a company's earnings management behaviour.

First, merchant gang governance should significantly increase the punishment $\Delta\lambda$ imposed on a company found to have engaged in earnings management. As mentioned above, the multilateral punishment mechanism of a merchant gang is triggered in the event of a breach of trust that may seriously undermine the basis of mutual trust among member companies. Earnings management is a typical form of dishonest behaviour that may trigger this multilateral punishment mechanism. Accounting is a basic and inexpensive social function that helps promote trust between people (Lei, 2012; Liu, 2015). Therefore, earnings management, which aims to distort the authenticity of accounting information, is obviously dishonest. Furthermore, earnings management is likely to seriously harm the interests of cooperative enterprises within a merchant gang. The distortion of accounting information caused by earnings management misleads cooperative enterprises within the group, causing them to make wrong decisions. For example, these enterprises may mistakenly believe the high rate of return of a project included in the accounting information of another enterprise that has been distorted by earnings management, leading to wrong investment decisions. Additionally, the distortion of accounting information by earnings management causes co-operative enterprises to miss the best opportunity to correct an investment project. When the external environment changes, collaborators within a merchant gang who are using distorted accounting information will misjudge the impact of these changes on the investment project and thus miss the best time to raise funds and allocate resources to amend the project, resulting in substantial losses that could have been minimised or even avoided. Finally,

the distortion of accounting information by earnings management creates the illusion that an investment project is flourishing, causing cooperative enterprises to make additional investments and suffer greater losses.

Many reports in the literature have indicated that the mechanism of merchant gang governance is affected by geographical distance decay (John et al., 2011; Kedia & Rajgopal, 2011; Sun & Liu, 2014). That is, member companies that experience stronger governance effects are often closer to the core of the merchant gang. Moreover, as resource sharing and exchange within an organisation are frictional processes (Beck et al., 2019; Hanes, 2013), companies that are closer to the core of a merchant gang have a wider range of transactions with a larger number of fellow merchant gang members than do companies at a greater distance. This observation implies that the earnings management behaviour of a company close to the core will affect substantially more victims and cause greater losses than that of a more distant company. As a result, these close companies will also receive a greater punishment, $\Delta\lambda$, when their earnings management behaviour is discovered. All else being equal, a larger $\Delta\lambda$ reduces the net benefits of business management. That is, merchant gang governance can reduce earnings management by increasing $\Delta\lambda$ as shown in equation (2).

Second, merchant gang governance also significantly increases $\Delta\mu$. The literature suggests that a company's earnings management behaviour can be seen easily by its important partners, such as customers, suppliers and creditors, due to frequent communication between the two parties regarding capital, personnel and other information (Hui et al., 2012; Wang & Liu, 2014; Xu & Shen, 2010). Compared with other companies, companies subject to more intense merchant gang governance tend to cooperate with a larger number of fellow member companies, and thus $\Delta\mu$ is substantially greater. All else being equal, a larger $\Delta\mu$ reduces the net benefits of earnings management. That is, merchant gang governance can also reduce earnings management by increasing $\Delta\mu$ as shown in equation (2). Based on the above analysis, we develop our hypothesis:

H: *Merchant gang governance significantly reduces the earnings management behaviour of the company.*

3. Research design

3.1. Samples and data

We include all A-share listed companies traded in China's Shanghai and Shenzhen markets during the 2007–2020 period in our initial sample. Following the literature, we exclude the following companies: financial companies, ST and PT companies, companies not registered in the provinces where the five new merchant gangs² are located and companies with missing data required in the baseline regression. Our final sample comprises 15,954 observations, and its industry distribution is reported in Table 1.

We obtain the financial data and registered addresses of the listed companies from the WIND database, corporate governance information from the China Stock Market & Accounting Research database, and the native place information of the chairman and CEO of each company from the Chinese Research Data Services Platform (CNRDS)

²Five new merchant gangs are Shangdong, Sunan, Zhejiang, Minnan, Guangdong merchant gang.

Table 1. Sample industry distribution.

Industry	Sample size	Percentage (%)
Agriculture, Forestry, Animal Husbandry, and Fishery	150	0.94
Mining	143	0.9
Manufacturing	11,356	71.18
Production and supply of Electricity, Heat, Gas, and Water	312	1.96
Architecture	389	2.44
Wholesale and Retail	763	4.78
Transport, Storage, and Postal Services	423	2.65
Accommodation and Catering Services	35	0.22
Information transmission, Software, and Information Technology	864	5.42
Real Estate	642	4.02
Leasing and Business Services	217	1.36
Scientific Research and Technical Services	143	0.9
Water Conservancy, Environment, and Public Facilities Management	112	0.7
Resident Services, Repair, and Other Services	19	0.12
Education	6	0.04
Health and Social Work	50	0.31
Culture, Sports, and Entertainment	139	0.87
Comprehensive	191	1.2
Total	15,954	100

database. In addition, this paper uses five types of manually collected data. (1) We capture latitude and longitude information corresponding to the registered addresses of listed companies, from the Baidu map application programming interface using crawler technology. (2) To measure the clan culture of each region in China, we collect genealogical information from the *General Catalogue of Chinese Genealogies* published by Shanghai Ancient Books Publishing House. (3) We collect the data used to calculate the cultural diversity of each region in China from the *Dictionary of Chinese Dialects* and *Atlas of Chinese Dialects*. (4) We collect specific information on commercial guilds in various regions of China during the Ming and Qing dynasties from *A Treatise on the History of Chinese Guildhalls*, by the Chinese – American historian B. D. Ho. (5) We collect data on the per capita area of arable land in each province of China during the Ming dynasty and the average irrigated area associated with water conservancy projects in each province during the Song dynasty from *The Development of Chinese Agriculture: 1368–1968* by the American historian D. H. Perkins.

