J Bus Ethics (2017) 143:353–386
DOI 10.1007/s10551-015-2765-3

Culture, Marketization, and Owner-Manager Agency Costs: A Case of Merchant Guild Culture in China

Xingqiang Du[1] · Jianying Weng[2] · Quan Zeng[1] · Hongmei Pei[1]

Received: 28 April 2015 / Accepted: 6 July 2015 / Published online: 28 July 2015

Abstract This study explores cultural influence on corporate behavior employing the case of merchant guild culture in China and further the moderating role of Marketization. Using hand-collected data on merchant guild culture, we find that merchant guild culture is significantly negatively associated with owner-manager agency costs, suggesting that merchant guild culture in ancient China still has its continuous and remarkable effects on managerial behavior in contemporary corporations. This finding also implies that merchant guild culture motivates managers to upgrade the efficiency of controlling operating costs, reduces agency conflicts between management and shareholders, and eventually mitigates owner-manager agency costs. Moreover, provincial Marketization level attenuates the negative association between merchant guild culture and owner-manager agency costs. Above results are robust to a variety of alternative measures of merchant guild culture and owner-manager agency costs. Furthermore, our findings are still valid after controlling for the potential endogeneity between merchant guild culture and owner-manager agency costs.

✉ Jianying Weng
jywengxmoc@163.com

Xingqiang Du
xqdu@xmu.edu.cn

Quan Zeng
xqduzeng@163.com

Hongmei Pei
phmxmu@163.com

[1] School of Management, Xiamen University, Xiamen 361005, Fujian, China

[2] Department of Business Administration, Xiamen Ocean Vocational College, Xiamen 361012, Fujian, People's Republic of China

Keywords Merchant guild culture · Marketization · Owner-manager agency costs · Expense ratio · Asset utilization ratio · China

Introduction

Agency relationship is naturally connected with owner-manager agency conflicts (Jensen and Meckling 1976), which result in unethical managerial behavior such as excessive salary and bonus, overinvestment for empire-building, and perks (Jensen 1986; Jensen and Meckling 1976; Du 2013). To alleviate information asymmetry between management and shareholders, mitigate unethical managerial behavior, and reduce owner-manager agency costs, a variety of mechanisms such as corporate governance, accounting and auditing systems, and ethical codes (culture) are introduced into contemporary enterprises (Bonn and Fisher 2005; Abdolmohammadi et al. 2003; Francis et al. 2011; Gaumnitz and Lere 2004; Jensen and Meckling 1976; Kurland 1995; Petrick and Quinn 2000; Sims and Brinkmann 2003; Watts 1977). However, according to the top-down approach in the institutional analysis framework (North 1990; Williamson 2000), the aforementioned mechanisms depend closely on the essential determinants, i.e., informal systems such as customs, traditions, norms, and religion, which are extremely stable and even keep almost unchanged for millennia (Williamson 2000). In this regard, scholars should pay their close attention to various informal systems and examine their impacts on owner-manager agency costs (Allen et al. 2005; North 1990; Williamson 2000).

Extant studies have documented a great deal of evidence about the impacts of informal systems such as religion and Confucianism on corporate decisions and

ethical behavior.[1] As for the association between cultural factors and ethical behavior, Du (2014b, c) documents that Confucianism as an important philosophy influences ethical behavior such as tunneling and board gender diversity. However, to our knowledge and literature in hand, scholars provide little evidence on the impacts of other informal systems on ethical behavior. At least, relevant to our study, merchant guild culture, as an important informal system, originated in ancient China and the medieval Europe, has been neglected for a long time.

In a nutshell, Chinese merchant guild culture mainly embodies *Chéngxìn* (honesty and credibility; 诚信), *Yìlì* (appropriateness/righteousness prior to benefits; 义利), and *Gǔrú* (Confucian businessman; 贾儒), which are validated to play the role of mitigating unethical behavior in ancient China (Golas 1977; Du 2014b, c; Zhang and Zhang 1993). Merchant guilds (also known as merchant groups or business guilds, *similarly hereinafter*), which extensively existed in the Chinese Ming and Qing dynasties and the medieval European countries, are viewed as the germination or beginning of contemporary enterprises (Zhang 2011). As a result, the principal–agent relationship and unethical managerial behavior extensively existed in ancient merchant guilds. In ancient merchant guilds, it is well known that merchant guild culture can effectively mitigate owner-manager agency costs. For example, merchant guild culture contains *Chéngxìn*, *Yìlì* and some important doctrines derived from Confucianism such as *Gǔrú*, which can motivate managers to behave themselves and restrain managers from unethical behavior. Considering the inheriting function of culture and spirit, we expect that merchant guild culture originated in ancient China has its peculiar value for business ethics in contemporary enterprises. However, few previous studies have focused on merchant guild culture to empirically investigate its influence on contemporary corporate behavior. In this study, we predict that merchant guild culture still exerts its uninterrupted influence in China and fill above gap by examining the mitigating effect of merchant guild culture on owner-manager agency costs.

It is a challenging task to capture and measure merchant guild culture. A branch of very thin literature conceptually and analytically discusses the origin of merchant guild culture and its influence (e.g., Brook 1981; Dessí and Ogilvie 2004; Hamilton 1979; Pearson 1994; etc.), but fails to provide systematic (empirical) evidence about the impacts of merchant guild culture on corporate behavior. Clearly, to better investigate the economic consequences of merchant guild culture, as well as whether and how merchant guild culture can mitigate owner-manager agency costs, researchers have to seek for the relatively impersonal or objective measure of merchant guild culture. In this study, borrowing ideas from the existing literature on religion, Confucianism, and finance (e.g., Du 2013, 2014b; El Ghoul et al. 2013; Loughran and Schultz 2005; John et al. 2011; etc.) and referring to the validated argument in previous literature that "the distance is not just a geographic concept and has its specific information contents and thus the geographic distance has important impacts on corporate behavior because different geographic distances shape the extent of information asymmetry" (Du 2014b, c; Loughran 2007; Loughran and Schultz 2005), we construct a set of geographic-proximity-based variables about merchant guild culture and further discuss their rationale, providing the feasibility of empirically investigating the influence of merchant guild culture on owner-manager agency costs.

For empirical tests, we construct a sample of 17,595 firm-year observations from the Chinese stock market for the period of 2001–2013 to examine the influence of merchant guild culture on owner-manager agency costs and investigate the moderating role of the provincial Marketization level. In brief, our findings reveal the following aspects: First, our study documents that merchant guild culture is significantly negatively associated with expense ratio, the proxy for owner-manager agency costs, suggesting that merchant guild culture still has continuous and remarkable effects on managerial behavior and thus motivates managers to upgrade the efficiency of controlling operating costs and reduces owner-manager agency conflicts. Second, Marketization attenuates the negative association between merchant guild culture and owner-manager agency costs. Third, above results are robust to alternative measures of merchant guild culture and owner-manager agency costs (e.g., asset utilization ratio). Finally, our findings are still valid after controlling for the potential endogeneity between merchant guild culture and owner-manager agency costs.

Our study contributes to the existing literature in several ways. First, our study firstly employs firm-level data to empirically investigate the impacts of merchant guild culture on owner-manager agency costs. Second, this study adds to the existing ethical literature on how to mitigate unethical behavior in contemporary enterprises and organizations by recognizing that merchant guild culture can alleviate owner-manager agency conflicts, mitigate unethical managerial behavior, and eventually reduce owner-manager agency costs. Third, this study firstly measures merchant guild culture based on the geographic proximity

[1] With regard to religious influence, previous literature has investigated the influence of religion or religiosity on business ethics such as ethical behavior, corporate environmental responsibility, corporate philanthropy, emergency helping, corporate irregularities, and earnings management (e.g., Conroy and Emerson 2004; Du 2013, 2014a; Du et al. 2014; Dyreng et al. 2012; Longenecker et al. 2004; McGuire et al. 2012; Weaver and Agle 2002; etc.).

between a firm and merchant guilds, providing an important and tentative viewpoint on the measurement of cultural factor. Finally, our findings lend important evidence to the argument about the relation between formal institutions and informal systems in Williamson (2000).

Our study also has some managerial implications. Our findings recognize the negative influence of merchant guild culture on owner-manager agency costs, suggesting that merchant guild culture still has its continuous impacts on contemporary corporate behavior. Moreover, we explore the mitigating role of provincial Marketization level, implying that the influence of merchant guild culture on owner-manager agency costs is less pronounced for firms located in regions with higher Marketization indexes than those located in regions with lower Marketization indexes. Finally, our findings have the potential implication for researchers to investigate the influence of guilds historically existed in Asia countries such as Korea and Japan on corporate behavior.

The remainder of this paper is organized as follows. In the second section, we introduce the institutional background and develop research hypotheses. In the third section, we illustrate empirical model specifications and variables. The fourth section reports sample construction, descriptive statistics, and Pearson correlation analysis. In the fifth section, we conduct main tests and report empirical analysis results. The sixth section conducts a variety of robustness checks based on different measures of merchant guild culture and owner-manager agency costs, respectively. In the seventh section, we discuss the potential endogeneity between merchant guild culture and owner-manager agency costs. In the eighth section, we discuss theoretical contributions and managerial implications of our findings. Finally, we summarize conclusions of this study.

Institutional Background and Hypotheses Development

Merchant Guild Culture in China

Merchant guilds (*Shang Bang*; 商帮) are also known as merchant groups or business guilds in ancient China. Historically, ten nationally famous merchant guilds, i.e., *Jin* (晋), *Hui* (徽), *Yue* (粤), *Min* (闽), *Yong* (甬), *Long You* (龙游), *Dong Ting* (洞庭), *Lu* (鲁), *Jiang You* (江佑), and *Shan* (□), existed in ancient China (Zhang 2011).[2] For example, about five hundred years ago, the footprints of *Jin* merchant guild had not only covered all over China but also expanded out to Europe (e.g., Portugal, Russia, etc.), Arabia, Japan, and Southeast Asia, "enjoying the same fame as or even surpassing the greatest Italian and Jewish merchants" (Zhang 2011). The scopes of business in *Jin* merchant guild included salt, grain, tea, cotton, silk, pawnshops, and loans. Especially, the *Piaohao* system (draft bank; 票号), which was created and developed by the *Jin* (Shanxi) merchant guild in 1823 (Zhang 2011) and had dominated banking activities in China for more than one century.

Merchant guilds, whose history in China can be traced back to the Song dynasty, reached their peaks in the Ming and Qing dynasties (Golas 1977). In the early stage, the majority of merchant guilds in China were traveling merchants, who roamed around and picked up commodities and then delivered them to other locations. Therefore, as a result, merchant guild culture was weak and vague. When some of merchants owned their relatively fixed sites/shops and operated via middlemen (Golas 1977), merchant guild culture gradually became clear and systematical. In this stage, a variety of merchants spontaneously united and formulated merchant guilds to resist against operational risk in non-home cities and mutually help each other in various ways (Brook 1981; Golas 1977; Liu 1988). In doing so, merchants established a set of generally accepted criteria of conduct as common knowledge that were statutorily required to be executed in the same merchant guild. Inch by inch and piece by piece, these criteria of conduct evolved into merchant guild culture. In ancient China, merchant guild cultures across ten nationally famous merchant guilds are different in some specific aspects; however, on the whole, they have common connotations in most aspects of ethics and culture (Golas 1977; Zhang and Zhang 1993) such as honesty and credibility, appropriateness, and moral qualities derived from Confucianism.

Accompanying with the development of merchant guilds, the connotations of merchant guild culture were gradually materialized and concretized. Moreover, the core contents of merchant guild culture such as *Chéngxìn* (诚信) and *Yìlì* (义利) were clearly brought forth and influenced conducts of a variety of stakeholders including managers in

[2] *Hui* (Anhui merchant guild) was one of the most successful merchant guilds in ancient China in terms of economic power, operation spectrum, capital amount, and talent. Deeply influenced by Confucianism, *Hui* valued *integrity and morality* in operations. *Yue* (Guangdong merchant guild) mainly engaged in foreign trade including flavors and wool products, as well as China's tea and silk products. After the end of the Opium War in 1842, *Yue* successfully changed itself into modern business not only in Guangdong but also in Hong Kong and Southeast Asia. *Yue* is a merchant guild of high-risk taking, courageous, pragmatic, and smart businessmen. *Min* (Fujian merchant guild) set up strongholds in the coastline areas, which ensured it to collect and hoard commodities and thus combined domestic trade with foreign trade. *Min* was one of the most influential merchant guilds at the end of the feudal period. Please refer to Zhang (2011) for the comprehensive introductions for all merchant guilds in ancient China.

the merchant guilds. Even more importantly, some merchant guilds like *Jin* (晋) broke through geographical restraint to spread all over the country and even overspread to other countries such as Russia, Japan, and other countries. As a result, merchant guild culture was disseminated in a wide range of territories and then was gradually recognized by more and more people, organizations, and stakeholders. In this regard, merchant guild culture had created a common social atmosphere or climate,[3] and thus, managers must be responsive to the moral or social norms that had been recognized by employees, customers, employers, and suppliers. Therefore, we predict that merchant guild culture can restrain managers from unethical behavior.

Next, naturally, our study needs to elaborate another problem about whether merchant guild culture, which was rooted in ancient China and historically existed in merchant guilds several hundreds years ago, still has its continuous influence on contemporary corporate behavior. First, theoretically, similar to religion and social norms, the culture of merchant guild as an informal system is always extremely stable for centuries (Williamson 2000), and thus, merchant guild culture in ancient China is prone to be inherited and continuously impacts ethical codes in contemporary enterprises. Second, Zhang (2011) argues and documents that merchant guild culture still exerts its uninterrupted impacts on firms in regions where ancient merchant guilds existed. Finally, Caijing (2005) also summarizes how merchant guild culture in ancient China uninterruptedly influences contemporary enterprises, including firms in provinces where ancient merchant guilds originated and firms located in regions with strong cultural atmosphere of merchant guild. In short, theoretically and empirically, one can expect the continuous influence of merchant guild culture in ancient China on contemporary firms.

"Merchant Guild Culture" and Owner-Manager Agency Costs (Hypothesis 1)

In merchant guild culture, *Chéngxìn* (honesty and credibility; 诚信) is of great importance. According to the connotations of merchant guild culture, managers should be honest and credible with shareholders, employees, customers, and suppliers. An honest and credible manager in a merchant guild values the reputation above his life, and thus, owner-manager agency conflicts in merchant guilds are relatively lower. *Chéngxìn* is composed of *Chéng* and *Xìn*. In terms of *Xìn*, it also means that one should keep to his/her word to obtain trust of others. Managers in merchant guilds and contemporary enterprises operate under the authorization of the shareholders and thus should faithfully fulfill their fiduciary responsibilities. However, it is likely that managers obtain private benefits via information advantage and at the expense of the interests of shareholders (Fama and Jensen 1983; Jensen and Meckling 1976) because of different utilities or objectives between managers and shareholders, and thus, unethical managerial behavior happens. As such, unethical managerial behavior that brings out higher owner-manager agency costs (conflicts) contradicts *Chéngxìn* and thus tramples "common knowledge" among members in merchant guilds and in the executive job market. Eventually, the value of human capitals of managers will be derogated. Therefore, managers should comply with *Chéngxìn* in merchant guild culture and stay away from unethical activities. As a result, *Chéngxìn* is expected to be able to mitigate owner-manager agency costs to some extent.

Moreover, *Yìlì* (appropriateness/righteousness prior to benefits; 义利) in merchant guild culture emphasizes appropriateness or righteousness over economic interests. In fact, *Yìlì* restrains managers from grabbing self-interest at the expense of shareholders. For hundreds of years, *Yìlì* had rooted in the hearts of managers in merchant guilds, and thus the ethical codes and culture of *Yìlì* can reduce the likelihood and the extent of unethical managerial behavior. *Yìlì* includes the connotations of *Yì* and *Lì*. More specifically, *Yì*, as an important ethical doctrine in Chinese society and in Confucianism, suggests that one should be able to "distinguish appropriate (good, right) behaviors from impertinent (bad, wrong) ways" (Du 2014b). According to the relationship between *Yì* and *Lì* (benefits) in merchant guild culture, a moral being or *JūnZǐ* (gentleman) should make money in a proper way and should not be self-interested at the expense of others. By parity of reasoning, managers in merchant guilds and contemporary enterprises should not grab private benefits at the expense of shareholders because owner-manager agency costs derived from unethical managerial behavior are contrary to *Yìlì*.