3.2. Model and variables

To examine the effect of merchant gang governance on earnings management behaviour, we established the following baseline regression model:

$$EMJS = a_0 + a_1 \times MG + a_i \times CONTROL + a_j \times \sum Year + a_k \times \sum Industry + \xi \quad (3)$$

The dependent variable *EMJS* in model (1) represents the degree of earnings management in each year. Although a series of extended forms are derived, the basic Jones model is the least controversial and most widely used method of estimating the degree of earnings management (Kim et al., 2017; Lo et al., 2017). Xia (2003) showed that the basic Jones model is more applicable to the Chinese capital market. We therefore use the basic Jones model to estimate the degree of earnings management in each year (Jones, 1991), as follows:

$$\frac{ACC_t}{ASS_{t-1}} = a_0 + a_1 \times \left(\frac{1}{ASS_{t-1}} \right) + a_2 \times \frac{REV_t}{ASS_{t-1}} + a_3 \times \frac{PPE_t}{ASS_{t-1}} + \varepsilon \quad (4)$$

where ACC_t is the company's operating accruals in year t , equal to the operating profit minus the net cash flow from operating activities. ΔREV_t is the change in operating income between year t and year $t-1$, and PPE_t is the original value of the fixed assets at the end of year t . ASS_{t-1} is the company's total assets at the beginning of year t and is used for smoothing to eliminate the effect of company size. The residuals obtained from the above formula by industry and by year reflect the unexpected part of operating accruals that deviate from economic transactions, namely $EMJS$, the degree of annual earnings management by a company.

The core explanatory variable of model (1), MG , represents the degree of the governance of a company by a merchant gang. Wu and Ye (2020) observed that a within-group comparison (i.e. treatment-only design) is the best research design if the differences between the treatment group and the control group are difficult to eliminate. Therefore, this paper limits the sample for empirical analysis to A-share listed companies registered in the provinces where the five new merchant gangs are located, namely Shandong, Zhejiang, Jiangsu, Fujian and Guangdong. As the comparison is restricted to companies within the merchant gangs, this approach helps to avoid the problem of endogeneity caused by potential omitted variables at the provincial level. The five new business gangs were first defined through a large-scale field interview and questionnaire survey of business people in Beijing. The survey has since been publicised by CCTV Economic Channel, People's Daily Overseas Edition and official websites, such as the State Hanban and Tencent, gradually leading to consensus within industry. The Zheshang Research Association, under the Zheshang General Association, also cited and reconfirmed the survey results in 2018.

After calculating the shortest distance between the registered address of each sample company and the core area of the merchant gang,³ we add 1 to the natural logarithm and then take the opposite number as MG . The literature has suggested that geographic distance increases both information asymmetry and monitoring costs, and that greater distance tends to be associated with weaker governance. For example, John et al. (2011) found that a remote geographical location of an enterprise weakened the shareholders' ability to supervise; in turn, the shareholders demanded a higher dividend payment rate as compensation. In another example, Kedia and Rajgopal (2011) found that the regulatory capacity of the U.S. Securities and Exchange Commission (SEC) decreases with increasing geographical distance. Companies located farther from the SEC have poorer-quality accounting information than do companies located near the SEC. In China, Sun and Liu (2014) also demonstrated the attenuating effect of geographical distance on the governance capacity described above. Specifically, they found that the supervisory function of non-local

³The core areas covered by the five new merchant gangs are as follows: Qingdao, Weihai, Yantai and Jinan in Shandong; Suzhou, Wuxi and Changzhou in Southern Jiangsu; Hangzhou, Ningbo, Wenzhou and Taizhou in Zhejiang; Quanzhou, Zhangzhou and Xiamen in Fujian; and Guangzhou, Shenzhen, Dongguan, Shunde and Zhongshan in Guangdong. The core regions of these five new merchant gangs are not limited to single cities. Therefore, after calculating the distances between the sample companies and all cities in the core region separately, we take the shortest distance and add 1 to obtain the natural logarithm. Finally, the opposite value is taken to make the interpretation of the estimated MG coefficients clearer and more intuitive and easy to understand and read.

independent directors was significantly weaker than that of local directors. Recent literature has also suggested that greater geographic distance is associated with a lower degree of resource sharing. Hanes (2013) noted that resource sharing within an organisation is a frictional process, and that geographic distance exacerbates this friction by increasing travel costs and decreasing social familiarity, thus reducing resource sharing. Beck et al. (2019) found that CPA firms are unable to help smaller and more remote branches to reach the firm-wide average level of audit quality due to the increased difficulty of sharing knowledge and human resources. In summary, therefore, our decision to use geographical distance to measure the strength of merchant gang governance is consistent with the literature. Specifically, sample companies with larger values of MG are more constrained by merchant gang governance due to the combined effect of reduced monitoring costs and increased shared resources.

Following the literature (Dou et al., 2016; Kim et al., 2017; Lo et al., 2017; Zhang & Zhang, 2018), we include a series of control variables in model (1), represented by the vector *CONTROL*. These control variables mainly include the company size (*SIZE*), growth (*GROWTH*), liability ratio (*LEVERAGE*), net interest rate on assets (*ROA*), asset turnover (*ATO*), age (*AGE*) and activities that may induce a company to exhibit earnings management behaviours, such as mergers and acquisitions (*MA*) and refinancing (*ISSUE*) during the year. To alleviate concerns about possible systematic differences in the quality of governance of the sample companies, we consider five dimensions of corporate governance, namely equity concentration, board size, board independence, management shareholding ratio and chairman – general manager, and use principal component analysis to obtain and control for the sample companies' corporate governance index, *CGindex*, in the respective years. We also control for the influence of regional economic factors and traditional merchant gang culture. We measure the regional macroeconomic development level in five aspects, namely the per capita GDP, fiscal deficit rate, unemployment rate, per capita disposable income and education level of each province, and use principal component analysis to obtain the province-level control variable *PEindex*. Referring to Wu et al. (2019), we also collect information on Chinese provincial commercial guilds during the Ming and Qing dynasties and calculate the number of off-site commercial guilds per 10,000 people in each province (*Hall*) by reviewing *A Historical Essay on Chinese Guilds* by the Chinese historian He Bingdi to measure and control for the impact of the traditional merchant gang culture in each province in China. Finally, we include year and industry fixed effects in the regressions, winsorise all continuous variables at the top and bottom 1%, and use industry-level clustering standard errors to obtain more robust inferences.