When *Chéngxìn* and *Yìlì* interact with Chinese cultural factors such as Confucianism, their impacts on managers are further amplified. In fact, merchant guild culture always advocates *Gǔrú* (Confucian businessman; 贾儒). Specifically, merchant guild culture accords great importance to Confucianism, and thus *Gǔrú* means and emphasizes that businessmen in merchant guilds should follow Confucian philosophy to operate. The core thoughts of Confucianism philosophy include the Five Constants (五常) (Berthrong 1998): Rén (humaneness, 仁), Yì (appropriateness, 义), Lǐ (propriety, 礼), Zhì (wisdom in thoughts and actions, 智), and Xìn (keeping to one's word, 信) (Du 2014b, c; Yao 2000). Confucianism is the dominating criterion of conduct in ancient China, and thus, once managers in merchant

[3] This argument can borrow direct support from the existing literature in religion, Confucianism, and management (Du 2014a, b, c; El Ghoul et al. 2013; Marquis et al. 2007). This branch of previous literature argues and documents the influence of social norms and social atmosphere on individual behavior and corporate decisions.

guilds run counter to the ethical philosophy of Confucianism, they will have no place in the community or even in ancient Chinese society. When the ethical philosophy of Confucianism is exerted into merchant guilds and becomes the core doctrine of merchant guild culture, the codes of ethics imposed on managers in merchant guilds are much stronger and more effective. In this regard, we predict the negative association between *Gŭrú* and owner-manager agency costs.

Furthermore, as argued by Bonn and Fisher (2005) and Thomsen (2001), codes of ethics can be considered as special governance mechanisms; firms should integrate ethical concerns into corporate governance, and thus, codes of ethics and corporate governance mechanisms interact, mutually complement and even reinforce. Therefore, to some extent, merchant guild culture can upgrade the level of corporate governance, which in turn reduce owner-manager agency costs

Overall, based on above discussion, the ethical connotations of merchant guild culture mitigate owner-manager agency costs. Therefore, we formulate Hypothesis 1 in an alternative form as below:

Hypothesis 1 Ceteris paribus, merchant guild culture is negatively associated with owner-manager agency costs.

The Moderating Role of Marketization (Hypothesis 2)

In Hypothesis 1, we focus on merchant guilds historically existed in ancient China to discuss and predict the mitigating role of merchant guild culture in owner-manager agency costs. However, merchant guild culture, after all, came into being several centuries ago in China. Therefore, it is undeniable that the influence of merchant guild culture is undergoing transmutation accompanying with the change of institutional environment in China, surrogated by provincial Marketization level (Fan et al. 2011; Jian and Wong 2010). In this regard, we further address the moderating role of Marketization, i.e., whether Marketization attenuates or reinforces the negative relation between merchant guild culture and owner-manager agency costs.

First, extant studies argue or document the positive associations between institutional environment (i.e., Marketization) and corporate governance (Fan et al. 2011; Jian and Wong 2010). Logically, one can rationally infer that, via the conduit of better corporate governance mechanisms, Marketization can reduce owner-manager agency conflicts and thus mitigate owner-manager agency costs.

Second, with regard to the substitutive effects or the reinforced effects between merchant guild culture and Marketization on mitigating owner-manager agency costs, our study can borrow direct support from the institutional analysis frameworks in Williamson (2000). There are four levels in Williamson (2000)'s framework: (1) informal institutions such as customs, traditions, norms, and religion; (2) institutional environment; (3) governance mechanisms such as contracts and transactions; and (4) resource allocation and employment. Clearly, merchant guild culture, as an important informal system, should be located in the first level. In addition, Marketization, as the proxy for institutional environment, should be classified into the second level. As such, according to Williamson (2000)'s framework and findings in Du (2014a) and Du et al. (2014), merchant guild culture should be always extremely stable for centuries, but Marketization should be responsive and hysteretic. More importantly, as Williamson (2000) suggests, merchant guild culture (informal systems) and Marketization (institutional environment) should be substitutive for each other when one of them is weak in a specific period. As a result, we predict the substitutive effects, rather than the reinforced effects, between merchant guild culture and Marketization on mitigating owner-manager agency costs.

Furthermore, focusing on other informal systems, extant studies (Du 2013, 2014c) document systematic evidence to show the substitutive effects between religion (Confucianism) and institutional environment (especially Marketization or its subcomponents). These findings in previous literature can lend important support to our conjecture about the substitutive effects between merchant guild culture and Marketization on the reduction of owner-manager agency costs.

Based on above discussions, we formulate Hypothesis 2 in an alternative form as below:

Hypothesis 2 Ceteris paribus, Marketization attenuates the negative association between merchant guild culture and owner-manager agency costs.

Empirical Model Specifications and Variables

Empirical Model Specification for Hypothesis 1

Hypothesis 1 predicts that merchant guild culture is negatively associated with owner-manager agency costs. To test Hypothesis 1, we estimate Eq. (1) to link owner-manager agency costs and merchant guild culture, firm-specific control variables, and other determinants:

$$\begin{aligned} AC\_ER = {} & \alpha_0 + \alpha_1 MGC\_R + \alpha_2 FIRST + \alpha_3 MAN\_SHR \\ & + \alpha_4 INDR + \alpha_5 DUAL + \alpha_6 BOARD + \alpha_7 MEET \\ & + \alpha_8 CEO\_CH + \alpha_9 REL + \alpha_{10} TOBIN'Q \\ & + \alpha_{11} SIZE + \alpha_{12} LEV + \alpha_{13} DA + \alpha_{14} LISTAGE \\ & + \alpha_{15} STATE + Industry\ Dummies \\ & + Year\ Dummies + \varepsilon. \end{aligned} \quad (1)$$

All the variables are defined in Appendix 1. In Eq. (1), the dependent variable is expense ratio with the label of *AC_ER*, the positive proxy for owner-manager agency costs. Following extant literature (Ang et al. 2000; Du 2013; Singh and Davidson 2003), in this study, expense ratio (*AC_ER*) is measured as the sum of sale expenses and administrative expenses in the year scaled by annual sales revenue (please refer to the subsections of "*Expense Ratio*" for details). Moreover, in Eq. (1), the main independent variable is *MGC_R*, the label for geographic-proximity-based variables of merchant guild culture in China, measured as the number of merchant guilds within a radius of *R* kilometers ($R = 100, 120, 140, 160, 180, 200$ km) around a firm's registered address (please refer to the subsections of "*Merchant Guild Culture*" for details).

In Eq. (1), if the coefficient on *MGC_R* ($R = 100, 120, 140, 160, 180, 200$ km) is negative and significant, Hypothesis 1 is supported by empirical evidence.

Furthermore, in this study, to isolate the influence of merchant guild culture (*MGC_R*) on owner-manager agency costs, we also follow previous studies (Ang et al. 2000; Du 2013; Singh and Davidson 2003) to specify and include a set of control variables in Eq. (1) as below: First, Du (2013) argues and documents the impacts of various corporate governance mechanisms on owner-manager agency costs, and thus, we incorporate seven variables such as the percentage of shares owned by the largest shareholder (*FIRST*), the percentage of shares held by top managers (*MAN_SHR*), the ratio of independent directors (*INDR*), managerial power (*DUAL*), board size (*BOARD*), the attendance of shareholders at the general meeting of shareholders (*MEET*), and an indicator variable about the change of CEO (*CEO_CH*) into Eq. (1). Second, the existing literature (Du 2013) documents that religion as a set of social norms can influence managerial behavior and reduce owner-manager agency costs, so we include a variable with the label of *REL* in Eq. (1) to control for the influence of religion in China on owner-manager agency costs. Third, we control three variables such as a firm's investment or growth opportunity (*TOBIN'Q*), firm size (*SIZE*), and financial leverage (*LEV*) in Eq. (1) because previous studies (Ang et al. 2000; Du 2013; Singh and Davidson 2003) argue and find that firm-specific financial characteristics impact owner-manager agency conflicts. Fourth, extant studies find that the contagion effects exist among different unethical activities (Koehn and Ueng 2010) and thus managers may cover their unethical behavior by manipulating a firm's financial statement, so we include a variable of *DA*, the label for discretional accruals, into Eq. (1) to capture the association between earnings management (low-quality earnings) and owner-manager agency costs. Fifth, following Du (2013), we also control for a variable of *LISTAGE* in Eq. (1) to isolate the influence of a firm's listed age on owner-manager agency costs. Sixth, prior literature (Du 2013) finds that owner-manager agency costs may be asymmetric between state-owned and non-state-owned enterprises because of different levels of corporate governance, and thus, we include *STATE* into Eq. (1) to control of the nature of the ultimate owner on owner-manager agency costs. Finally, year and industry fixed effects are included into Eq. (1).

Empirical Model Specification for Hypothesis 2

Hypothesis 2 predicts that the extent of Marketization in a province in which a firm is located attenuates the negative association between merchant guild culture and owner-manager agency costs. To test Hypothesis 2, we estimate the following Eq. (2) to link owner-manager agency costs (*AC_ER*) and merchant guild culture (*MGC_R*), provincial Marketization level (*MKT*), the interaction of *MGC_R* × *MKT*, firm-specific control variables, and other determinants:

$$\begin{aligned} AC\_ER = {} & \beta_0 + \beta_1 MGC\_R + \beta_2 MKT + \beta_3 MGC\_R \times MKT \\ & + \beta_4 FIRST + \beta_5 MAN\_SHR + \beta_6 INDR \\ & + \beta_7 DUAL + \beta_8 BOARD + \beta_9 MEET \\ & + \beta_{10} CEO\_CH + \beta_{11} REL + \beta_{12} TOBIN'Q \\ & + \beta_{13} SIZE + \beta_{14} LEV + \beta_{15} DA + \beta_{16} LISTAGE \\ & + \beta_{17} STATE + Industry\,Dummies \\ & + Year\,Dummies + \zeta. \end{aligned} \tag{2}$$

In Eq. (2), the dependent variable and the independent variable are still *AC_ER* and *MGC_R*, respectively. The moderating variable is *MKT*, which measures the extent of Marketization in a province in which a firm is located (please refer to the subsection of "Marketization" for details). In Eq. (2), if the coefficient on *MGC_R* × *MKT* is positive and significant, Hypothesis 2 is validated. Moreover, consistent with Hypothesis 1 and theoretical expectation, the coefficients on both *MGC_R* and *MKT* should be significantly negative. All control variables in Eq. (2) are the same as those in Eq. (1).

Expense Ratio (The Dependent Variable)

It is a challenging task to accurately capture and measure owner-manager agency costs because of its hidden characteristic, the difficulty of being observed, information asymmetry, and high monitoring costs (Jensen and Meckling 1976; Du 2013). Nevertheless, any unethical managerial activity has to be concealed in a firm's financial statements (Du 2013). As a result, it is difficult to directly observe and measure unethical managerial behavior, but it is feasible for researchers to estimate owner-manager

agency costs with the help of financial data in a firm's financial reports. Specifically, outsider shareholders and researchers judge whether and to what extent unethical managerial behavior exits in a firm by financial information that will reveal owner-manager agency costs such as excess perquisite consumption or ineffective deployment of assets. As the response, in this study, we adopt expense ratio as the proxy for owner-manager agency costs. Previous studies such as Ang et al. (2000), Du (2013), and Singh and Davidson (2003) can lend support to this proxy.

In this study, following extant studies (Ang et al. 2000; Du 2013; Singh and Davidson 2003), expense ratio is measured as operating expenses scaled by annual sales revenue, capturing the efficiency that management controls operating costs, including "excessive perquisite consumption and other direct agency costs." Therefore, higher expense ratio means more serious owner-manager agency conflicts and higher owner-manager agency costs. Moreover, following Ang et al. (2000) and Singh and Davidson (2003), we also employ assets utilization ratio (*AC_AUR*), an inverse proxy for owner-manager agency costs, measured by sales revenue in the year scaled by total assets, to conduct robustness checks.

Merchant Guild Culture (The Independent Variable)

In extant literature on merchant guild culture, the descriptive method is generally adopted (e.g., Brook 1981; Dessí and Ogilvie 2004; Hamilton 1979; Liu 1988; etc.). Moreover, there is also a branch of very thin literature to focus on mathematical analysis and/or historical evidence and discuss merchant guild culture (Grief et al. 1994; Pearson 1994). However, previous studies provide little empirical evidence on the determinants and economic consequences of merchant guild culture. In this study, inspired by extant studies in management, finance, and religion, especially literature on religion and Confucianism (e.g., Du 2013, 2014a, b, c; El Ghoul et al. 2013; Loughran and Schultz 2005; John et al. 2011; etc.), we employ a well-known equation from geographic information system (*GIS*) to compute and hand-collect data on merchant guild culture with the help of Google-earth map, following a set of procedures as below:

First, we collect and sort the registered address of each firm in a specific year based on the China Stock Market and Accounting Research (*CSMAR*).

Second, we use "*Google*-earth" to obtain the longitude and latitude of each firm's registered address in a specific year and the location of each merchant guild, respectively. According to Zhang and Zhang (1993), there are ten nationally famous merchant guilds in ancient China, i.e., *Jin* (晋) in Shanxi, *Hui* (徽) in Anhui, *Yue* (粤) in Guangdong, *Min* (闽) in Fujian, *Yong* (甬) in Zhejiang, *Long You* (龙游) in Zhejiang, *Dong Ting* (洞庭) in Jiangsu, *Lu* (鲁) in Shandong, *Jiang You* (江佑) in Jiangxi, and *Shan* (陕) in Shaanxi. The culture derived from ten nationally famous merchant guilds is considered to have potential influence on contemporary Chinese society. Figure 1 plots the longitude and latitude distributions of ten nationally famous merchant guilds and Chinese listed firms.

Third, using the following Eq. (3), we calculate the geographic distance between a firm's registered address in a specific year and the location of each merchant guild according to their respective longitudes and latitudes (Rising 2000; Du 2013, 2014a, b, c).

$$\mathrm{DIS} = \mathrm{RAD} \times \left(\frac{\pi}{2} - \arctan\left(\frac{\cos\alpha}{\sqrt{1-\cos^2\alpha}}\right)\right). \tag{3}$$

In Eq. (3), RAD denotes the *arc* length of per radian, computed as $\frac{40075.04}{360^\circ} \times \frac{180^\circ}{\pi}$ (40075.04 is the perimeter of the earth equator in kilometer and π denotes the circumference ratio). Also, α is the central angle between a firm and a merchant guild, which is calculated according to Eq. (4) as below:

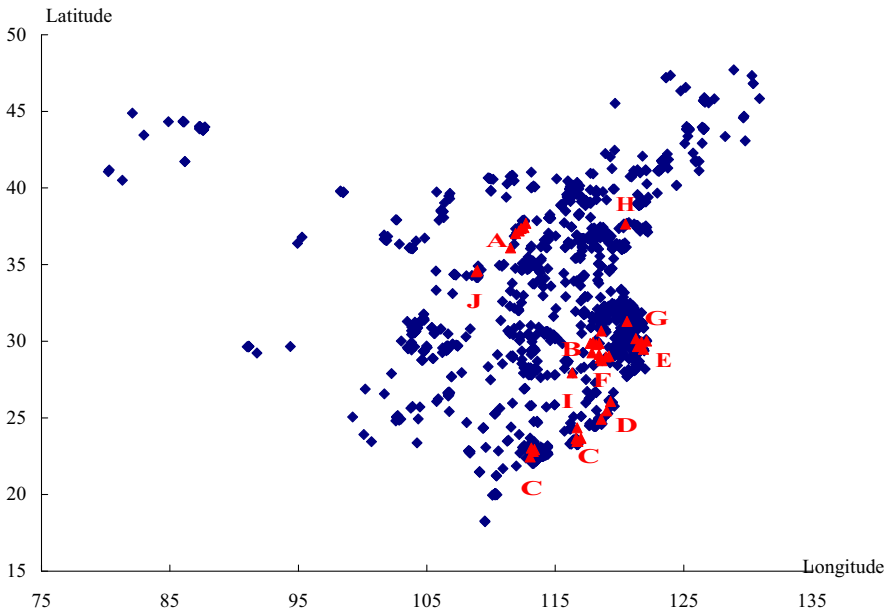
$$\cos\alpha = \sin\omega_F \times \sin\omega_M + \cos\omega_F \times \cos\omega_M \times \cos(\lambda_F - \lambda_M). \tag{4}$$

In Eq. (4), λ_F and ω_F (λ_M and ω_M) are the longitude and the latitude of a firm (a merchant guild), respectively.

Finally, similar to Du (2013, 2014a, b, c), using R kilometers as the threshold values or upper limits, we define a set of geographic-proximity-based variables of merchant guild culture with the label of *MGC_R* (R = 100, 120, 140, 160, 180, 200 km), which identify the number of merchant guilds within a radius of R kilometers around a listed firm's registered address, respectively.