Panel A in Table 2 shows the definitions and measures of all of the variables involved in model (1), and Panel B reports the descriptive characteristics. The average book value of the assets of the sample companies exceeds ¥3.3 billion, the average *LEVERAGE* is 40.5%, and the average *ROA* is 4.2%. The mean and median values of *EMJS* are greater than zero, indicating that upwardly adjusted earning is prevalent among the sample companies.

Table 2. Variable definitions and descriptive statistics.

Panel A: Variable definitions and measurement methods					
<i>EMJS</i>	Degree of earnings management calculated by the basic Jones model in year <i>t</i> .				
<i>MG</i>	Take the natural logarithm of the shortest distance from the company to the core area of the merchant gang plus one, and then take the negative.				
<i>SIZE</i>	Natural logarithm of total assets at the end of year <i>t</i> .				
<i>GROWTH</i>	Market value divided by net assets at the end of year <i>t</i> .				
<i>LEVERAGE</i>	Total liabilities divided by total assets at the end of year <i>t</i> .				
<i>ROA</i>	Net income divided by total assets in year <i>t</i> .				
<i>ATO</i>	Asset turnover ratio in year <i>t</i> .				
<i>MA</i>	Indicator variable with a value of 1 if the firm conducted M&A activities in year <i>t</i> , and 0 otherwise.				
<i>ISSUE</i>	Indicator variable with a value of 1 if the firm conducted seasoned equity offerings in year <i>t</i> , and 0 otherwise.				
<i>AGE</i>	Natural logarithm of firm age at the end of year <i>t</i> .				
<i>CGindex</i>	Corporate governance index at end of year <i>t</i> .				
<i>PEindex</i>	Macroeconomic index of the province where the company is located at end of year <i>t</i> .				
<i>Hall</i>	Number of non-local commercial associations per 10,000 people in the province where the company is located.				
Panel B: Descriptive statistics					
Variables	Mean	SD	p25	p50	p75
<i>EMJS</i>	0.003	0.083	-0.038	0.002	0.042
<i>MG</i>	-3.520	1.277	-4.467	-3.397	-2.602
<i>SIZE</i>	21.918	1.173	21.064	21.777	22.572
<i>GROWTH</i>	3.752	2.955	1.889	2.904	4.567
<i>LEVERAGE</i>	0.405	0.202	0.240	0.394	0.553
<i>ROA</i>	0.042	0.061	0.018	0.043	0.072
<i>ATO</i>	0.694	0.452	0.403	0.598	0.851
<i>MA</i>	2.865	0.333	2.639	2.890	3.091
<i>ISSUE</i>	0.278	0.448	0.000	0.000	1.000
<i>AGE</i>	0.564	0.496	0.000	1.000	1.000
<i>CGindex</i>	0.113	0.816	-0.470	0.007	0.636
<i>PEindex</i>	0.053	0.817	-0.418	0.147	0.692
<i>Hall</i>	0.044	0.031	0.016	0.029	0.072

4. Empirical results and analysis

4.1. Baseline results

Table 3 reports the results of model (1). We control only for the basic characteristics of the sample companies in column (1); we also control for *PEindex* in column (2) and *Hall* in column (3). The coefficients of *MG* in three regressions are significant and negative. This result suggests that companies that are more constrained by merchant gang governance have significantly lower levels of earnings management. We also estimate the economic significance of the above tests. A one-standard-deviation change in *MG* will result in a 42.57% ($1.277 \times 0.001/0.003$) reduction in the degree of earnings management of the sample companies. This finding is also highly economically significant. Therefore, the results of the baseline regression reported in Table 3 indicate that merchant gang governance significantly reduces earnings management behaviour, supporting our hypothesis.

4.2. Robustness test

To enhance the robustness of our findings, we conduct four tests. First, we use an alternative measure of earnings management. Sun and Liu (2008) observed that all

Table 3. Merchant gang governance and earnings management.

	Dependent variable= <i>EMJS</i>		
	(1)	(2)	(3)
<i>MG</i>	-0.001** (-2.7)	-0.001** (-2.8)	-0.001*** (-2.9)
<i>Size</i>	-0.002 (-1.7)	-0.002 (-1.7)	-0.002 (-1.6)
<i>Growth</i>	-0.003*** (-7.5)	-0.003*** (-7.5)	-0.003*** (-6.8)
<i>Leverage</i>	0.027*** (4.3)	0.027*** (4.3)	0.026*** (4.0)
<i>ROA</i>	0.518*** (21.1)	0.517*** (21.1)	0.516*** (20.2)
<i>ATO</i>	-0.026*** (-12.0)	-0.026*** (-12.0)	-0.026*** (-11.8)
<i>MA</i>	-0.001 (-0.5)	-0.001 (-0.4)	-0.000 (-0.1)
<i>ISSUE</i>	0.002*** (3.0)	0.002*** (3.1)	0.003*** (3.7)
<i>AGE</i>	0.010*** (9.0)	0.010*** (9.0)	0.011*** (9.8)
<i>CGindex</i>	0.002* (1.9)	0.002* (2.0)	0.002** (2.4)
<i>PEindex</i>		-0.001 (-0.9)	-0.001 (-1.0)
<i>Hall</i>			-0.048 (-1.2)
<i>Year FE</i>	Yes	Yes	Yes
<i>Industry FE</i>	Yes	Yes	Yes
<i>N</i>	15954	15954	15954
<i>adj R²</i>	0.146	0.146	0.146