Overall, above geographic-proximity-based variables of merchant guild culture are measured based on the distance between a firm and a merchant guild in nature, so it can capture the influence of merchant guilds located in two or more provinces or regions. Moreover, it can mitigate the risk of serious cross-sectional self-correlation of regression results (Du 2013).

Maybe one can question the rationale of the geographic-proximity-based variable of merchant guild culture. First, the rationale of the geographic-proximity-based variables of merchant guild culture can borrow support from extant studies in management, finance, and business ethics, especially literature on religion and Confucianism (e.g., Du 2013, 2014a, b, c; El Ghoul et al. 2013; Loughran and Schultz 2005; John et al. 2011; etc.), which construct geographic-proximity-based financial, regulatory, religion, and Confucianism variables, respectively. And more relevantly, scholars are inclined to accept the rationale of geographic-proximity-based religion and Confucianism variables in Du (2013, 2014a, b, c). If so, the geographic-



Code	A	B	C	D	E	F	G	H	I	J
English	Jin	Hui	Yue	Min	Yong	Long You	Dong Ting	Lu	Jiang You	Shan
Chinese	晋	徽	粤	闽	甬	龙游	洞庭	鲁	江佑	陕
Province	Shanxi	Anhui	Guangdong	Fujian	Zhejiang	Zhejiang	Jiangsu	Shandong	Jiangxi	Shaanxi

Fig. 1 The longitude and latitude distributions of ten nationally famous merchant guilds and Chinese listed firms. *Note* [1] In Fig. 1, "*filled triangle*" denotes merchant guilds and "*filled diamond*" denotes Chinese listed firms, respectively. As shown in Fig. 1, for some merchant guilds, there are two or more cradle lands, and thus, they display clustering phenomena around a point in the map except for "C." [2] In Fig. 1, there are the following one-to-one relationships between the sign of "*filled triangle*" (*letters*) and merchant guilds

proximity-based variables of merchant guild culture should be relatively appropriate, a beneficial attempt at least.

Second, extant studies can lend direct support or indirect evidence to the rationale of employing ten nationally famous merchant guilds to measure merchant guild culture. For example, Du (2014b) calculates geographic-proximity-based Confucianism variables based on seven Confucianism centers, El Ghoul et al. (2013) use six financial centers in Boston, Chicago, Los Angeles, New York, Philadelphia, and San Francisco to construct a set of variables of regulatory intensity, Du et al. (2014) only employ three regulatory centers in China to define monitoring intensity, and DeFond et al. (2011) identify the monitoring variables based on six SEC offices (a national office and five regional offices including Washington D.C., New York City, Miami, Chicago, Denver, and Los Angeles).

Overall, above discussions recognize the theoretical rationale of the geographic-proximity-based variables of merchant guild culture, as well as the support from the existing literature. Nonetheless, according to Eq. (3), we still construct two alternative sets of geographic-proximity-based variables of merchant guild culture with the labels of *MGC_DIS_N* and *MGC_DUM_R*, respectively. *MGC_DIS_N* ($N = 1, 2, 3 \ldots 10$) is computed based on the geographic distance between a firm and the nearest N nationally famous merchant guilds. *MGC_DUM_R* ($R = 100$, 120, 140, 160, 180, 200 km) is an indicator variable, equaling 1 if there are one or more merchant guilds within a radius of R kilometers around a firm's registered address and 0 otherwise.

Marketization (The Moderating Variable)

The Marketization index with the label of *MKT*, compiled by the National Economic Research Institute (Fan et al. 2011), "captures the extent of market development across different Chinese provinces." In brief, the Marketization index is composed of five components: relationship between government and markets, development of non-state sector in the economy, development of product markets, development of factor markets, and development of market intermediaries and legal environment. In Fan et al. (2011)'s index, "the minimum and maximum values of each component in the year of 1999 are assigned to be the base values, and are specified to be 0 and 10, respectively. The total Marketization index is the mean value of the scores of all components which are normalized by the corresponding base year values." In this study, we employ Marketization as the moderating variable to examine the substitutive or reinforced effects between merchant guild culture and Marketization on mitigating owner-manager agency costs.

Sample, Data Source, and Descriptive Statistics

Identification of Sample

The initial list in our sample includes all Chinese listed firms during the period of 2001–2013. We then select our sample based on the following criteria (Du 2013; Jiang and Wang 2008; see Panel A of Table 1): (1) We eliminate firms pertaining to the banking, insurance, and other financial industries because firms in these industries have strikingly different financial characteristics from firms in other industries. (2) We delete firm-year observations whose net assets are below *zero*, following Du (2013). (3) We exclude firm-year observations whose data on expense ratio (*AC_ER*) are unavailable. (4) We delete firm-year observations whose data on merchant guild culture (*MGC_R*) are unavailable. (5) We eliminate firm-year observations whose data on firm-specific control variables are unavailable. Finally, we obtain a sample of 17,595 observations covering 2364 firms. In this study, the top 1 % and the bottom 1 % of each continuous variable's distribution is winsorized to mitigate the potential influence of extreme observations on our regression results.[4]

Panel B reports the sample distribution by year and industry. Panel B of Table 1 shows there is no year or industry clustering in most industries except for C4 and C7.

Data Source

Data sources for variables used in our main tests are reported as below (see Appendix 1 for data sources in detail): (1) Based on China Stock Market and Accounting Research (*CSMAR*), a frequently used database in extant China studies (e.g., Jiang and Wang 2008; Wang et al. 2008; Du 2013, 2014a, b, c; etc.), we calculate and obtain data on *AC_ER* (*AC_AUR*), the positive (inverse) proxy for owner-manager agency costs, for main tests and robustness checks, respectively. (2) Inspired by extant studies in management, finance, and religion (Du 2013; El Ghoul et al. 2013; Loughran and Schultz 2005; John et al. 2011), we employ a well-known equation from geographic information system (*GIS*) to compute and hand-collect data on merchant guild culture (*MGC_R*, $R = 100, 120, 140, 160, 180, 200$ km) with the help of Google-earth map. (3) We obtain data on provincial Marketization level (*MKT*) from Fan et al. (2011). (4) We calculate data on discretional accruals (*DA*) based on Ball and Shivakumar (2006). (5) We adopt the same procedures as those computing *MGC_R* to hand-collect data on *REL*. (6) Other data except for the mentioned before are collected from *CSMAR*.

[4] Results are not qualitatively changed by deleting the top and bottom 1 % of the sample or by no winsorization.

Descriptive Statistics

Table 2 reports descriptive statistics of variables used in this study. The mean (median) value of *AC_ER*, the dependent variable, is 0.1757 (0.1239), suggesting that the average expense ratio is about 17.57 %. This finding is comparable with 0.1594 in Du (2013). The mean values of *MGC100*, *MGC120*, *MGC140*, *MGC160*, *MGC180*, and *MGC200* are 0.3845, 0.4788, 0.5818, 0.6560, 0.7484, and 0.8427, revealing the number of merchant guilds within a radius of 100, 120, 140, 160, 180, and 200 km around a firm's registered address, respectively. The mean value of *MKT* is 8.3160, indicating that the average provincial Marketization level is about 8.3160.

As for control variables, on average, the percentage of shares owned by the largest shareholder (*FIRST*) is about 37.85 %, the proportion of shares held by top managers (*MAN_SHR*) is about 4.07 %, the ratio of independent directors (*INDR*) is about 34.03 %, the same person simultaneously serves as the CEO and the chairman (*DUAL*) for about 15.65 % of Chinese listed firms, there are about nine directors ($e^{2.1996}$) in the boardroom (*BOARD*), the attendance of shareholders at the general meeting of shareholders (*MEET*) is about the 51.18 %, about 26.93 % of Chinese listed firms change CEOs (*CEO_CH*) in our sample period, for about 66.96 % firms, there are one or more religious sites within a radius of 100 km around their registered addresses (*REL*), the market value of assets over book value of assets (*TOBIN'Q*) is about 1.7993, firm size (*SIZE*) is about 2.43 billions RMB ($e^{21.6099}$), the financial leverage (*LEV*) is about 43.68 %, the discretional accruals (*DA*) is about 6.40 %, firm's listed age (*LISTAGE*) is about 9.7157, and the ultimate controlling shareholders in about 61.99 % of firms are central/local government agencies or government-controlled enterprises (*STATE*), respectively.

Pearson Correlation Analysis

Table 3 reports *Pearson* correlation analysis between the dependent variable (*AC_ER*) and the independent variable (*MGC_R*), the moderating variable (*MKT*), and control variables. As shown in Table 3, *AC_ER* is significantly negatively related with *MGC_R* ($R = 100, 120, 140, 160, 180, 200$ km) at 1 or 5 % level, suggesting that merchant guild culture mitigates owner-manager agency conflicts and reduces owner-manager agency costs. This finding provides preliminary support to Hypothesis 1. Moreover, the correlation coefficient between *AC_ER* and *MKT* is negative and significant at the 1 % level, revealing that owner-manager agency costs are significantly lower for firms located in provinces with higher Marketization levels than for firms located in provinces with lower Marketization levels. Furthermore, *MGC_R* ($R = 100, 120, 140, 160,$

Table 1 Sample selection

Panel A: firm-year observation selection process	
Initial observations	21,922
Eliminate firm-year observations pertaining to the banking, insurance, and other financial industries	(306)
Eliminate firm-year observations whose net assets are below *zero*	(519)
Eliminate firm-year observations whose data on expense ratio (*AC_ER*) are unavailable	(1647)
Eliminate firm-year observations whose data on merchant guild culture (*MGC_R*) are unavailable	(9)
Eliminate firm-year observations whose data on firm-specific control variables are unavailable	(1846)
Available firm-year observations	17,595
Unique firms	2364

Panel B: sample distribution by year and industry

Year industry		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total by industry	%
Agriculture, forestry, husbandry and fishery	A	19	27	28	27	29	31	32	33	33	34	35	48	49	425	2.42
Mining	B	8	12	15	15	17	17	19	21	35	36	41	47	46	329	1.87
Food and beverage	C0	44	42	46	50	52	50	52	52	62	63	69	82	89	753	4.28
Textile, garment manufacturing and products of leather and fur	C1	34	43	47	48	49	51	57	61	65	59	64	76	82	736	4.18
Wood and furniture	C2	1	2	2	2	2	2	3	3	3	6	8	9	12	55	0.31
Papermaking and printing	C3	16	18	20	17	20	20	22	27	29	30	35	39	43	336	1.91
Petroleum, chemical, plastics, and rubber products	C4	100	117	126	127	129	127	133	143	149	159	166	214	251	1941	11.03
Electronics	C5	24	28	31	34	39	44	45	49	66	72	78	113	130	753	4.28
Metal and non-metal	C6	81	90	95	105	106	110	115	125	128	128	133	170	186	1572	8.94
Machinery, equipment, and instrument manufacturing	C7	139	153	167	173	177	187	190	202	225	238	278	374	441	2944	16.73
Medicine and biological products manufacturing	C8	49	60	67	71	76	86	87	89	89	88	103	123	139	1127	6.41
Other manufacturing	C9	10	12	13	14	13	13	17	19	22	22	23	26	29	233	1.32
Production and supply of electricity, steam and tap water	D	24	32	37	39	40	47	58	59	60	63	64	66	69	658	3.74
Construction	E	14	15	15	17	19	22	26	30	33	30	33	40	49	343	1.95
Transportation and warehousing	F	18	25	32	30	34	35	52	53	56	54	58	70	67	584	3.32
Information technology	G	48	62	62	62	68	65	72	79	82	88	116	165	194	1163	6.61
Wholesale and retail	H	75	83	84	84	82	81	84	83	86	96	100	107	118	1163	6.61
Real estate	J	35	48	52	53	53	53	58	64	82	93	100	102	103	896	5.09
Social services	K	31	34	32	34	33	33	36	38	43	44	53	64	67	542	3.08

Table 1 continued

Panel B: sample distribution by year and industry

Year industry		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total by industry	%
Communication and culture	L	12	10	10	9	9	8	7	6	9	11	17	23	31	162	0.92
Conglomerates	M	79	72	73	72	68	66	70	68	67	62	59	61	63	880	5.00
Total by year		861	985	1054	1083	1115	1148	1235	1304	1424	1476	1633	2019	2258	17,595	
%		4.89	5.60	5.99	6.16	6.34	6.52	7.02	7.41	8.09	8.39	9.28	11.48	12.83		100

180, 200 km) is significantly positively related with *MKT*. Above results motivate us to further address the interactive effects between merchant guild culture and Marketization on mitigating owner-manager agency costs.

As for the correlation between owner-manager agency costs (*AC_ER*) and controlling variables, results in Table 3 show that *AC_ER* is significantly positively (negatively) related with *MAN_SHR*, *DUAL*, *CEO_CH*, *TOBIN'Q*, and *DA* (*FIRST*, *INDR*, *BOARD*, *MEET*, *REL*, *SIZE*, *LEV*, *LISTAGE*, and *STATE*), respectively, suggesting the necessity to include above control variables when we examine the influence of merchant guild culture on owner-manager agency costs. Moreover, as expected, the coefficients of pairwise correlation among control variables are generally low, suggesting no serious multicollinearity when we include these variables in regressions simultaneously.[5]

Empirical results

Multivariate Test of Hypothesis 1

Table 4 presents results of Hypothesis 1, which predicts the negative association between merchant guild culture and owner-manager agency costs. All reported t statistics are based on standard errors adjusted for clustering at the firm level and the year level (Petersen 2009, *similarly hereinafter).*

As shown in Table 4, the coefficients on *MGC_R* ($R = 100$, 120, 140, 160, 180, 200 km) are all negative and significant (−0.0138 with $t = -2.45$, −0.0078 with $t = -2.17$, −0.0100 with $t = -2.51$, −0.0087 with $t = -2.28$, −0.0088 with $t = -2.64$, and −0.0106 with $t = -3.41$, respectively). These results reveal that merchant guild culture is significantly negatively associated with expense ratio (*AC_ER*), the proxy for owner-manager agency costs, providing strong evidence to Hypothesis 1. Moreover, these findings echo the argument in extant literature that merchant guild culture historically existed in ancient China still exerts the uninterrupted and remarkable influence on contemporary corporate behavior and managerial behavior (Zhang 2011), suggesting that merchant guild culture motivates top managers in contemporary Chinese enterprises to upgrade the efficiency of controlling operating costs, reduces owner-manager agency conflicts, and eventually mitigates owner-manager agency

[5] In addition, we also employ the variance inflation factors and condition indices to diagnose the multicollinearity among variables used in our study, respectively. Non-tabulated results show that the largest condition index (or intercept-adjusted condition index) is far less than 10, suggesting that there is no serious multicollinearity in our empirical models (Belsley 1991; Belsley et al. 1980).

Table 2 Descriptive statistics

Variable	*N*	Mean	SD	Min	*Q*1	Median	*Q*3	Max
AC_ER	17,595	0.1757	0.2398	0.0026	0.0758	0.1239	0.1970	4.3235
*MGC*100	17,595	0.3845	0.5128	0	0	0	1	2
*MGC*120	17,595	0.4788	0.6181	0	0	0	1	2
*MGC*140	17,595	0.5818	0.7471	0	0	0	1	3
*MGC*160	17,595	0.6560	0.8292	0	0	0	1	4
*MGC*180	17,595	0.7484	0.9335	0	0	0	1	4
*MGC*200	17,595	0.8427	1.0093	0	0	1	1	4
MKT	17,595	8.3160	2.2530	0.3300	6.7500	8.3300	10.5500	11.7100
FIRST	17,595	0.3785	0.1614	0.0843	0.2500	0.3571	0.5013	0.8132
MAN_SHR	17,595	0.0407	0.1269	0.0000	0.0000	0.0001	0.0006	0.7042
INDR	17,595	0.3403	0.0938	0.0000	0.3333	0.3333	0.3750	1.0000
DUAL	17,595	0.1565	0.3633	0	0	0	0	1
BOARD	17,595	2.1996	0.2157	1.0986	2.0794	2.1972	2.3026	2.8332
MEET	17,595	0.5118	0.1596	0.1183	0.3971	0.5215	0.6332	1.0000
CEO_CH	17,595	0.2693	0.4436	0	0	0	1	1
REL	17,595	0.6696	0.4704	0	0	1	1	1
TOBIN'Q	17,595	1.7993	1.1366	0.8847	1.1651	1.4289	1.9714	13.5112
SIZE	17,595	21.6099	1.1955	18.2636	20.7962	21.4682	22.2532	26.9531
LEV	17,595	0.4368	0.2597	0.0000	0.2335	0.4715	0.6456	0.9162
DA	17,595	0.0640	0.1219	0.0000	0.0193	0.0417	0.0791	8.5160
LISTAGE	17,595	9.7157	4.7972	2	6	9	13	24
STATE	17,595	0.6199	0.4854	0	0	1	1	1

All the variables are defined in Appendix 1

costs.[6] Furthermore, the coefficient estimates on *MGC_R* ($R = 100, 120, 140, 160, 180, 200$ km) imply that expense ratio reduces by about 0.71, 0.48, 0.75, 0.72, 0.82, and 1.07 % on average accompanying with one standard deviation increases in *MGC100*, *MGC120*, *MGC140*, *MGC160*, *MGC180*, and *MGC200*, equaling about 4.04, 2.73, 4.27, 4.10, 4.67, and 6.09 % of the mean value of *AC_ER*, respectively. Clearly, these amounts are economically significant.

As for the signs and significances of control variables, it is worthy noting the following aspects. (1) The coefficients on *FIRST* are all negative and significant in Columns (1)–(6), suggesting that higher percentage of shares can provide the largest shareholder with sufficient motivation to monitor management and thus reduce owner-manager agency costs (Du 2013). Also, this finding can borrow support from extant studies (e.g., Du 2013). (2) The coefficients on *DUAL* in Columns (1)–(6) are all significantly positive, indicating that higher managerial power, surrogated by a dummy variable which indicates whether the same persons serve as CEO and the chairman simultaneously, brings out higher owner-manager agency costs.[7] These results echo the finding in Du (2013). (3) *CEO_CH* has a positive and significant coefficient in each column, revealing the positive association between owner-manager agency costs and a firm's changing its CEO. (4) The coefficients on *TOBIN'Q* in Columns (1)–(6) are all significantly positive, suggesting that owner-manager agency costs are significantly higher for a firm with higher investment or growth opportunity than those with lower investment or growth

[6] Though non-tabulated for brevity, we follow Du (2013) to conduct two additional checks: First, Fig. 1 shows that ten nationally famous merchant guilds do not distribute equally across China mainland. As the response, we employ two reduced samples to re-estimate Eq. (1) and Eq. (2): (1) we exclude firms in five autonomous regions of minority nationalities and (2) we delete firms in provinces, municipalities, and autonomous regions without any nationally famous merchant guilds. Non-tabulated results are qualitatively similar to those in Tables 4 and 5 and validate Hypotheses 1 and 2 again. Second, as shown in Fig. 1, for all ten nationally famous merchant guilds, five of them are located in coastal developed areas. This characteristic motivates us to re-consider whether the locations of nationally famous merchant guilds are proxies for urbanization. Therefore, we examine the association between nationally famous merchant guilds and GDP *per capita*, the proxy for urbanization, and we do not find significant association between nationally famous merchant guilds and GDP *per capita*. Above findings, taken together, reinforce the causality between merchant guild culture and owner-manager agency costs in our study to some extent.

[7] Extant literature (Bebchuk et al. 2002; Core et al. 2008; Du 2013) argues that one person will have more managerial power if he/she serves as the CEO and the chairman of the board simultaneously.

Table 3 Pearson correlation matrix

Variable		(1)	(2)	(3)	(4)	(5)	(6)
AC_ER	(1)	1					
*MGC*100	(2)	−0.0294 (0.0001)	1				
*MGC*120	(3)	−0.0152 (0.0439)	0.8721 (<.0001)	1			
*MGC*140	(4)	−0.0310 (<.0001)	0.7779 (<.0001)	0.9125 (<.0001)	1		
*MGC*160	(5)	−0.0268 (0.0004)	0.6955 (<.0001)	0.8495 (<.0001)	0.9406 (<.0001)	1	
*MGC*180	(6)	−0.0341 (<.0001)	0.5939 (<.0001)	0.7733 (<.0001)	0.8810 (<.0001)	0.9444 (<.0001)	1
*MGC*200	(7)	−0.0493 (<.0001)	0.5762 (<.0001)	0.7315 (<.0001)	0.8300 (<.0001)	0.9016 (<.0001)	0.9547 (<.0001)
MKT	(8)	−0.0812 (<.0001)	0.5001 (<.0001)	0.5614 (<.0001)	0.5944 (<.0001)	0.5890 (<.0001)	0.5685 (<.0001)
FIRST	(9)	−0.1328 (<.0001)	−0.0215 (0.0043)	−0.0302 (0.0001)	−0.0120 (0.1107)	−0.0192 (0.0108)	−0.0152 (0.0441)
MAN_SHR	(10)	0.0328 (<.0001)	0.1041 (<.0001)	0.1013 (<.0001)	0.0910 (<.0001)	0.1019 (<.0001)	0.1031 (<.0001)
INDR	(11)	−0.0661 (<.0001)	0.0241 (0.0014)	0.0314 (<.0001)	0.0259 (0.0006)	0.0257 (0.0006)	0.0278 (0.0002)
DUAL	(12)	0.0645 (<.0001)	0.0297 (0.0001)	0.0233 (0.0020)	0.0130 (0.0837)	0.0132 (0.0801)	0.0189 (0.0123)
BOARD	(13)	−0.0652 (<.0001)	−0.0248 (0.0010)	−0.0300 (0.0001)	−0.0191 (0.0112)	−0.0282 (0.0002)	−0.0229 (0.0024)
MEET	(14)	−0.0796 (<.0001)	0.0274 (0.0003)	0.0219 (0.0037)	0.0239 (0.0015)	0.0242 (0.0013)	0.0264 (0.0005)
CEO_CH	(15)	0.0439 (<.0001)	−0.0268 (0.0004)	−0.0292 (0.0001)	−0.0309 (<.0001)	−0.0348 (<.0001)	−0.0396 (<.0001)
REL	(16)	−0.0172 (0.0225)	0.2202 (<.0001)	0.2358 (<.0001)	0.2449 (<.0001)	0.2335 (<.0001)	0.2092 (<.0001)
TOBIN'Q	(17)	0.1556 (<.0001)	0.0004 (0.9599)	0.0196 (0.0094)	0.0142 (0.0604)	0.0087 (0.2489)	0.0042 (0.5773)
SIZE	(18)	−0.2662 (<.0001)	0.0000 (0.9982)	−0.0002 (0.9781)	0.0170 (0.0242)	−0.0016 (0.8350)	0.0012 (0.8772)
LEV	(19)	−0.0647 (<.0001)	−0.0185 (0.0140)	−0.0258 (0.0006)	−0.0290 (0.0001)	−0.0383 (<.0001)	−0.0484 (<.0001)
DA	(20)	0.0762 (<.0001)	0.0022 (0.7677)	0.0086 (0.2527)	0.0083 (0.2702)	0.0072 (0.3375)	0.0056 (0.4556)
LISTAGE	(21)	−0.0269 (0.0004)	0.0519 (<.0001)	0.0714 (<.0001)	0.0879 (<.0001)	0.0647 (<.0001)	0.0468 (<.0001)
STATE	(22)	−0.1090 (<.0001)	−0.1255 (<.0001)	−0.1297 (<.0001)	−0.1044 (<.0001)	−0.1109 (<.0001)	−0.1093 (<.0001)

Variable		(7)	(8)	(9)	(10)	(11)	(12)
AC_ER	(1)						
*MGC*100	(2)						
*MGC*120	(3)						
*MGC*140	(4)						
*MGC*160	(5)						
*MGC*180	(6)						
*MGC*200	(7)	1					
MKT	(8)	0.5730 (<.0001)	1				
FIRST	(9)	−0.0128 (0.0890)	−0.0760 (<.0001)	1			
MAN_SHR	(10)	0.1127 (<.0001)	0.2128 (<.0001)	−0.1131 (<.0001)	1		
INDR	(11)	0.0323 (<.0001)	0.3014 (<.0001)	−0.0843 (<.0001)	0.1222 (<.0001)	1	
DUAL	(12)	0.0231 (0.0022)	0.0990 (<.0001)	−0.0883 (<.0001)	0.1967 (<.0001)	0.0765 (<.0001)	1
BOARD	(13)	−0.0322 (<.0001)	−0.0816 (<.0001)	0.0303 (0.0001)	−0.1307 (<.0001)	−0.2599 (<.0001)	−0.1190 (<.0001)
MEET	(14)	0.0319 (<.0001)	−0.0386 (<.0001)	0.6446 (<.0001)	0.1411 (<.0001)	−0.1094 (<.0001)	−0.0358 (<.0001)
CEO_CH	(15)	−0.0467 (<.0001)	−0.0639 (<.0001)	0.0157 (0.0376)	−0.0764 (<.0001)	−0.0113 (0.1328)	−0.0739 (<.0001)
REL	(16)	0.2132 (<.0001)	0.2209 (<.0001)	0.0599 (<.0001)	−0.0702 (<.0001)	−0.0615 (<.0001)	−0.0401 (<.0001)
TOBIN'Q	(17)	−0.0100 (0.1834)	0.0935 (<.0001)	−0.1769 (<.0001)	0.0208 (0.0059)	0.0628 (<.0001)	0.0758 (<.0001)
SIZE	(18)	0.0046 (0.5391)	0.1558 (<.0001)	0.2161 (<.0001)	−0.1065 (<.0001)	0.1535 (<.0001)	−0.0920 (<.0001)
LEV	(19)	−0.0448 (<.0001)	−0.1542 (<.0001)	0.0065 (0.3883)	−0.1558 (<.0001)	−0.1120 (<.0001)	−0.0620 (<.0001)
DA	(20)	0.0023 (0.7592)	0.0372 (<.0001)	−0.0227 (0.0026)	0.0105 (0.1648)	0.0293 (0.0001)	0.0236 (0.0017)
LISTAGE	(21)	0.0228 (0.0025)	0.1881 (<.0001)	−0.1723 (<.0001)	−0.3600 (<.0001)	0.1951 (<.0001)	−0.0893 (<.0001)
STATE	(22)	−0.1263 (<.0001)	−0.2007 (<.0001)	0.2633 (<.0001)	−0.3894 (<.0001)	−0.1434 (<.0001)	−0.2071 (<.0001)

Table 3 continued

Variable		(13)	(14)	(15)	(16)	(17)
AC_ER	(1)					
*MGC*100	(2)					
*MGC*120	(3)					
*MGC*140	(4)					
*MGC*160	(5)					
*MGC*180	(6)					
*MGC*200	(7)					
MKT	(8)					
FIRST	(9)					
MAN_SHR	(10)					
INDR	(11)					
DUAL	(12)					
BOARD	(13)	1				
MEET	(14)	0.1015 (<.0001)	1			
CEO_CH	(15)	−0.0269 (0.0004)	−0.0112 (0.1383)	1		
REL	(16)	0.0487 (<.0001)	0.0472 (<.0001)	0.0105 (0.1625)	1	
TOBIN'Q	(17)	−0.1183 (<.0001)	−0.1851 (<.0001)	−0.0123 (0.1036)	−0.0349 (<.0001)	1
SIZE	(18)	0.2121 (<.0001)	0.1299 (<.0001)	−0.0386 (<.0001)	−0.0317 (<.0001)	−0.3282 (<.0001)
LEV	(19)	0.0818 (<.0001)	−0.0208 (0.0059)	0.0233 (0.0020)	−0.0008 (0.9128)	−0.2417 (<.0001)
DA	(20)	−0.0558 (<.0001)	−0.0334 (<.0001)	0.0127 (0.0927)	−0.0118 (0.1179)	0.1080 (<.0001)
LISTAGE	(21)	−0.0391 (<.0001)	−0.4229 (<.0001)	0.0390 (<.0001)	−0.0055 (0.4666)	0.1361 (<.0001)
STATE	(22)	0.2145 (<.0001)	0.0871 (<.0001)	0.0452 (<.0001)	0.0719 (<.0001)	−0.1521 (<.0001)

Variable		(18)	(19)	(20)	(21)	(22)
AC_ER	(1)					
*MGC*100	(2)					
*MGC*120	(3)					
*MGC*140	(4)					
*MGC*160	(5)					
*MGC*180	(6)					
*MGC*200	(7)					
MKT	(8)					
FIRST	(9)					
MAN_SHR	(10)					
INDR	(11)					
DUAL	(12)					
BOARD	(13)					
MEET	(14)					
CEO_CH	(15)					
REL	(16)					
TOBIN'Q	(17)					
SIZE	(18)	1				
LEV	(19)	0.1336 (<.0001)	1			
DA	(20)	−0.0491 (<.0001)	−0.0460 (<.0001)	1		
LISTAGE	(21)	0.1978 (<.0001)	−0.0217 (0.0040)	0.0629 (<.0001)	1	
STATE	(22)	0.2165 (<.0001)	0.0677 (<.0001)	−0.0720 (<.0001)	0.1432 (<.0001)	1

p value is presented in parentheses. All the variables are defined in Appendix 1

Table 4 Regression results of owner-manager agency costs on merchant guild culture and other determinants (Hypothesis 1)

Variable	The dependent variable: expense ratio (*AC_ER*)					
	(1)		(2)		(3)	
	$R = 100$ km		$R = 120$ km		$R = 140$ km	
	Coefficient	*t* value	Coefficient	*t* value	Coefficient	*t* value
MGC_R	−0.0138**	−2.45	−0.0078**	−2.17	−0.0100**	−2.51
FIRST	−0.1189***	−5.56	−0.1190***	−5.57	−0.1183***	−5.53
MAN_SHR	0.0239	1.25	0.0228	1.16	0.0252	1.30
INDR	−0.0643	−1.22	−0.0633	−1.20	−0.0634	−1.21
DUAL	0.0197**	2.29	0.0196**	2.28	0.0195**	2.28
BOARD	−0.0214	−1.16	−0.0216	−1.17	−0.0213	−1.16
MEET	0.0003	0.01	−0.0005	−0.02	0.0006	0.02
CEO_CH	0.0214***	3.49	0.0214***	3.50	0.0212***	3.50
REL	−0.0065	−0.73	−0.0078	−0.91	−0.0060	−0.68
TOBIN'Q	0.0170***	4.30	0.0172***	4.32	0.0172***	4.34
SIZE	−0.0315***	−5.44	−0.0314***	−5.40	−0.0313***	−5.44
LEV	−0.0198	−1.14	−0.0200	−1.16	−0.0198	−1.14
DA	0.1140	1.51	0.1144	1.51	0.1139	1.50
LISTAGE	0.0016*	1.78	0.0015*	1.76	0.0016*	1.80
STATE	−0.0221***	−2.87	−0.0217***	−2.85	−0.0219***	−2.87
Constant	1.0058***	6.31	1.0045***	6.27	1.0001***	6.32
Industry	Control		Control		Control	
Year	Control		Control		Control	
Observations	17,595		17,595		17,595	
Adjusted R^2	0.1309		0.1305		0.1310	
F (*p* value)	51.19***(<.0001)		51.25***(<.0001)		51.15***(<.0001)	
Variable	The dependent variable: expense ratio (*AC_ER*)					
	(4)		(5)		(6)	
	$R = 160$ km		$R = 180$ km		$R = 200$ km	
	Coefficient	*t* value	Coefficient	*t* value	Coefficient	*t* value
MGC_R	−0.0087**	−2.28	−0.0088***	−2.64	−0.0106***	−3.41
FIRST	−0.1187***	−5.55	−0.1184***	−5.53	−0.1183***	−5.51
MAN_SHR	0.0246	1.26	0.0249	1.28	0.0255	1.33
INDR	−0.0637	−1.22	−0.0630	−1.22	−0.0636	−1.24
DUAL	0.0194**	2.27	0.0195**	2.28	0.0194**	2.27
BOARD	−0.0215	−1.18	−0.0213	−1.17	−0.0217	−1.19
MEET	0.0003	0.01	0.0003	0.01	0.0010	0.04
CEO_CH	0.0212***	3.52	0.0211***	3.51	0.0208***	3.48
REL	−0.0063	−0.72	−0.0063	−0.72	−0.0046	−0.52
TOBIN'Q	0.0171***	4.31	0.0171***	4.31	0.0169***	4.28
SIZE	−0.0315***	−5.42	−0.0314***	−5.43	−0.0314***	−5.45
LEV	−0.0199	−1.15	−0.0202	−1.17	−0.0201	−1.17
DA	0.1140	1.50	0.1140	1.50	0.1136	1.50
LISTAGE	0.0016*	1.76	0.0016*	1.76	0.0015*	1.75
STATE	−0.0218***	−2.88	−0.0220***	−2.91	−0.0228***	−3.00
Constant	1.0041***	6.31	1.0035***	6.31	1.0038***	6.33
Industry	Control		Control		Control	

Table 4 continued

Variable	The dependent variable: expense ratio (*AC_ER*)					
	(4)		(5)		(6)	
	$R = 160$ km		$R = 180$ km		$R = 200$ km	
	Coefficient	*t* value	Coefficient	*t* value	Coefficient	*t* value
Year	Control		Control		Control	
Observations	17,595		17,595		17,595	
Adjusted R^2	0.1309		0.1312		0.1319	
F (*p* value)	51.07***(<.0001)		51.13***(<.0001)		51.30***(<.0001)	

***,**, and * represent the 1, 5, and 10 % levels of significance, respectively, for two-tailed tests. All reported *t* statistics are based on robust standard errors clustering at firm and year level (Petersen 2009). All the variables are defined in Appendix 1

opportunity. (5) *SIZE* has a significantly negative coefficient in each column, consistent with the finding in Du (2013) and meaning the negative relation between firm size and owner-manager agency costs. (6) The coefficients on *LISTAGE* in Columns (1)–(6) are all significantly positive, implying that owner-manager agency costs are more pronounced for elder firms than for younger firms on the whole. (7) *STATE* has a significant and negative coefficient in each case, suggesting that state-owned enterprises are confronted with less owner-manager agency costs than non-state-owned enterprises. This finding can borrow somewhat support from Du (2013).