T-statistics are presented in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. The t-values for statistical tests have been corrected for clustered standard errors and White heteroskedasticity robustness. All regressions include, but do not report, the intercept term. Similar notes apply below.

empirical studies of earnings management involve joint tests of the validity of the earnings management model and the research hypotheses. That is, the conclusions are considered reliable only if the estimated model fairly portrays the company's earnings management behaviour. To alleviate the above concerns, we use the modified Jones model and the Kothari model as the dependent variables, in addition to the *EMJS* estimated by the basic Jones model, and re-run the baseline regressions. The modified Jones model is as follows:

$$\frac{ACC_t}{ASS_{t-1}} = \alpha_0 + \alpha_1 \times \left(\frac{1}{ASS_{t-1}} \right) + \alpha_2 \times \frac{(REV_t - REC_t)}{ASS_{t-1}} + \alpha_3 \times \frac{PPE_t}{ASS_{t-1}} + \varepsilon \quad (5)$$

where the newly variable ΔREC_t is the change in the book value of a company's accounts receivable between year t and year $t-1$, and all other variables are the same as in the basic Jones model. The residual obtained by fitting the above equation by industry and by year is the degree of earnings management of the company by year, denoted as *EMM*. This test is reported in column (1) of **Table 4**. The coefficient of *MG* is still significant and negative, again indicating that merchant gang governance can reduce the earnings management behaviour of a company.

Table 4. Robustness test.

	Alternative measures of dependent variables		Change dependent variable			Expand sample	IV estimation	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	<i>EMM</i>	<i>EMK</i>	<i>RES</i>	<i>INQD</i>	<i>INQN</i>	<i>EMJS</i>	<i>MG</i>	<i>EMJS</i>
<i>MG</i>	-0.001** (-2.6)	-0.002*** (-3.8)	-0.005*** (-5.3)	-0.008*** (-6.6)	-0.007*** (-5.2)			-0.026** (-2.2)
<i>MGDUMMY</i>						-0.005** (-2.4)		
<i>PCALMING</i>							-0.177*** (-3.2)	
<i>IAWCSONG</i>							-0.133*** (-5.0)	
<i>Baseline Controls</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Year FE</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Industry FE</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>N</i>	15954	15954	15954	15954	15954	33852	15954	15954
<i>adj R²</i>	0.157	0.028	0.023	0.172	0.182	0.140	0.081	0.028

Column (2) of Table 4 reports the results of robustness tests, using the degree of corporate earnings management estimated by the Kothari model as the dependent variable. The Kothari model is as follows:

$$\frac{ACC_t}{ASS_{t-1}} = \alpha_0 + \alpha_1 \times \left(\frac{1}{ASS_{t-1}} \right) + \alpha_2 \times \frac{(REV_t - REC_t)}{ASS_{t-1}} + \alpha_3 \times \frac{PPE_t}{ASS_{t-1}} + \alpha_4 \times \frac{NI_t}{ASS_{t-1}} + \varepsilon \quad (6)$$

where the newly variable NI_t is the company's net profit in year t . All other variables are identical to the modified Jones model, and the residual obtained by fitting the above equation by industry and by year is the degree of earnings management of the company in each year, denoted as EMK . This test is reported in column (2) of Table 4. The estimated coefficient of MG is still significant and negative. This result indicates that our findings are not affected by the use of different earnings management estimation models.

Second, we use other measures of accounting information quality. We first re-estimate the baseline model from the perspective of financial restatement. We construct a new dependent variable, RES , which takes the value of 1 if there is a financial restatement in the sample company in the current year, and 0 otherwise. This test is reported in column (3) of Table 4. The estimated coefficient of MG is significant and negative, indicating that companies that are more constrained by merchant gang governance are significantly less likely to have financial restatements. We then re-estimate the baseline model from the perspective of exchange comment letters. We construct the new dependent variables $INQD$ and $INQN$. $INQD$ is a dummy variable that takes the value of 1 if the sample company is subject to an exchange enquiry in the year, and 0 otherwise. $INQN$ is the natural logarithm of the total number of times the company is subject to an exchange enquiry in a given year, plus 1. These two tests are reported in columns (4) and (5) of Table 4, respectively. The coefficients of MG are also both significant and negative at the 1% level, indicating that companies that are subject to stronger merchant gang governance constraints have a significantly lower probability that their financial reports will be subject to exchange enquiries and a significantly lower number of such enquiries than other companies. In summary, the evidence provided in columns (3)–(5) of Table 4 suggests that changing the observational perspective on the quality of companies' accounting information does not affect our findings.

Third, we conduct full-sample tests. To mitigate the effects of potential omitted variables, our baseline model uses a within-group comparison that restricts the sample to companies registered in the provinces where the five new merchant gangs are located. Theoretically, we could also run a full-sample test. As merchant gangs' influence are based on geographic extension and expansion, the behaviour of companies located in the provinces where the five new merchant gangs are located is also more likely to be constrained by the internal governance mechanisms of the merchant gangs than the behaviour of companies registered in places where influential modern merchant gangs have yet to form. We construct a new explanatory variable, *MGDUMMY*, which takes the value of 1 if the company is registered in a province where one of the five new business gangs is located, (i.e. Shandong, Zhejiang, Jiangsu, Fujian and Guangdong), and 0 otherwise. The results are reported in column (6) of Table 4. The coefficient of *MGDUMMY* is also significant and negative. This result demonstrates that conducting a full-sample test does not affect our findings.