Multivariate Test of Hypothesis 2

In Hypothesis 2, we predict that Marketization attenuates the negative association between merchant guild culture and owner-manager agency costs. Table 5 reports results of Hypothesis 2.

As shown in Table 5, all the coefficients on *MGC_R* ($R = 100$, 120, 140, 160, 180, 200 km) are still significantly negative at the 1 % level (−0.0707 with $t = -3.52$, −0.0710 with $t = -3.98$, −0.0657 with $t = -4.39$, −0.0584 with $t = -3.84$, −0.0589 with $t = -4.50$, and −0.0548 with $t = -4.55$, respectively), validating Hypothesis 1 again. Moreover, the coefficients on *MKT* in all columns are negative and significant at the 1 or 5 % level (−0.0067 with $t = -3.08$, −0.0085 with $t = -3.42$, −0.0069 with $t = -3.02$, −0.0069 with $t = -3.15$, −0.0063 with $t = -3.07$, and −0.0052 with $t = -2.56$, respectively), suggesting that firms located in provinces with higher Marketization index are confronted with lower owner-manager agency costs.

More importantly, all the coefficients on *MGC_R* × *MKT* ($R = 100$, 120, 140, 160, 180, 200 km) in Columns (1)–(6) are positive and significant at the 1 % level (0.0070 with $t = 3.17$, 0.0077 with $t = 3.79$, 0.0064 with $t = 3.98$, 0.0057 with $t = 3.75$, 0.0056 with $t = 4.26$, and 0.0048 with $t = 4.03$, respectively). These results suggest that the extent of Marketization in a province in which a firm is located attenuates the negative association between merchant guild culture (*MGC_R*) and owner-manager agency costs, lending important support to Hypothesis 2. Also, these results reveal the substitutive effects between merchant guild culture and the extent of Marketization on mitigating owner-manager agency costs.

With respect to control variables, their signs and significances are qualitatively similar to those in Table 4. In short, *AC_ER* is significantly positively (negatively) associated with *DUAL*, *CEO_CH*, *TOBIN'Q*, and *LISTAGE* (*FIRST*, *SIZE*, and *STATE*), respectively.

Robustness Checks

Robustness Checks Using Asset Utilization Ratio as the Dependent Variables

In Tables 4 and 5, we employ expense ratio (*AC_ER*) as the dependent variable. To test whether our findings are robust to other measure of owner-manager agency costs, following extant studies (Ang et al. 2000; Du 2013; Singh and Davidson 2003), we adopt asset utilization ratio (*AC_AUR*) as the dependent variable to re-test Hypotheses 1 and 2 in Table 6. Asset utilization ratio (*AC_AUR*) is the inverse proxy for owner-manager agency costs, and thus, if the coefficients on *MGC_R* and *MGC_R* × *MKT* ($R = 100$, 120, 140, 160, 180, 200 km) are significantly positive and significantly negative, Hypotheses 1 and 2 are supported by empirical evidence.

As shown in Columns (1)–(6) of Table 6, all the coefficients on *MGC_R* ($R = 100$, 120, 140, 160, 180, 200 km) are significantly positive (0.0442 with $t = 2.53$, 0.0373 with $t = 2.45$, 0.0428 with $t = 3.28$, 0.0467 with $t = 3.91$, 0.0432 with $t = 4.15$, and 0.0418 with $t = 4.43$,

Table 5 Regression results of owner-manager agency costs on merchant guild culture, Marketization, and other determinants (Hypothesis 2)

Variable	The dependent variable: expense ratio (*AC_ER*)											
	(1)		(2)		(3)		(4)		(5)		(6)	
	R = 100 km		R = 120 km		R = 140 km		R = 160 km		R = 180 km		R = 200 km	
	Coefficient	*t* value	Coefficient	*t* value	Coefficient	*t* value	Coefficient	*t* value	Coefficient	*t* value	Coefficient	*t* value
MGC_R	−0.0707***	−3.52	−0.0710***	−3.98	−0.0657***	−4.39	−0.0584***	−3.84	−0.0589***	−4.50	−0.0548***	−4.55
MKT	−0.0067***	−3.08	−0.0085***	−3.42	−0.0069***	−3.02	−0.0069***	−3.15	−0.0063***	−3.07	−0.0052**	−2.56
MGC_R × *MKT*	0.0070***	3.17	0.0077***	3.79	0.0064***	3.98	0.0057***	3.75	0.0056***	4.26	0.0048***	4.03
FIRST	−0.1181***	−5.51	−0.1181***	−5.52	−0.1189***	−5.55	−0.1193***	−5.57	−0.1193***	−5.57	−0.1188***	−5.53
MAN_SHR	0.0259	1.36	0.0242	1.26	0.0256	1.34	0.0254	1.33	0.0262	1.38	0.0265	1.40
INDR	−0.0625	−1.25	−0.0630	−1.27	−0.0604	−1.21	−0.0591	−1.20	−0.0574	−1.17	−0.0566	−1.16
DUAL	0.0200**	2.32	0.0204**	2.35	0.0203**	2.36	0.0203**	2.37	0.0201**	2.34	0.0199**	2.31
BOARD	−0.0228	−1.24	−0.0231	−1.25	−0.0227	−1.23	−0.0225	−1.22	−0.0224	−1.22	−0.0225	−1.22
MEET	0.0016	0.06	0.0010	0.04	0.0020	0.08	0.0017	0.07	0.0018	0.07	0.0017	0.07
CEO_CH	0.0209***	3.47	0.0210***	3.47	0.0208***	3.47	0.0208***	3.47	0.0206***	3.47	0.0204***	3.44
REL	0.0011	0.11	0.0011	0.11	0.0015	0.16	0.0009	0.09	0.0003	0.03	0.0007	0.07
TOBIN'Q	0.0173***	4.44	0.0173***	4.42	0.0173***	4.41	0.0173***	4.43	0.0172***	4.41	0.0171***	4.41
SIZE	−0.0306***	−5.52	−0.0304***	−5.50	−0.0305***	−5.49	−0.0305***	−5.48	−0.0305***	−5.49	−0.0306***	−5.50
LEV	−0.0216	−1.26	−0.0219	−1.29	−0.0212	−1.23	−0.0212	−1.23	−0.0213	−1.24	−0.0210	−1.22
DA	0.1133	1.50	0.1136	1.51	0.1136	1.51	0.1138	1.51	0.1138	1.51	0.1135	1.50
LISTAGE	0.0015*	1.73	0.0014	1.59	0.0015	1.63	0.0015	1.63	0.0015*	1.68	0.0015*	1.68
STATE	−0.0226***	−2.93	−0.0219***	−2.88	−0.0225***	−2.93	−0.0221***	−2.90	−0.0219***	−2.88	−0.0220***	−2.90
Constant	1.0216***	6.43	1.0284***	6.48	1.0236***	6.50	1.0235***	6.49	1.0233***	6.52	1.0213***	6.52
Industry	Control		Control		Control		Control		Control		Control	
Year	Control		Control		Control		Control		Control		Control	
Observations	17,595		17,595		17,595		17,595		17,595		17,595	
Adjusted R^2	0.1322		0.1326		0.1326		0.1325		0.1329		0.1332	
F (*p* value)	49.09***(<.0001)		49.14***(<.0001)		49.11***(<.0001)		49.09***(<.0001)		49.23***(<.0001)		49.59***(<.0001)	

***,**, and * represent the 1, 5, and 10 % levels of significance, respectively, for two-tailed tests. All reported *t* statistics are based on robust standard errors clustering at firm and year level (Petersen 2009). All the variables are defined in Appendix 1

Table 6 Robustness checks of Hypotheses 1 and 2 using asset utilization ratio as the proxy for owner-manager agency costs (the dependent variable)

Variable	The dependent variable: asset utilization ratio (*AC_AUR*, the *inverse proxy* for owner-manager agency costs)					
	Section A: robustness checks of Hypothesis 1 using asset utilization ratio					
	(1) R = 100 km Coefficient (t value)	(2) R = 120 km Coefficient (t value)	(3) R = 140 km Coefficient (t value)	(4) R = 160 km Coefficient (t value)	(5) R = 180 km Coefficient (t value)	(6) R = 200 km Coefficient (t value)
MGC_R	0.0442** (2.53)	0.0373** (2.45)	0.0428*** (3.28)	0.0467*** (3.91)	0.0432*** (4.15)	0.0418*** (4.43)
MKT						
MGC_R × *MKT*						
FIRST	0.1645** (2.21)	0.1661** (2.24)	0.1627** (2.20)	0.1646** (2.23)	0.1631** (2.22)	0.1626** (2.22)
MAN_SHR	−0.1103 (−1.62)	−0.1124* (−1.65)	−0.1214* (−1.81)	−0.1247* (−1.87)	−0.1233* (−1.85)	−0.1202* (−1.81)
INDR	−0.0306 (−0.26)	−0.0357 (−0.31)	−0.0350 (−0.30)	−0.0347 (−0.30)	−0.0377 (−0.33)	−0.0337 (−0.30)
DUAL	−0.0009 (−0.05)	−0.0004 (−0.02)	−0.0001 (−0.01)	0.0006 (0.04)	0.0001 (0.01)	0.0002 (0.01)
BOARD	0.0479 (1.22)	0.0482 (1.23)	0.0470 (1.20)	0.0480 (1.23)	0.0468 (1.19)	0.0489 (1.25)
MEET	0.0743 (0.98)	0.0726 (0.96)	0.0691 (0.92)	0.0662 (0.88)	0.0683 (0.91)	0.0689 (0.92)
CEO_CH	−0.0238* (−1.94)	−0.0236* (−1.91)	−0.0230* (−1.86)	−0.0224* (−1.82)	−0.0219* (−1.80)	−0.0213* (−1.75)
REL	0.0757*** (3.28)	0.0750*** (3.26)	0.0685*** (2.97)	0.0651*** (2.85)	0.0670*** (2.95)	0.0648*** (2.85)
TOBIN'Q	−0.0002 (−0.03)	−0.0008 (−0.10)	−0.0011 (−0.14)	−0.0007 (−0.08)	−0.0004 (−0.06)	0.0002 (0.03)
SIZE	0.0747*** (6.00)	0.0743*** (5.93)	0.0739*** (5.94)	0.0744*** (5.99)	0.0742*** (5.98)	0.0740*** (5.99)
LEV	−0.4302*** (−6.61)	−0.4301*** (−6.59)	−0.4307*** (−6.62)	−0.4307*** (−6.63)	−0.4290*** (−6.60)	−0.4293*** (−6.62)
DA	0.0249 (0.91)	0.0245 (0.89)	0.0266 (0.98)	0.0271 (0.99)	0.0269 (0.98)	0.0275 (1.01)
LISTAGE	0.0012 (0.47)	0.0010 (0.40)	0.0007 (0.28)	0.0007 (0.29)	0.0009 (0.35)	0.0012 (0.45)
STATE	0.0461** (2.19)	0.0465** (2.20)	0.0471** (2.23)	0.0481** (2.27)	0.0484** (2.29)	0.0498** (2.35)
Constant	−1.1681*** (−4.52)	−1.1578*** (−4.46)	−1.1408*** (−4.44)	−1.1530*** (−4.50)	−1.1520*** (−4.50)	−1.1580*** (−4.53)
Industry	Control	Control	Control	Control	Control	Control
Year	Control	Control	Control	Control	Control	Control
Observations	17,595	17,595	17,595	17,595	17,595	17,595
Adjusted R^2	0.2409	0.2409	0.2424	0.2440	0.2445	0.2450
F (p value)	118.94*** (<.0001)	118.90*** (<.0001)	119.43*** (<.0001)	120.55*** (<.0001)	121.06*** (<.0001)	122.28*** (<.0001)
Variable	The dependent variable: asset utilization ratio (*AC_AUR*, the *inverse proxy* for owner-manager agency costs)					
	Section B: robustness checks of Hypothesis 2 using asset utilization ratio					
	(7) R = 100 km Coefficient (t value)	(8) R = 120 km Coefficient (t value)	(9) R = 140 km Coefficient (t value)	(10) R = 160 km Coefficient (t value)	(11) R = 180 km Coefficient (t value)	(12) R = 200 km Coefficient (t value)
MGC_R	0.2103*** (3.00)	0.2025*** (3.26)	0.1668*** (3.13)	0.1546*** (2.99)	0.1467*** (3.20)	0.1498*** (3.40)
MKT	0.0347*** (5.02)	0.0375*** (5.17)	0.0320*** (4.34)	0.0276*** (3.80)	0.0261*** (3.78)	0.0267*** (3.91)
MGC_R × *MKT*	−0.0231*** (−3.05)	−0.0227*** (−3.42)	−0.0167*** (−3.00)	−0.0141*** (−2.67)	−0.0129*** (−2.81)	−0.0132*** (−3.00)

Table 6 continued

Variable	The dependent variable: asset utilization ratio (*AC_AUR*, the *inverse proxy* for owner-manager agency costs)					
	Section B: robustness checks of Hypothesis 2 using asset utilization ratio					
	(7) $R = 100$ km Coefficient (t value)	(8) $R = 120$ km Coefficient (t value)	(9) $R = 140$ km Coefficient (t value)	(10) $R = 160$ km Coefficient (t value)	(11) $R = 180$ km Coefficient (t value)	(12) $R = 200$ km Coefficient (t value)
FIRST	0.1618** (2.20)	0.1623** (2.20)	0.1653** (2.25)	0.1665** (2.27)	0.1659** (2.26)	0.1651** (2.26)
MAN_SHR	−0.1324** (−1.99)	−0.1298* (−1.96)	−0.1348** (−2.05)	−0.1370** (−2.09)	−0.1388** (−2.12)	−0.1377** (−2.10)
INDR	−0.0291 (−0.26)	−0.0262 (−0.23)	−0.0323 (−0.29)	−0.0386 (−0.34)	−0.0420 (−0.37)	−0.0446 (−0.39)
DUAL	−0.0044 (−0.26)	−0.0056 (−0.32)	−0.0055 (−0.32)	−0.0042 (−0.24)	−0.0039 (−0.22)	−0.0039 (−0.22)
BOARD	0.0556 (1.42)	0.0555 (1.42)	0.0544 (1.38)	0.0528 (1.34)	0.0522 (1.33)	0.0535 (1.36)
MEET	0.0608 (0.81)	0.0607 (0.81)	0.0573 (0.77)	0.0563 (0.76)	0.0565 (0.77)	0.0575 (0.78)
CEO_CH	−0.0214* (−1.74)	−0.0215* (−1.76)	−0.0213* (−1.74)	−0.0208* (−1.69)	−0.0204* (−1.68)	−0.0199 (−1.63)
REL	0.0365 (1.52)	0.0361 (1.51)	0.0361 (1.50)	0.0371 (1.54)	0.0395 (1.64)	0.0375 (1.56)
TOBIN'Q	−0.0023 (−0.29)	−0.0019 (−0.24)	−0.0019 (−0.24)	−0.0018 (−0.22)	−0.0015 (−0.19)	−0.0014 (−0.18)
SIZE	0.0692*** (5.77)	0.0690*** (5.79)	0.0695*** (5.82)	0.0701*** (5.87)	0.0701*** (5.86)	0.0699*** (5.83)
LEV	−0.4211*** (−6.54)	−0.4211*** (−6.56)	−0.4234*** (−6.56)	−0.4249*** (−6.56)	−0.4242*** (−6.53)	−0.4243*** (−6.52)
DA	0.0285 (1.09)	0.0280 (1.07)	0.0281 (1.08)	0.0284 (1.10)	0.0281 (1.08)	0.0286 (1.11)
LISTAGE	0.0012 (0.45)	0.0014 (0.55)	0.0011 (0.43)	0.0009 (0.36)	0.0008 (0.32)	0.0010 (0.39)
STATE	0.0503** (2.42)	0.0490** (2.35)	0.0509** (2.44)	0.0507** (2.42)	0.0503** (2.40)	0.0499** (2.37)
Constant	−1.2212*** (−4.90)	−1.2357*** (−4.95)	−1.2157*** (−4.87)	−1.2051*** (−4.86)	−1.2024*** (−4.88)	−1.2084*** (−4.94)
Industry	Control	Control	Control	Control	Control	Control
Year	Control	Control	Control	Control	Control	Control
Observations	17,595	17,595	17,595	17,595	17,595	17,595
Adjusted R^2	0.2481	0.2487	0.2480	0.2483	0.2488	0.2494
F (p value)	118.29*** (<.0001)	118.30*** (<.0001)	118.62*** (<.0001)	119.14*** (<.0001)	119.56*** (<.0001)	120.13*** (<.0001)

***,**, and * represent the 1, 5, and 10 % levels of significance, respectively, for two-tailed tests. All reported t statistics are based on robust standard errors clustering at firm and year level (Petersen 2009). All the variables are defined in Appendix 1

respectively), providing support to Hypothesis 1 again. These results suggest that merchant guild culture significantly upgrades the operation efficiency and mitigates owner-manager agency costs to some extent.

As Columns (7)–(12) of Table 6, all the coefficients on *MGC_R* × *MKT* (*R* = 100, 120, 140, 160, 180, 200 km) are negative and significant (−0.0231 with *t* = −3.05, −0.0227 with *t* = −3.42, −0.0167 with *t* = −3.00, −0.0141 with *t* = −2.67, −0.0129 with *t* = −2.81, and −0.0132 with *t* = −3.00, respectively), validating Hypothesis 2 again and suggesting that Marketization attenuates the positive association between merchant guild culture and asset utilization ratio, the inverse proxy for owner-manager agency costs. Moreover, in Columns (7)–(12), both *MGC_R* (*R* = 100, 120, 140, 160, 180, 200 km) and *MKT* have significantly positive coefficients, consistent with Hypothesis 1 and findings in Table 5.

In short, regression results in Table 6 using asset utilization ratio as the dependent variable produce statistically indistinguishable results compared with those in Tables 4 and 5.

Robustness Checks Using the Dummy Variables of "Merchant Guild Culture"

In Table 7, to examine whether our findings in Tables 4 and 5 are robust, we construct a set of dummy variables for merchant guild culture with the labels of *MGC_DUM_R*, equaling 1 if there are one or more merchant guilds within a radius of *R* kilometers (*R* = 100, 120, 140, 160, 180, 200 km) around a firm's registered address and 0 otherwise.

Results in Columns (1)–(6) of Table 7 indicate that *MGC_DUM_R* (*R* = 100, 120, 140, 160, 180, 200 km) have significantly negative coefficients (−0.0142 with *t* −2.34, −0.0156 with *t* = −2.73, −0.0165 with *t* = −2.85, −0.0146 with *t* = −2.30, −0.0183 with *t* = −2.84, and −0.0202 with *t* = −3.14, respectively), consistent with Hypothesis 1.

As shown in Columns (7)–(12), all the coefficients on *MGC_DUM_R* × *MKT* (*R* = 100, 120, 140, 160, 180, 200 km) are positive and significant at the 1 % level (0.0073 with *t* = 3.02, 0.0082 with *t* = 3.38, 0.0077 with *t* = 3.07, 0.0088 with *t* = 3.50, 0.0092 with *t* = 3.64, and 0.0094 with *t* = 3.67, respectively), lending strong and additional support to Hypothesis 2 and consistent with findings in Table 5. In addition, the coefficients on *MGC_DUM_R* and *MKT* in all columns are significantly negative at the 1 % level, validating Hypothesis 1 and consistent with theoretical expectation.

Overall, results in Table 7 using a set of dummy variables of merchant guild culture are qualitatively similar to those in Tables 4 and 5.

Robustness Checks Using Merchant Guild Culture Based on the Reciprocal Value of the Average Distance between A firm and the Nearest N Merchant Guilds

In our main tests, we use *MGC_R* (*R* = 100, 120, 140, 160, 180, 200 km) as the main independent variables to examine Hypotheses 1 and 2. To ensure that our findings in Tables 4 and 5 are robust, we follow Du (2014b, c) to calculate and construct another set of geographic-proximity-based variables of merchant guild culture with the labels of *MGC_DIS_N* (*N* = 1, 2, 3, 4, 5, 6, 7, 8, 9, 10), the reciprocal value of the average distance between a firm and the nearest *N* merchant guilds. And then, we re-estimate Eqs. (1) and (2) to further test Hypotheses 1 and 2.

As shown in Panel A of Table 8, all the coefficients on *MGC_DIS_N* (*N* = 1, 2, 3, 4, 5, 6, 7, 8, 9, 10) are negative and significant at the 1 % level (−0.0782 with *t* = −3.08, −4.1346 with *t* = −4.01, −7.2167 with *t* = −4.65, −8.9954 with *t* = −4.61, −14.0523 with *t* = −4.87, −17.6036 with *t* = −4.87, −22.4254 with *t* = −4.92, −28.6892 with *t* = −4.97, −34.7040 with *t* = −4.96, and −40.7321 with *t* = −4.95, respectively), lending additional and strong support to Hypothesis 1. These results mean that the geographic proximity between a firm and merchant guilds reduce owner-manager agency costs.

Results in Panel B of Table 8 show that all the coefficients on *MGC_DIS_N* × *MKT* (*N* = 1, 2, 3, 4, 5, 6, 7, 8, 9, 10) are significantly positive (0.0309 with *t* = 2.93, 1.4919 with *t* = 4.02, 2.5023 with *t* = 4.42, 3.4798 with *t* = 4.89, 4.0560 with *t* = 3.92, 4.7138 with *t* = 3.65, 5.1734 with *t* = 3.19, 5.7789 with *t* = 2.81, 6.1124 with *t* = 2.42, and 6.6237 with *t* = 2.21, respectively), validating Hypothesis 2 again. Moreover, both *MGC_DIS_N* (*N* = 1, 2, 3, 4, 5, 6, 7, 8, 9, 10) and *MKT* have significantly negative coefficients, consistent with Hypothesis 1 and theoretical expectation.

In a nutshell, results in Table 8 indicate that our findings are insensitive to using other geographic-proximity-based variables of merchant guild culture based on the reciprocal value of the average distance between a firm and the nearest *N* merchant guilds (*N* = 1, 2, 3, 4, 5, 6, 7, 8, 9, 10).

Discussion on the Potential Endogeneity between Merchant Guild Culture and Owner-Manager Agency Costs

In this study, geographic-proximity-based variables of merchant guild culture strongly depend on a firm's registered address and the locations of merchant guilds. Therefore, the endogeneity between merchant guild culture and owner-manager agency costs potentially exists in our

Table 7 Robustness checks of Hypotheses 1 and 2 using the dummy variables of merchant guild culture

Variable	The dependent variable: expense ratio (*AC_ER*)					
	Panel A: robustness checks of Hypothesis 1					
	(1) $R = 100$ Coefficient (*t* value)	(2) $R = 120$ Coefficient (*t* value)	(3) $R = 140$ Coefficient (*t* value)	(4) $R = 160$ Coefficient (*t* value)	(5) $R = 180$ Coefficient (*t* value)	(6) $R = 200$ Coefficient (*t* value)
MGC_DUM_R	−0.0142** (−2.34)	−0.0156*** (−2.73)	−0.0165*** (−2.85)	−0.0146** (−2.30)	−0.0183*** (−2.84)	−0.0202*** (−3.14)
MKT						
MGC_DUM_R × *MKT*						
FIRST	−0.1188*** (−5.56)	−0.1193*** (−5.58)	−0.1192*** (−5.58)	−0.1194*** (−5.57)	−0.1198*** (−5.59)	−0.1196*** (−5.56)
MAN_SHR	0.0241 (1.25)	0.0253 (1.32)	0.0254 (1.33)	0.0244 (1.27)	0.0254 (1.33)	0.0262 (1.37)
INDR	−0.0642 (−1.22)	−0.0632 (−1.21)	−0.0630 (−1.21)	−0.0635 (−1.22)	−0.0626 (−1.22)	−0.0618 (−1.21)
DUAL	0.0197** (2.29)	0.0197** (2.30)	0.0198** (2.31)	0.0197** (2.29)	0.0199** (2.29)	0.0199** (2.31)
BOARD	−0.0216 (−1.18)	−0.0213 (−1.16)	−0.0214 (−1.16)	−0.0216 (−1.18)	−0.0216 (−1.18)	−0.0219 (−1.19)
MEET	0.0001 (0.00)	0.0004 (0.02)	0.0008 (0.03)	0.0005 (0.02)	0.0016 (0.06)	0.0015 (0.06)
CEO_CH	0.0214*** (3.49)	0.0212*** (3.49)	0.0211*** (3.48)	0.0211*** (3.51)	0.0209*** (3.49)	0.0207*** (3.46)
REL	−0.0064 (−0.71)	−0.0054 (−0.62)	−0.0049 (−0.55)	−0.0058 (−0.64)	−0.0052 (−0.57)	−0.0047 (−0.52)
TOBIN'Q	0.0170*** (4.30)	0.0171*** (4.31)	0.0170*** (4.30)	0.0170*** (4.28)	0.0169*** (4.27)	0.0169*** (4.27)
SIZE	−0.0315*** (−5.44)	−0.0315*** (−5.43)	−0.0315*** (−5.44)	−0.0315*** (−5.44)	−0.0314*** (−5.47)	−0.0313*** (−5.48)
LEV	−0.0200 (−1.15)	−0.0200 (−1.15)	−0.0197 (−1.14)	−0.0197 (−1.14)	−0.0199 (−1.15)	−0.0199 (−1.16)
DA	0.1142 (1.51)	0.1140 (1.51)	0.1140 (1.51)	0.1141 (1.51)	0.1139 (1.51)	0.1136 (1.50)
LISTAGE	0.0016* (1.80)	0.0016* (1.80)	0.0016* (1.79)	0.0015* (1.75)	0.0016* (1.79)	0.0016* (1.79)
STATE	−0.0221*** (−2.86)	−0.0225*** (−2.92)	−0.0225*** (−2.93)	−0.0221*** (−2.88)	−0.0223*** (−2.92)	−0.0224*** (−2.94)
Constant	1.0061*** (6.31)	1.0042*** (6.31)	1.0049*** (6.31)	1.0062*** (6.31)	1.0050*** (6.35)	1.0043*** (6.36)
Industry	Control	Control	Control	Control	Control	Control
Year	Control	Control	Control	Control	Control	Control
Observations	17,595	17,595	17,595	17,595	17,595	17,595
Adjusted R^2	0.1308	0.1310	0.1311	0.1309	0.1314	0.1317
F (*p* value)	51.21*** (<.0001)	51.12*** (<.0001)	51.13*** (<.0001)	51.11*** (<.0001)	51.18*** (<.0001)	51.23*** (<.0001)
Variable	The dependent variable: expense ratio (*AC_ER*)					
	Panel B: robustness checks of Hypothesis 2					
	(7) $R = 100$ Coefficient (*t* value)	(8) $R = 120$ Coefficient (*t* value)	(9) $R = 140$ Coefficient (*t* value)	(10) $R = 160$ Coefficient (*t* value)	(11) $R = 180$ Coefficient (*t* value)	(12) $R = 200$ Coefficient (*t* value)
MGC_DUM_R	−0.0722*** (−3.28)	−0.0788*** (−3.71)	−0.0753*** (−3.48)	−0.0801*** (−3.65)	−0.0867*** (−4.04)	−0.0901*** (−4.23)
MKT	−0.0068*** (−3.09)	−0.0076*** (−3.21)	−0.0074*** (−2.98)	−0.0087*** (−3.63)	−0.0086*** (−3.45)	−0.0086*** (−3.33)
MGC_DUM_R × *MKT*	0.0073*** (3.02)	0.0082*** (3.38)	0.0077*** (3.07)	0.0088*** (3.50)	0.0092*** (3.64)	0.0094*** (3.67)

Table 7 continued

Variable	The dependent variable: expense ratio (*AC_ER*)					
	Panel B: robustness checks of Hypothesis 2					
	(7) $R = 100$ Coefficient (*t* value)	(8) $R = 120$ Coefficient (*t* value)	(9) $R = 140$ Coefficient (*t* value)	(10) $R = 160$ Coefficient (*t* value)	(11) $R = 180$ Coefficient (*t* value)	(12) $R = 200$ Coefficient (*t* value)
FIRST	−0.1185*** (−5.52)	−0.1189*** (−5.54)	−0.1187*** (−5.53)	−0.1185*** (−5.51)	−0.1183*** (−5.50)	−0.1184*** (−5.49)
MAN_SHR	0.0258 (1.35)	0.0248 (1.29)	0.0254 (1.33)	0.0244 (1.27)	0.0259 (1.36)	0.0261 (1.37)
INDR	−0.0629 (−1.26)	−0.0617 (−1.24)	−0.0621 (−1.25)	−0.0607 (−1.23)	−0.0590 (−1.20)	−0.0579 (−1.19)
DUAL	0.0200** (2.33)	0.0201** (2.34)	0.0201** (2.34)	0.0201** (2.35)	0.0200** (2.32)	0.0200** (2.34)
BOARD	−0.0228 (−1.24)	−0.0229 (−1.25)	−0.0231 (−1.25)	−0.0231 (−1.26)	−0.0231 (−1.26)	−0.0231 (−1.25)
MEET	0.0017 (0.07)	0.0020 (0.08)	0.0020 (0.08)	0.0010 (0.04)	0.0009 (0.03)	0.0005 (0.02)
CEO_CH	0.0209*** (3.46)	0.0209*** (3.47)	0.0208*** (3.47)	0.0209*** (3.50)	0.0207*** (3.49)	0.0206*** (3.47)
REL	0.0011 (0.12)	0.0016 (0.17)	0.0018 (0.18)	0.0013 (0.14)	0.0014 (0.14)	0.0015 (0.16)
TOBIN'Q	0.0174*** (4.46)	0.0173*** (4.44)	0.0173*** (4.44)	0.0174*** (4.46)	0.0173*** (4.44)	0.0173*** (4.45)
SIZE	−0.0305*** (−5.51)	−0.0304*** (−5.50)	−0.0304*** (−5.51)	−0.0303*** (−5.46)	−0.0303*** (−5.47)	−0.0302*** (−5.48)
LEV	−0.0217 (−1.27)	−0.0218 (−1.28)	−0.0216 (−1.26)	−0.0218 (−1.27)	−0.0221 (−1.29)	−0.0222 (−1.30)
DA	0.1133 (1.50)	0.1134 (1.51)	0.1134 (1.51)	0.1136 (1.51)	0.1136 (1.51)	0.1134 (1.51)
LISTAGE	0.0015* (1.71)	0.0015* (1.66)	0.0015* (1.69)	0.0014 (1.63)	0.0015* (1.66)	0.0015 (1.64)
STATE	−0.0225*** (−2.92)	−0.0222*** (−2.89)	−0.0221*** (−2.89)	−0.0216*** (−2.83)	−0.0215*** (−2.82)	−0.0215*** (−2.83)
Constant	1.0212*** (6.43)	1.0234*** (6.47)	1.0227*** (6.44)	1.0276*** (6.46)	1.0290*** (6.50)	1.0298*** (6.50)
Industry	Control	Control	Control	Control	Control	Control
Year	Control	Control	Control	Control	Control	Control
Observations	17,595	17,595	17,595	17,595	17,595	17,595
Adjusted R^2	0.1321	0.1323	0.1322	0.1324	0.1328	0.1330
F (*p* value)	49.06*** (<.0001)	49.08*** (<.0001)	49.09*** (<.0001)	49.30*** (<.0001)	49.51*** (<.0001)	49.73*** (<.0001)

***,**, and * represent the 1, 5, and 10 % levels of significance, respectively, for two-tailed tests. All reported *t* statistics are based on robust standard errors clustering at firm and year level (Petersen 2009). All the variables are defined in Appendix 1

Table 8 Robustness checks of Hypotheses 1 and 2 using "merchant guild culture" variables based on the reciprocal value of the average distance between a firm and the nearest *N* merchant guilds