Fourth, we apply the instrumental variable method. Although the design of our baseline model, which uses within-group comparisons and controls for the effects of a range of company characteristics, provincial economic factors and traditional merchant gang culture, can largely alleviate the problems caused by potential missing variables, we may still face endogeneity problems. Unobserved factors that affect both *MG* and *EMJS* would bias our estimation results. To further alleviate these potential problems, we use a two-stage least squares method based on instrumental variables. Specifically, we use the per capita arable land area of provinces during the Ming dynasty (*PCALMING*) and the average irrigated area of water conservancy projects in provinces during the Song dynasty (*IAWCSONG*) as the instrumental variables. Tang (2006) observed that the rise of merchant gangs in China was closely related to the geographic environment, which resulted in field and land scarcity. For example, the Ningbo merchant gang, which played a significant role in the Qing dynasty, originated in a coastal area with many mountains and little land. During the Yongzheng period, the *Provincial Gazetteer of Ningbo* described Zhenhai and Cixi counties, which were under the jurisdiction of the Ningbo merchant gang, respectively as 'surrounded by the sea, living in a harsh environment, with barren soil and no source of irrigation, so the cultivator does not have a year's supply' and as 'densely populated and narrow in land, with three out of 10 people having food shortages at the age of abundance'. These descriptions depict how the environment promoted the formation of merchant gangs by forcing local residents to abandon agriculture and become merchants. Therefore, the per capita area of cultivated land and the average irrigated area may affect regional merchant gang culture, first by influencing the probability of formation of ancient Chinese business gangs and then by influencing the possibility that companies will gather in the core area of a new business gang. However, the per capita arable land area in the Ming dynasty and the average irrigated area in the Song dynasty are unlikely to influence the earnings management behaviour of today's listed companies through channels other than merchant gang governance. That is, *PCALMING* and *IAWCSONG* should theoretically satisfy the instrumental variable requirements of relevance and exogeneity.

By reviewing the work of American historian Perkins, *The Development of Chinese Agriculture: 1368–1968*, we obtained data on the per capita arable land area in each Chinese province during the Ming dynasty and the average irrigated area of water

conservancy projects in each province during the Song dynasty. Columns (7) and (8) of Table 4 report the results of two-stage regressions under the instrumental variable approach. First, column (7) shows that the coefficients of both *PCALMING* and *IAWCSONG* are significant and negative, indicating that both a larger per capita arable land area and a larger average irrigated area of water conservancy projects in the province where merchant gangs were located are associated with a lower degree of aggregation of provincial companies around the core areas of new merchant gangs. These results are consistent with theoretical expectations and indicate that the instrumental variables satisfy the correlation requirements. Second, the CD statistic of 14.662 is higher than the critical value of 10, indicating that *PCALMING* and *IAWCSONG* are not weak instrumental variables. Again, the result of Hansen's J chi-square test is not significant ($p = 0.76$); thus, the null hypothesis that at least one of the two instrumental variables satisfies the exogenous requirement is not rejected. Finally, in the second-stage regression shown in column (8) of Table 4, the coefficient of *MG* remains significant and negative, again indicating that merchant gang governance significantly reduces companies' earnings management behaviour. This result implies that potential omitted variables do not materially affect our findings.

5. Mechanism test and further analysis

5.1. Mechanism test

We posit that the mechanism of merchant gang governance mainly involves multilateral punishment. In other words, after earnings management behaviour is exposed, companies that are more constrained by merchant gang governance will be punished more severely than less-constrained companies and will face a significantly greater increase in transaction costs with other member companies. To test the above-described multilateral punishment mechanism, we construct the following difference-in-differences (DID) model:

$$TC = \alpha_0 + \alpha_1 \times Treat \times Post + \alpha_i \times CONTROL + \lambda_{year} + \lambda_{Firm} + \xi \quad (7)$$

where *TC* is the commercial credit and net commercial credit received by the sample company. According to the literature (Kong et al., 2020; Pan et al., 2022, the commercial credit received by a company is equal to the ratio of the sum of accounts payable, notes payable and deposits received at the end of the year to the total assets or total liabilities, recorded as *TCA* or *TCL*, respectively. The net commercial credit received by the sample company is equal to *TCA* and *TCL* minus the ratio of year-end accounts receivables, notes receivable and prepaid accounts to the total assets or total liabilities, respectively, and is denoted correspondingly as *NTCA* and *NTCL*. To some extent, *TCA*, *TCL*, *NTCA* and *NTCL* can all represent the transaction costs between the sample company and other member companies. The larger the value of *TCA*, *TCL*, *NTCA* or *NTCL*, the more commercial credit the sample company can obtain and the smaller the transaction cost.

We build the explanatory variable *Treat*×*Post* in model (2) using the following four steps. In the first step, we divide the sample companies into four groups based on *MG* quartiles and keep the highest and lowest groups, which are respectively most and least influenced by merchant gang governance. In the second step, we use *EMJS* quartiles to further divide the sample companies in the largest and the smallest *MG*

Table 5. Mechanism test.

	(1)	(2)	(3)	(4)
	<i>TCA</i>	<i>TCL</i>	<i>NetTCA</i>	<i>NetTCL</i>
<i>Treat</i> × <i>Post</i>	−0.027* (−1.8)	−0.065** (−2.5)	−0.048*** (−3.4)	−0.104** (−2.4)
<i>sBaseline Controls</i>	Yes	Yes	Yes	Yes
<i>Year FE</i>	Yes	Yes	Yes	Yes
<i>Firm FE</i>	Yes	Yes	Yes	Yes
<i>N</i>	914	914	914	914
<i>adj R</i> ²	0.730	0.677	0.684	0.700

quartiles into four groups; we then retain the two highest quartiles, which correspond to the two groups of sample companies with the highest degree of earnings management. We take the companies with a high *EMJS* and the highest *MG* as the treatment group, with a *Treat* value of 1; we then take the companies with a high *EMJS* and the lowest *MG* as the control group, with a *Treat* value of 0. In the third step, we eliminate the companies in both groups that were not publicly punished by the China Securities Regulatory Commission (CSRC) for financial violations during the study period. In the fourth step, we assign a *Post* value of 1 to sample companies in the year after receiving public punishment by the CSRC for financial violations, and 0 otherwise.