Variable	The dependent variable: expense ratio (*AC_ER*)				
	(1) $N = 1$ Coefficient (*t* value)	(2) $N = 2$ Coefficient (*t* value)	(3) $N = 3$ Coefficient (*t* value)	(4) $N = 4$ Coefficient (*t* value)	(5) $N = 5$ Coefficient (*t* value)
Panel A: Robustness checks of Hypothesis 1 using "merchant guild culture" variables based on the reciprocal value of the average distance between a firm and the nearest *N* merchant guilds					
MGC_DIS_N	−0.0782*** (−3.08)	−4.1346*** (−4.01)	−7.2167*** (−4.65)	−8.9954*** (−4.61)	−14.0523*** (−4.87)
FIRST	−0.1189*** (−5.55)	−0.1177*** (−5.47)	−0.1180*** (−5.49)	−0.1184*** (−5.51)	−0.1190*** (−5.53)
MAN_SHR	0.0207 (1.07)	0.0258 (1.35)	0.0261 (1.38)	0.0256 (1.35)	0.0250 (1.32)
INDR	−0.0653 (−1.21)	−0.0650 (−1.27)	−0.0678 (−1.32)	−0.0684 (−1.33)	−0.0687 (−1.34)
DUAL	0.0194** (2.26)	0.0190** (2.26)	0.0193** (2.28)	0.0193** (2.28)	0.0192** (2.27)
BOARD	−0.0220 (−1.20)	−0.0219 (−1.21)	−0.0221 (−1.22)	−0.0222 (−1.22)	−0.0225 (−1.24)
MEET	−0.0038 (−0.14)	0.0023 (0.09)	0.0022 (0.09)	0.0021 (0.08)	0.0023 (0.09)
CEO_CH	0.0214*** (3.50)	0.0206*** (3.45)	0.0204*** (3.43)	0.0204*** (3.43)	0.0202*** (3.41)
REL	−0.0096 (−1.15)	−0.0007 (−0.08)	0.0007 (0.08)	0.0007 (0.08)	0.0018 (0.20)
TOBIN'Q	0.0169*** (4.26)	0.0169*** (4.31)	0.0169*** (4.29)	0.0169*** (4.29)	0.0167*** (4.26)
SIZE	−0.0315*** (−5.38)	−0.0313*** (−5.48)	−0.0312*** (−5.48)	−0.0312*** (−5.48)	−0.0312*** (−5.49)
LEV	−0.0199 (−1.15)	−0.0192 (−1.10)	−0.0191 (−1.10)	−0.0190 (−1.10)	−0.0188 (−1.09)
DA	0.1141 (1.51)	0.1123 (1.49)	0.1122 (1.48)	0.1122 (1.48)	0.1120 (1.48)
LISTAGE	0.0014* (1.69)	0.0016* (1.77)	0.0015* (1.71)	0.0015* (1.68)	0.0014 (1.63)
STATE	−0.0217*** (−2.84)	−0.0231*** (−3.03)	−0.0238*** (−3.11)	−0.0239*** (−3.13)	−0.0240*** (−3.14)
Constant	1.0101*** (6.25)	1.0057*** (6.37)	1.0072*** (6.38)	1.0090*** (6.38)	1.0153*** (6.39)
Industry	Control	Control	Control	Control	Control
Year	Control	Control	Control	Control	Control
Observations	17,595	17,595	17,595	17,595	17,595
Adjusted R^2	0.1309	0.1330	0.1338	0.1339	0.1345
F (*p* value)	51.24*** (<.0001)	51.35*** (<.0001)	51.46*** (<.0001)	51.44*** (<.0001)	51.54*** (<.0001)

Table 8 continued

Variable	The dependent variable: expense ratio (*AC_ER*)				
	(6) $N = 6$ Coefficient (*t* value)	(7) $N = 7$ Coefficient (*t* value)	(8) $N = 8$ Coefficient (*t* value)	(9) $N = 9$ Coefficient (*t* value)	(10) $N = 10$ Coefficient (*t* value)
Panel A: Robustness checks of Hypothesis 1 using "merchant guild culture" variables based on the reciprocal value of the average distance between a firm and the nearest *N* merchant guilds					
MGC_DIS_N	−17.6036*** (−4.87)	−22.4254*** (−4.92)	−28.6892*** (−4.97)	−34.7040*** (−4.96)	−40.7321*** (−4.95)
FIRST	−0.1190*** (−5.53)	−0.1189*** (−5.53)	−0.1190*** (−5.53)	−0.1192*** (−5.53)	−0.1192*** (−5.53)
MAN_SHR	0.0246 (1.30)	0.0242 (1.28)	0.0240 (1.26)	0.0230 (1.21)	0.0222 (1.16)
INDR	−0.0691 (−1.35)	−0.0696 (−1.36)	−0.0702 (−1.37)	−0.0705 (−1.37)	−0.0706 (−1.37)
DUAL	0.0191** (2.27)	0.0190** (2.27)	0.0190** (2.27)	0.0190** (2.27)	0.0190** (2.26)
BOARD	−0.0226 (−1.24)	−0.0230 (−1.27)	−0.0230 (−1.27)	−0.0231 (−1.27)	−0.0232 (−1.28)
MEET	0.0022 (0.08)	0.0020 (0.08)	0.0013 (0.05)	0.0005 (0.02)	−0.0001 (−0.00)
CEO_CH	0.0203*** (3.41)	0.0203*** (3.40)	0.0203*** (3.39)	0.0203*** (3.39)	0.0203*** (3.38)
REL	0.0018 (0.19)	0.0023 (0.25)	0.0029 (0.32)	0.0031 (0.33)	0.0031 (0.33)
TOBIN'Q	0.0167*** (4.25)	0.0167*** (4.25)	0.0168*** (4.27)	0.0168*** (4.27)	0.0167*** (4.26)
SIZE	−0.0312*** (−5.49)	−0.0311*** (−5.49)	−0.0310*** (−5.49)	−0.0310*** (−5.49)	−0.0310*** (−5.49)
LEV	−0.0187 (−1.08)	−0.0187 (−1.08)	−0.0190 (−1.11)	−0.0191 (−1.12)	−0.0193 (−1.13)
DA	0.1120 (1.48)	0.1120 (1.48)	0.1120 (1.48)	0.1121 (1.48)	0.1121 (1.48)
LISTAGE	0.0014 (1.62)	0.0014 (1.61)	0.0013 (1.59)	0.0013 (1.56)	0.0013 (1.53)
STATE	−0.0239*** (−3.13)	−0.0235*** (−3.08)	−0.0231*** (−3.05)	−0.0227*** (−3.00)	−0.0224*** (−2.97)
Constant	1.0185*** (6.39)	1.0218*** (6.41)	1.0240*** (6.42)	1.0281*** (6.43)	1.0321*** (6.43)
Industry	Control	Control	Control	Control	Control
Year	Control	Control	Control	Control	Control
Observations	17,595	17,595	17,595	17,595	17,595
Adjusted R^2	0.1345	0.1347	0.1348	0.1348	0.1348
F (*p* value)	51.52*** (<.0001)	51.52*** (<.0001)	51.57*** (<.0001)	51.60*** (<.0001)	51.62*** (<.0001)

Table 8 continued

Variable	The dependent variable: expense ratio (*AC_ER*)				
	(1) $N = 1$ Coefficient (*t* value)	(2) $N = 2$ Coefficient (*t* value)	(3) $N = 3$ Coefficient (*t* value)	(4) $N = 4$ Coefficient (*t* value)	(5) $N = 5$ Coefficient (*t* value)
Panel B: Robustness checks of Hypothesis 2 using "merchant guild culture" variables based on the reciprocal value of the average distance between a firm and the nearest *N* merchant guilds					
MGC_DIS_N	−0.3793*** (−3.26)	−17.9020*** (−4.84)	−31.2822*** (−5.60)	−43.1994*** (−6.06)	−52.4567*** (−5.14)
MKT	−0.0047*** (−2.95)	−0.0066*** (−2.75)	−0.0060** (−2.47)	−0.0066*** (−2.70)	−0.0066** (−2.46)
MGC_DIS_N × *MKT*	0.0309*** (2.93)	1.4919*** (4.02)	2.5023*** (4.42)	3.4798*** (4.89)	4.0560*** (3.92)
FIRST	−0.1199*** (−5.59)	−0.1176*** (−5.46)	−0.1176*** (−5.47)	−0.1184*** (−5.50)	−0.1187*** (−5.52)
MAN_SHR	0.0275 (1.46)	0.0241 (1.27)	0.0229 (1.21)	0.0217 (1.14)	0.0213 (1.12)
INDR	−0.0676 (−1.29)	−0.0573 (−1.17)	−0.0607 (−1.22)	−0.0611 (−1.23)	−0.0628 (−1.26)
DUAL	0.0202** (2.35)	0.0189** (2.27)	0.0190** (2.27)	0.0190** (2.27)	0.0189** (2.26)
BOARD	−0.0230 (−1.25)	−0.0224 (−1.23)	−0.0224 (−1.23)	−0.0225 (−1.24)	−0.0230 (−1.26)
MEET	0.0018 (0.07)	0.0016 (0.06)	0.0003 (0.01)	−0.0003 (−0.01)	−0.0003 (−0.01)
CEO_CH	0.0210*** (3.49)	0.0202*** (3.41)	0.0201*** (3.37)	0.0200*** (3.37)	0.0200*** (3.37)
REL	−0.0016 (−0.17)	0.0049 (0.51)	0.0052 (0.53)	0.0059 (0.61)	0.0057 (0.59)
TOBIN'Q	0.0172*** (4.40)	0.0169*** (4.39)	0.0168*** (4.38)	0.0168*** (4.36)	0.0167*** (4.34)
SIZE	−0.0307*** (−5.47)	−0.0309*** (−5.54)	−0.0308*** (−5.52)	−0.0308*** (−5.51)	−0.0308*** (−5.51)
LEV	−0.0205 (−1.20)	−0.0204 (−1.16)	−0.0199 (−1.15)	−0.0198 (−1.15)	−0.0197 (−1.15)
DA	0.1134 (1.50)	0.1128 (1.50)	0.1127 (1.49)	0.1127 (1.49)	0.1125 (1.49)
LISTAGE	0.0016* (1.79)	0.0014 (1.61)	0.0013 (1.51)	0.0012 (1.46)	0.0012 (1.44)
STATE	−0.0233*** (−2.99)	−0.0225*** (−2.95)	−0.0224*** (−2.96)	−0.0224*** (−2.96)	−0.0223*** (−2.94)
Constant	1.0126*** (6.38)	1.0471*** (6.62)	1.0539*** (6.71)	1.0645*** (6.78)	1.0711*** (6.74)
Industry	Control	Control	Control	Control	Control
Year	Control	Control	Control	Control	Control
Observations	17,595	17,595	17,595	17,595	17,595
Adjusted R^2	0.1321	0.1345	0.1355	0.1360	0.1361
F (*p* value)	49.84*** (<.0001)	49.66*** (<.0001)	49.79*** (<.0001)	49.79*** (<.0001)	49.97*** (<.0001)

Table 8 continued

Variable	The dependent variable: expense ratio (*AC_ER*)				
	(6) $N = 6$ Coefficient (*t* value)	(7) $N = 7$ Coefficient (*t* value)	(8) $N = 8$ Coefficient (*t* value)	(9) $N = 9$ Coefficient (*t* value)	(10) $N = 10$ Coefficient (*t* value)
Panel B: Robustness checks of Hypothesis 2 using "merchant guild culture" variables based on the reciprocal value of the average distance between a firm and the nearest *N* merchant guilds					
MGC_DIS_N	−61.5543*** (−4.84)	−68.9885*** (−4.41)	−79.3681*** (−4.07)	−85.8094*** (−3.66)	−94.2091*** (−3.43)
MKT	−0.0071** (−2.49)	−0.0074** (−2.38)	−0.0077** (−2.25)	−0.0080** (−2.14)	−0.0083** (−2.10)
MGC_DIS_N × *MKT*	4.7138*** (3.65)	5.1734*** (3.19)	5.7789*** (2.81)	6.1124** (2.42)	6.6237** (2.21)
FIRST	−0.1186*** (−5.51)	−0.1185*** (−5.51)	−0.1186*** (−5.51)	−0.1189*** (−5.53)	−0.1189*** (−5.53)
MAN_SHR	0.0213 (1.12)	0.0217 (1.14)	0.0221 (1.15)	0.0222 (1.16)	0.0223 (1.17)
INDR	−0.0638 (−1.28)	−0.0651 (−1.30)	−0.0664 (−1.32)	−0.0673 (−1.33)	−0.0678 (−1.34)
DUAL	0.0188** (2.26)	0.0189** (2.27)	0.019R0** (2.28)	0.0191** (2.29)	0.0191** (2.29)
BOARD	−0.0232 (−1.27)	−0.0234 (−1.29)	−0.0234 (−1.28)	−0.0234 (−1.28)	−0.0234 (−1.29)
MEET	−0.0005 (−0.02)	−0.0006 (−0.02)	−0.0012 (−0.04)	−0.0013 (−0.05)	−0.0014 (−0.05)
CEO_CH	0.0201*** (3.37)	0.0201*** (3.38)	0.0202*** (3.38)	0.0203*** (3.38)	0.0203*** (3.39)
REL	0.0055 (0.57)	0.0056 (0.58)	0.0060 (0.62)	0.0060 (0.62)	0.0061 (0.62)
TOBIN'Q	0.0167*** (4.34)	0.0167*** (4.34)	0.0168*** (4.36)	0.0169*** (4.36)	0.0169*** (4.37)
SIZE	−0.0308*** (−5.51)	−0.0308*** (−5.50)	−0.0307*** (−5.50)	−0.0306*** (−5.50)	−0.0306*** (−5.50)
LEV	−0.0197 (−1.15)	−0.0198 (−1.16)	−0.0202 (−1.18)	−0.0204 (−1.20)	−0.0206 (−1.21)
DA	0.1126 (1.49)	0.1127 (1.49)	0.1127 (1.49)	0.1128 (1.49)	0.1128 (1.49)
LISTAGE	0.0012 (1.44)	0.0012 (1.44)	0.0012 (1.43)	0.0012 (1.43)	0.0012 (1.43)
STATE	−0.0222*** (−2.93)	−0.0219*** (−2.89)	−0.0217*** (−2.87)	−0.0216*** (−2.85)	−0.0215*** (−2.84)
Constant	1.0766*** (6.74)	1.0791*** (6.74)	1.0820*** (6.73)	1.0834*** (6.71)	1.0863*** (6.69)
Industry	Control	Control	Control	Control	Control
Year	Control	Control	Control	Control	Control
Observations	17,595	17,595	17,595	17,595	17,595
Adjusted R^2	0.1360	0.1358	0.1358	0.1355	0.1354
F (*p* value)	49.95*** (<.0001)	49.95*** (<.0001)	50.04*** (<.0001)	50.11*** (<.0001)	50.18*** (<.0001)

***,**, and * represent the 1, 5, and 10 % levels of significance, respectively, for two-tailed tests. All reported *t* statistics are based on robust standard errors clustering at firm and year level (Petersen 2009). All the variables are defined in Appendix 1

Table 9 Regression results of Hypotheses 1 and 2 using the propensity score matching approach to control for the endogeneity between owner-manager agency costs and merchant guild culture