The control variables are the same as in the baseline model, and we also include company and annual fixed effects in model (2). *Treat* and *Post* are not included in the regression model because they are absorbed by the company and year fixed effects, respectively. The estimated coefficient of *Treat*×*Post* is α_1 , which reflects the difference in the change in commercial credit between the treatment group and the control group from before to after financial misconduct by high-earning management companies was exposed.

Table 5 shows the results of this analysis. The estimated coefficients across the four regressions are significant and negative. Compared with the control group companies, which are less constrained by merchant gang governance, the treatment group companies exhibit a significantly greater decrease in commercial credit after financial misconduct is exposed. This result indicates a multilateral punishment mechanism within the merchant gangs. A high-earning management company in the treatment group will receive a more severe collective punishment (compared with the control group) after financial misconduct is exposed, which will greatly increase its transaction cost; this punishment thus forces all membership companies to reduce earnings management behaviour.

5.2. Heterogeneity analysis: impact of the conditions of multilateral punishment mechanism implementation

To support the causal mechanism (Armstrong et al., 2022; Leuz, 2022), we further examine the relationship between merchant gang governance and earnings management from the perspective of heterogeneity. Our logic is that after integration with the societal characteristics of acquaintance, face and relationship, the multilateral punishment mechanism embedded in merchant gang governance has a huge deterrent effect on and thus significantly reduces companies' earnings management behaviour. Theoretically,

the more complete the conditions of multilateral punishment mechanism implementation, the more obvious the restriction effect of merchant gang governance on earnings management.

5.2.1. Regional informal relationship network

Greif (1993) summarises the two most important conditions for implementation of the multilateral punishment mechanism. One condition is the strength of the informal relationship network. Informal relations are defined as all social relations outside the scope of hierarchical system (Ji, 2012). The stronger the internal informal network of a merchant gang, the higher the degree of trust between its members and the lower the transaction costs imposed on insiders. Accordingly, the members of a merchant gang have a strong incentive to impose severe multilateral penalties on defaulters to safeguard the premiums generated by insider transactions. Thus, the restriction effect of merchant gang governance on surplus management should be more obvious in this context. Furthermore, the strength of the informal network of relationships within a merchant gang is positively associated with the number of channels for and the speed of dissemination of internal information, as well as the level of trust among merchant group members regarding this internal information. Under these conditions, the multilateral punishment mechanism is likely to be activated in a timely and effective manner to strengthen the effect of merchant gang governance.

To test this hypothesis, we measure the strength of the regional informal network of relationships in two aspects. First, following Pan et al. (2019), we collect the number of genealogies per capita from the Ming dynasty to 1990, denoted as *CLAN*. Specifically, we review the *General Catalogue of Chinese Genealogy* published by Shanghai Classics Publishing House and collect quantitative data on genealogy in various regions of China. Cai et al. (2008) pointed out that the strength of an informal relationship network largely depends on the development of clan power in the region. Therefore, the larger the value of *CLAN*, the stronger the clan culture and the stronger the regional informal relationship network. Second, using relevant information from the 2015 Chinese General Social Survey, we construct a second index to measure the strength of the regional informal relationship network, denoted as *IN*. Specifically, question A30–6 of the survey asked, 'During the past year, how often did you engage in the following activity in your free time: meeting with relatives who do not live with you?' The response options were 'Every day', 'Several times a week', 'Several times a month', 'Several times a year or less' and 'Never' and were respectively assigned values of 1 to 5. Therefore, we calculate *IN* by averaging the scores of respondents in each province and taking the opposite number. A large value of *IN* represents a strong informal relationship network. According to our theoretical logic, the greater the intensity of the regional informal relationship network, the more complete the conditions of multilateral punishment mechanism implementation and the more significant the reduction of earnings management behaviour.

Table 6 reports the results of our tests of both aspects of informal network strength. We interact *MG* with *CLAN* in Column (1), and with *IN* in column (2). Consistent with the hypothesis, for both regressions, the coefficients of the interaction terms are significant and negative. Therefore, a stronger informal relationship network in the region where the merchant gang is located is associated with a more significant reduction of corporate earnings management behaviour, a result that further verifies our theoretical logic and mechanism analysis.

Table 6. Impact of the conditions of multilateral punishment mechanism implementation.

	Dependent variable = <i>EMJS</i>			
	Strength of the regional informal network of relationships		Degree of shared customs and social norms	
	(1)	(2)	(3)	(4)
<i>MG</i>	0.001 (0.1)	-0.030** (-2.3)	-0.000 (-0.4)	-0.027** (-2.8)
<i>CLAN</i>	-0.018 (-1.3)			
<i>MG</i> × <i>CLAN</i>	-0.006* (-1.8)			
<i>IN</i>		-0.037** (-2.7)		
<i>MG</i> × <i>IN</i>		-0.008*** (-3.0)		
<i>OPPCDIV</i>			-0.006 (-1.5)	
<i>MG</i> × <i>OPPCDIV</i>			-0.002* (-1.9)	
<i>CULTURETIG</i>				-0.069* (-1.9)
<i>MG</i> × <i>CULTURETIG</i>				-0.018** (-2.8)
<i>Baseline Controls</i>	Yes	Yes	Yes	Yes
<i>Board FE</i>	Yes	Yes	Yes	Yes
<i>Year FE</i>	Yes	Yes	Yes	Yes
<i>Industry FE</i>	Yes	Yes	Yes	Yes
<i>N</i>	15954	15954	15954	15954
<i>adj R</i> ²	0.240	0.241	0.146	0.241

5.2.2. Degree of shared regional customs and social norms

The second condition for multilateral punishment mechanism implementation, as summarised by Greif (1993), is the degree of shared customs and social norms. Customs and social norms are explicit forms of culture with significant impacts on the formation of an individual's moral judgement (Miller & Bersoff, 1994; Miller et al., 2017). A greater degree of shared customs and social norms in an area where a merchant gang is located indicates that the identification of immoral behaviour is more consistent and that multilateral punishment is more likely to be implemented to strengthen the effect of merchant gang governance.

To test this suggested relationship, we measure the sharing degree of regional customs and social norms from two aspects. First, we measure the cultural diversity in various regions of China using the dialect diversity index of cities at and above the prefecture level (Pan et al., 2017; Zhang & Fan, 2018), then multiply by -1, denoted as *OPPCDIV*. The more diverse the culture, the lower the sharing degree of regional customs and social norms. For example, Zhou (1997) described the differences in marriage customs in the Qing dynasty caused by cultural differences between the Northern Shaanxi, Guanzhong and Hannan regions in Shaanxi province. Of these regions, Northern Shaanxi attaches great importance to economic compensation for the bride's family and has very complicated procedures for marriage and other contracts. In contrast, Guanzhong uses an extremely brief contracting process that does not require birthday matching and marriage divination procedures, but places special emphasis on the wedding ceremony. In this region, the groom must not meet the bride in person, and the bride must wear heavy makeup and cover her face with

a white handkerchief. Relatives and friends who come to congratulate the couple must be dressed in white. In Hannan, the marriage customs are varied, and aspects of matriarchal clan society, such as a matrilineal son-in-law, are particularly respected in some alpine and forest areas. Therefore, the larger the value of *OPPCDIV*, the higher the sharing degree of regional customs and social norms. Second, Chua et al. (2019) directly measured the cultural closeness of Chinese provinces through a 3-year tracing survey of 11,662 respondents in 31 provinces. Cultural closeness, as defined by Chua et al. (2019), refers to the extent to which people are punished for violating rules and norms based on local culture. This measure is similar to our measure of the degree of sharing of regional customs and social norms. Therefore, we also use the cultural closeness of provinces in China as measured by Chua et al. (2019) to measure the sharing degree of regional customs and social norms; this is denoted as *CULTURETIG*. The greater the value of *CULTURETIG*, the higher the sharing degree of regional customs and social norms.

The results of these two tests are reported in columns (3) and (4) of Table 6. We interact *MG* with *OPPCDIV* in Column (3) and with *CULTURETIG* in column (4). For both regressions, the coefficients of the interaction terms are significant and negative. Consistent with the hypothesis, these results show that the higher the sharing degree of customs and social norms in the area where the merchant gang is located, the more significant the inhibitory effect of merchant gang governance on earnings management behaviour. Accordingly, we again verify our theoretical logic and mechanism analysis.

5.3. Impact of native management

A merchant gang gradually expands within the local circle, and its scope is not limited to those with a common geographic origin. However, there remains a clear difference between natives and non-natives. Although a non-native can enter a merchant gang through various approaches, the level of trust between natives is much stronger than that between outsiders because members of the former group have known each other since childhood. Therefore, compared with non-native managed companies, companies with native management benefit more from the low transaction costs associated with merchant gang governance and have a greater incentive to maintain the foundation of internal trust in their business. Therefore, we expect the negative relationship between merchant gang governance and earning management to be stronger for companies operated by native (vs. non-native) management. To test this, we construct the following DID model:

$$EMJS = \alpha_0 + \alpha_1 \times Treat \times Post + \alpha_i \times CONTROL + \lambda_{year} + \lambda_{Firm} + \xi \quad (8)$$

where *Treat* is a dummy variable used to distinguish between the treatment and control groups. If the chairman or CEO of a sample company changes from a non-native to a native during the study period, a value of 1 is assigned and the variable is denoted as *Treat_NTL*. If the chairman or CEO of the sample company changes from a native to a non-native during the study period, a value of 1 is assigned and the variable is denoted as *Treat_LTN*. If the sample company does not experience either of these changes during the study period (i.e. the control group), both *Treat_NTL* and *Treat_LTN* take the value of 0. *Post* is a dummy variable used to distinguish periods before and after these two changes. The value of *Post* is 1 if the year of the sample is after the change, and 0 otherwise; the corresponding variables are denoted as *Post_NTL* and *Post_LTN*.

Table 7. Impact of local management.

	Dependent variable = <i>EMJS</i>	
	Management shifts from a non-native to a native	Management shifts from a native to a non- native
	(1)	(2)
<i>Treat_NTL</i> × <i>Post_NTL</i>	-0.006** (-2.1)	
<i>Treat_LTN</i> × <i>Post_LTN</i>		0.004* (1.9)
<i>Baseline Controls</i>	Yes	Yes
<i>Year FE</i>	Yes	Yes
<i>Firm FE</i>	Yes	Yes
<i>N</i>	12939	13217
<i>adj R</i> ²	0.148	0.148

The control variables are the same as in the baseline regression model, and company and year fixed effects are also included in model (3). *Treat* and *Post* are not included in the regression because they are absorbed by the company and year fixed effects, respectively. The estimated coefficient of *Treat*×*Post*, α_1 , reflects the difference in the role of merchant gang governance between companies with native management and those with non-native management.

Table 7 reports the results of this test. Column (1) shows the results when management shifts from a non-native to a native. The coefficient of *Treat_NTL*×*Post_NTL* is significant and negative. This shows that when compared with the control companies, whose management does not change, the earnings management behaviour of the treatment companies is significantly reduced. Column (2) shows the results when management shifts from a native to a non-native. The coefficient of *Treat_LTN*×*Post_LTN* is significant and positive. Compared to the control companies with unchanged management, the earnings management behaviour of treated companies significantly increases. In summary, the results in Table 7 are consistent with our expectation, indicating that the effect of merchant gang governance is stronger for companies managed by natives compared to those managed by non-natives.

5.4. Influence of formal institution

In this paper, we prove that, as an informal institution, a merchant gang has an important governance effect. However, the influence of formal institutions cannot be ignored. We use two theoretical logics to explain how a formal institution might affect the role of merchant gang governance. First, a formal institution may have a negative effect on merchant gang governance, such that as the formal institution of companies and regions becomes more perfect, the demand for and dependence on merchant gangs for governance weakens. Second, a formal institution may have a positive effect on merchant gang governance. A more perfect formal institution helps to confirm and expose dishonest behaviours such as earnings management (Greif, 2012); thus, it can help trigger the multilateral punishment mechanism within a merchant gang in an objective and timely manner, thus improving the deterrence effect of this mechanism and strengthening the governance of the merchant gang.

Table 8. Influence of formal institution.

	Dependent variable= <i>EMUS</i>			
	External governance mechanism		Legal environment of the region	
	(1)	(2)	(3)	(4)
<i>MG</i>	0.000 (0.6)	-0.001** (-2.2)	0.001 (0.8)	0.001 (1.1)
<i>IIS</i>	-0.031*** (-6.7)			
<i>MG</i> × <i>IIS</i>	-0.004** (-2.6)			
<i>BIG4</i>		-0.016* (-2.0)		
<i>MG</i> × <i>BIG4</i>		-0.003* (-1.8)		
<i>LAWindex</i>			-0.013*** (-3.3)	
<i>MG</i> × <i>LAWindex</i>			-0.001* (-2.1)	
<i>LAWFIRM</i>				-0.024*** (-3.4)
<i>MG</i> × <i>LAWFIRM</i>				-0.005*** (-3.6)
<i>Baseline Controls</i>	Yes	Yes	Yes	Yes
<i>Board FE</i>	Yes	Yes	Yes	Yes
<i>Year FE</i>	Yes	Yes	Yes	Yes
<i>Industry FE</i>	Yes	Yes	Yes	Yes
<i>N</i>	15954	15954	15954	15954
<i>adj R</i> ²	0.148	0.146	0.147	0.147

To test these two theoretical logics, we explore the impact of the formal institution on the governance of merchant gangs in two aspects, using four proxy variables to measure the external formal institution of a company. The first aspect is the external governance mechanism of a company, which is measured using two proxies. One proxy is the shareholding ratio of institutional investors (*IIS*) at the end of the year. The other is whether the company is audited by a Big 4 auditing firm (*Big4*). The second aspect is the legal environment of the region where the company is located, which is also measured using two proxies. One proxy is the development of intermediary organisations and the legal institution environment index (*LAWindex*) in the province where the company is located. The other is the number of law firms per 10,000 people in the province where the company is located (*LAWFIRM*). Specifically, data on *IIS* and *BIG 4* are obtained from the CNRDS database. Data on *LAWindex* are obtained from the *Marketization Index of China's Provinces*, compiled by Wang et al. (2017). For *LAWFIRM*, web crawler technology is used to capture the registration information of all law firms in China.

Table 8 reports the results of this test. We interact *MG* with *IIS*, *BIG 4*, *LAWindex* and *LAWFIRM* and report the results in columns (1)–(4), respectively. The coefficients of the interaction terms in the four regressions are significant and negative, indicating that the more perfect the formal institution, the stronger the effect of merchant gang governance on earnings management behaviour. In other words, formal institutions enhance the effect of merchant gang governance.

6. Conclusions

Throughout the long river of history, merchant gangs have made a significant mark in China's economic field. Surprisingly, these merchant gangs, which had been dormant for nearly two centuries, have recently re-emerged and become increasingly active. What accounts for the formidable vitality of merchant gangs in China? Might they involve the coupling of a governance mechanism with Chinese culture? By integrating the multilateral punishment mechanism theory with the three major characteristics of Chinese society, namely acquaintance, face and relationship, and taking the perspective of earnings management, we analyse and test the internal mechanism of Chinese merchant gang governance for the first time. We report several findings. (1) Merchant gang governance can significantly reduce the degree of earnings management. (2) Compared with less affected companies, firms that are more affected by merchant gang governance are subject to harsher multilateral punishments when their financial misconduct is exposed. Moreover, the more complete the conditions of multilateral punishment mechanism implementation, the more obvious the effect of merchant gang governance on earnings management. In other words, multilateral punishment is the core governance mechanism of a merchant gang. (3) The merchant gang has a stronger governance effect on companies with native (vs. non-native) management, and formal institutions promote the effect of merchant gang governance.

Our paper provides the following policy implications. First, we show that in the economic field, Chinese merchant gangs play a very important role in governance. Therefore, we suggest that more attention be paid to the role of traditional, excellent governance modes, such as merchant gangs, to promote high-quality economic development.

Second, we reveal the important role of merchant gangs as an alternative governance mechanism when coupled with Chinese culture. Our paper supports the assertion by Allen et al. (2005) and Coles et al. (2008) that there is no one-size-fits-all model of corporate governance. Our conclusions also imply that it is both possible and urgently important for Chinese companies to escape the rut of mimicking British and American models of corporate governance and to establish a modern enterprise system coupled with Chinese culture.

Third, we reveal that multilateral punishment is the core governance mechanism of a merchant gang, and the completeness of the conditions under which the multilateral punishment mechanism is implemented affects the effectiveness of this governance. Therefore, we suggest that more effort is needed to improve the conditions for implementation of the multilateral punishment mechanism to give full play to the role of merchant gang governance. For example, we should emphasise the importance of traditional festivals, capitalise on the communication and propaganda roles of the mobile Internet, and increase both the strength of informal networks and the degree of sharing of customs and norms in Chinese society.

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