Variable	Section A: the first stage of the propensity score matching (the dependent variables: *MGC_DUM_R*)					
	(1) R = 100 km Coefficient (t value)	(2) R = 120 km Coefficient (t value)	(3) R = 140 km Coefficient (t value)	(4) R = 160 km Coefficient (t value)	(5) R = 180 km Coefficient (t value)	(6) R = 200 km Coefficient (t value)
METRO	0.0623*** (2.73)	0.0665*** (2.93)	−0.0105 (−0.46)	−0.0666*** (−2.96)	0.0241 (1.08)	0.0197 (0.88)
R&D	0.0267*** (2.98)	0.0099 (1.11)	0.0105 (1.19)	0.0096 (1.10)	−0.0267*** (−3.07)	−0.0480*** (−5.50)
CROSS	0.7274*** (19.11)	0.7664*** (19.83)	0.7423*** (19.27)	0.7287*** (18.80)	0.7648*** (19.21)	0.7214*** (18.06)
MGC_R						
MKT						
MGC_R × *MKT*						
FIRST	0.3116*** (4.54)	0.2732*** (3.99)	0.3409*** (5.01)	0.3233*** (4.77)	0.3259*** (4.83)	0.3495*** (5.17)
MAN_SHR	0.7057*** (7.92)	0.8969*** (9.92)	0.9090*** (10.01)	0.9489*** (10.36)	0.9133*** (9.89)	1.0113*** (10.75)
INDR	−0.0406 (−1.43)	−0.0352 (−1.24)	−0.0133 (−0.47)	−0.0280 (−0.99)	−0.0001 (−0.01)	0.0104 (0.37)
DUAL	−0.0391 (−0.22)	0.1260 (0.72)	0.1572 (0.90)	0.1194 (0.69)	0.1770 (1.03)	0.2541 (1.48)
BOARD	0.0496 (0.92)	0.0968* (1.81)	0.0979* (1.84)	0.0755 (1.43)	0.0621 (1.18)	0.0385 (0.73)
MEET						
CEO_CH						
REL						
TOBIN'Q	−0.0421*** (−3.76)	−0.0232** (−2.09)	−0.0308*** (−2.79)	−0.0421*** (−3.83)	−0.0490*** (−4.46)	−0.0459*** (−4.17)
SIZE	−0.0262** (−2.30)	−0.0153 (−1.35)	−0.0199* (−1.77)	−0.0230** (−2.05)	−0.0077 (−0.69)	0.0079 (0.71)
LEV						
DA						
LISTAGE						
STATE	−0.2971*** (−12.18)	−0.3375*** (−13.91)	−0.3226*** (−13.34)	−0.2787*** (−11.58)	−0.2597*** (−10.82)	−0.2453*** (−10.21)
Constant	−0.5231** (−2.03)	−0.8006*** (−3.12)	−0.6400** (−2.51)	−0.5136** (−2.02)	−0.6145** (−2.44)	−0.7990*** (−3.18)
Industry	Control	Control	Control	Control	Control	Control
Year	Control	Control	Control	Control	Control	Control
Observations	17,595	17,595	17,595	17,595	17,595	17,595
Pseudo R^2	0.0607	0.0753	0.0700	0.0661	0.0623	0.0627
Adjusted R^2						
LR (p value)	1390.24*** (<.0001)	1768.51*** (<.0001)	1654.86*** (<.0001)	1575.13*** (<.0001)	1490.97*** (<.0001)	1498.51*** (<.0001)
F (p value)						

Table 9 continued

Variable	Section B Hypothesis 1 using the second stage of the propensity score matching (the dependent Variable: *AC_ER*)					
	(7) $R = 100$ km Coefficient (t value)	(8) $R = 120$ km Coefficient (t value)	(9) $R = 140$ km Coefficient (t value)	(10) $R = 160$ km Coefficient (t value)	(11) $R = 180$ km Coefficient (t value)	(12) $R = 200$ km Coefficient (t value)
METRO						
R&D						
CROSS						
MGC_R	−0.0146** (−2.26)	−0.0072* (−1.85)	−0.0099* (−1.92)	−0.0080* (−1.89)	−0.0082** (−2.53)	−0.0087*** (−3.27)
MKT						
MGC_R × *MKT*						
FIRST	−0.1197*** (−4.63)	−0.1253*** (−5.03)	−0.1168*** (−4.06)	−0.1136*** (−5.10)	−0.1209*** (−4.96)	−0.1199*** (−4.87)
MAN_SHR	0.0182 (0.91)	0.0240 (1.13)	0.0285 (1.40)	0.0213 (1.02)	0.0240 (1.21)	0.0278 (1.49)
INDR	0.0120 (0.25)	−0.0382 (−0.60)	−0.0339 (−0.54)	−0.0315 (−0.61)	−0.0428 (−0.67)	−0.0222 (−0.42)
DUAL	0.0152* (1.87)	0.0214** (2.52)	0.0166** (2.14)	0.0152** (2.06)	0.0170** (2.23)	0.0223** (2.23)
BOARD	−0.0142 (−0.68)	0.0008 (0.05)	0.0032 (0.19)	0.0123 (0.76)	−0.0171 (−0.80)	−0.0118 (−0.62)
MEET	0.0156 (0.58)	0.0198 (0.77)	0.0135 (0.44)	0.0025 (0.10)	0.0118 (0.52)	0.0188 (0.84)
CEO_CH	0.0215*** (3.50)	0.0264*** (3.29)	0.0175*** (2.98)	0.0194*** (2.98)	0.0234*** (3.43)	0.0194*** (3.87)
REL	−0.0084 (−0.70)	−0.0157 (−1.55)	−0.0110 (−1.19)	−0.0143 (−1.45)	−0.0135 (−1.58)	−0.0100 (−1.22)
TOBIN'Q	0.0189*** (4.81)	0.0175*** (4.28)	0.0181*** (4.24)	0.0184*** (4.12)	0.0183*** (4.13)	0.0190*** (4.62)
SIZE	−0.0296*** (−5.07)	−0.0327*** (−5.31)	−0.0304*** (−5.46)	−0.0313*** (−5.42)	−0.0309*** (−5.27)	−0.0285*** (−5.74)
LEV	−0.0271 (−1.57)	−0.0246 (−1.41)	−0.0292 (−1.61)	−0.0316** (−1.98)	−0.0228 (−1.35)	−0.0175 (−0.95)
DA	0.0700 (1.28)	0.0951 (1.38)	0.0767 (1.34)	0.0910 (1.25)	0.0941 (1.36)	0.0873 (1.48)
LISTAGE	0.0017* (1.94)	0.0018* (1.84)	0.0019* (1.82)	0.0017* (1.79)	0.0016* (1.68)	0.0016* (1.76)
STATE	−0.0256*** (−2.93)	−0.0240** (−2.47)	−0.0260*** (−2.81)	−0.0273*** (−2.89)	−0.0246*** (−2.91)	−0.0174** (−2.15)
Constant	1.0043*** (5.34)	0.9917*** (5.90)	0.9473*** (6.33)	0.9939*** (5.62)	0.9949*** (5.97)	0.9072*** (6.59)
Industry	Control	Control	Control	Control	Control	Control
Year	Control	Control	Control	Control	Control	Control
Observations	10,594	11,386	11,670	12,244	13,078	13,428
Pseudo R^2						
Adjusted R^2	0.1269	0.1299	0.1285	0.1397	0.1428	0.1427
LR (p value)						
F (p value)	33.05*** (<.0001)	34.89*** (<.0001)	36.99*** (<.0001)	38.06*** (<.0001)	41.98*** (<.0001)	40.79*** (<.0001)

Table 9 continued

Variable	Section C: Hypothesis 2 using the second stage of the propensity score matching (the dependent Variable: *AC_ER*)					
	(13) $R = 100$ km Coefficient (t value)	(14) $R = 120$ km Coefficient (t value)	(15) $R = 140$ km Coefficient (t value)	(16) $R = 160$ km Coefficient (t value)	(17) $R = 180$ km Coefficient (t value)	(18) $R = 200$ km Coefficient (t value)
METRO						
R&D						
CROSS						
MGC_R	−0.0829*** (−2.84)	−0.0941*** (−3.92)	−0.0838*** (−3.60)	−0.0593*** (−2.90)	−0.0622*** (−4.09)	−0.0461*** (−3.21)
MKT	−0.0068** (−2.30)	−0.0099*** (−3.03)	−0.0079*** (−2.75)	−0.0050** (−2.13)	−0.0048** (−2.35)	−0.0024** (−2.29)
MGC_R × *MKT*	0.0081** (2.53)	0.0101*** (3.66)	0.0082*** (3.43)	0.0055*** (2.79)	0.0057*** (3.73)	0.0038*** (2.75)
FIRST	−0.1183*** (−4.57)	−0.1255*** (−5.04)	−0.1187*** (−4.15)	−0.1148*** (−5.19)	−0.1228*** (−5.03)	−0.1204*** (−4.89)
MAN_SHR	0.0189 (0.93)	0.0247 (1.18)	0.0276 (1.38)	0.0198 (0.96)	0.0229 (1.17)	0.0263 (1.40)
INDR	0.0160 (0.34)	−0.0367 (−0.61)	−0.0274 (−0.46)	−0.0244 (−0.50)	−0.0359 (−0.58)	−0.0156 (−0.31)
DUAL	0.0151* (1.89)	0.0218*** (2.59)	0.0174** (2.25)	0.0156** (2.13)	0.0172** (2.28)	0.0221** (2.26)
BOARD	−0.0150 (−0.73)	−0.0001 (−0.00)	0.0023 (0.13)	0.0124 (0.76)	−0.0177 (−0.82)	−0.0120 (−0.63)
MEET	0.0154 (0.57)	0.0201 (0.77)	0.0133 (0.43)	0.0026 (0.10)	0.0122 (0.54)	0.0179 (0.81)
CEO_CH	0.0209*** (3.46)	0.0259*** (3.28)	0.0172*** (2.94)	0.0189*** (2.92)	0.0229*** (3.41)	0.0192*** (3.83)
REL	−0.0009 (−0.07)	−0.0054 (−0.51)	−0.0027 (−0.25)	−0.0092 (−0.85)	−0.0092 (−1.00)	−0.0081 (−0.93)
TOBIN'Q	0.0191*** (4.92)	0.0173*** (4.31)	0.0178*** (4.24)	0.0182*** (4.17)	0.0181*** (4.14)	0.0188*** (4.66)
SIZE	−0.0290*** (−5.16)	−0.0321*** (−5.42)	−0.0299*** (−5.53)	−0.0310*** (−5.45)	−0.0305*** (−5.32)	−0.0284*** (−5.75)
LEV	−0.0284* (−1.66)	−0.0259 (−1.50)	−0.0297 (−1.63)	−0.0318** (−1.97)	−0.0234 (−1.38)	−0.0176 (−0.95)
DA	0.0693 (1.28)	0.0944 (1.38)	0.0764 (1.35)	0.0909 (1.26)	0.0941 (1.36)	0.0873 (1.48)
LISTAGE	0.0016* (1.87)	0.0017* (1.68)	0.0016 (1.63)	0.0016* (1.67)	0.0015 (1.61)	0.0015* (1.69)
STATE	−0.0255*** (−2.92)	−0.0234** (−2.41)	−0.0261*** (−2.82)	−0.0267*** (−2.84)	−0.0236*** (−2.77)	−0.0161* (−1.93)
Constant	1.0378*** (5.41)	1.0493*** (6.13)	0.9999*** (6.52)	1.0272*** (5.78)	1.0293*** (6.18)	0.9310*** (6.79)
Industry	Control	Control	Control	Control	Control	Control
Year	Control	Control	Control	Control	Control	Control
Observations	10,594	11,386	11,670	12,244	13,078	13,428
Pseudo R^2						
Adjusted R^2	0.1281	0.1327	0.1309	0.1409	0.1445	0.1436
LR (p value)						
F (p value)	31.78*** (<.0001)	33.42*** (<.0001)	35.55*** (<.0001)	36.55*** (<.0001)	40.46*** (<.0001)	39.39*** (<.0001)

***,**, and * represent the 1, 5, and 10 % levels of significance, respectively, for two-tailed tests. All reported t statistics are based on robust standard errors clustering at firm and year level (Petersen 2009). All the variables are defined in Appendix 1

study because a firm is inclined to choose its address of register and/or operations in a peaceful place in which merchant guild culture is relatively stronger. Therefore, we further employ the propensity score matching (PSM) method (Dehejia and Wahba 2002) to test whether our main results are still valid after controlling for the potential endogeneity between merchant guild culture and owner-manager agency costs.

Because of literature limitation on extant empirical studies of merchant guild culture, we refer to literature in similar academic disciplines such as finance, religion, and Confucianism (Du 2013, 2014a, b; Loughran and Schultz 2005; John et al. 2011) to identify a set of variables used in the first stage of the propensity score matching (PSM) method as below. Referring to extant studies, we identify and include three variables, i.e., *METRO*, *R&D*, and *CROSS*, in the first stage. *METRO* is a dummy variable, equaling 1 if a firm is located in a vice-provincial or provincial city and 0 otherwise. *R&D* denotes R&D investment intensity in a province in which a firm is located. *CROSS* is an indicator variable, equaling 1 if a firm is listed in two or more stock markets and 0 otherwise. Moreover, we also incorporate firm-specific variables such as *FIRST*, *MAN_SHR*, *INDR*, *DUAL*, *BOARD*, *TOBIN'Q*, *SIZE*, and *STATE* into the first stage regression (see Appendix 1 for variable definitions).

After identifying variables in the first stage, we conduct t-tests for differences in the mean value between the merchant guild culture (MGC) subsample and the non-MGC subsample. Non-tabulated results show that, for the full sample, there are significant differences in most variables between the *MGC* subsample and the non-*MGC* subsample. However, after conducting the propensity score matching process, for all variables used in the first stage, we find that no significant difference exists, suggesting that variables in the first stage are appropriate and a good matching work is done in the first stage.[8] Columns (1)–(6) in Table 9 report results of the first-stage regressions in which *MGC_DUM_R* (R = 100, 120, 140, 160, 180, 200 km) are the dependent variables. Overall, results in Columns (1)–(6) are consistent with findings in extant studies and theoretical expectation.

Columns (7)–(12) and Columns (13)–(18) in Table 9 display the second stage of the propensity score matching (PSM) method and provide regression results of Hypotheses 1 and 2. As shown in Columns (7)–(12), all the coefficients on *MGC_R* (R = 100, 120, 140, 160, 180, 200 km) are significantly negative (−0.0146 with $t = -2.26$, −0.0072 with $t = -1.85$, −0.0099 with $t = -1.92$, −0.0080 with $t = -1.89$, −0.0082 with $t = -2.53$, and −0.0087 with $t = -3.27$, respectively), validating Hypothesis 1 again.

[8] Non-tabulated results are available upon request (similarly hereinafter).

Results in Columns (13)–(18) of Table 9 show that the coefficients on *MGC_R* × *MKT* (R = 100, 120, 140, 160, 180, 200 km) are all significantly positive (0.0081 with $t = 2.53$, 0.0101 with $t = 3.66$, 0.0082 with $t = 3.43$, 0.0055 with $t = 2.79$, 0.0057 with $t = 3.73$, and 0.0038 with $t = 2.75$, respectively), providing important support to Hypothesis 2. Moreover, both *MGC_R* and *MKT* in Columns (13)–(18) are negative and significant, consistent with Hypothesis 1 and findings in Table 5, respectively.

Overall, after controlling for the endogeneity, results in Table 9 are statistically indistinguishable with those in Tables 4 and 5, corroborating Hypotheses 1 and 2 again.

Discussions

Theoretical Contributions

Our study makes several contributions to the existing literature. First, to our knowledge and literature in hand, our study is the first using firm-level data to empirically investigate the influence of merchant guild culture on owner-manager agency costs. Most previous studies about merchant guild culture adopt the descriptive method (e.g., Brook 1981; Dessí and Ogilvie 2004; Hamilton 1979; Liu 1988; etc.) or focus on mathematical analysis and historical evidence (Grief et al. 1994; Pearson 1994) to discuss the determinants and economic consequences of merchant guild culture, but provide little empirical evidence on whether merchant guild culture influences contemporary corporate behavior or business ethics. In this study, we calculate and collect firm-level data on merchant guild culture, and then document systematic evidence to show the negative association between merchant guild culture and expense ratio, suggesting that merchant guild culture historically existed in ancient China *does* still exert the uninterrupted influence on contemporary corporate behavior. Clearly, this finding adds to the existing literature and inspires future research to focus on the micro influence of merchant guild culture. Moreover, this study adds to previous literature on informal systems (North 1990; Williamson 2000) that argues and emphasizes the crucial role of informal systems such as religion, customs, tradition, and social norms in contemporary society and enterprises. Without question, findings in our study echo and provide important support to North (1990) and Williamson (2000).

Second, this study adds to the existing ethical literature on how to mitigate unethical behavior in contemporary enterprises and organizations. Indeed, a branch of extant studies recognize that various ethics codes/cultures can mitigate unethical managerial behavior and reduce owner-manager agency costs to some extent (Felo 2001; Thomsen 2001). However, another branch of previous literature

emphasizes that corporate governance mechanisms and informal systems play their respective roles in the reduction of owner-manager agency costs (Du 2013; Bonn and Fisher 2005). Especially, Hunt and Vitell (2006) argue that cultural factors influence ethical judgments and decisions. In this regard, our study emphasizes and validates another conduit to affect ethical climate in contemporary enterprises by documenting the role of merchant guild culture in mitigating owner-manager agency costs.

Third, this study firstly measures merchant guild culture based on the geographic proximity between a firm and merchant guilds. Specifically, referring to extant studies in finance, business ethics, religion, and Confucianism (Du 2013, 2014a, b, c; El Ghoul et al. 2013; Loughran and Schultz 2005; John et al. 2011), we calculate and construct a set of geographic-proximity-based variables of merchant guild culture, which are firm level or (quasi-) firm level and thus can better capture influence of merchant guild culture on corporate behavior, especially, owner-manager agency costs in this study. Moreover, geographic-proximity-based variables can lend important support for scholars to conduct future research on the economic consequences of worldwide merchant guild culture.

Finally, our findings contribute to the framework in Williamson (2000) about the relation between formal institutions and informal systems. Specifically, our study finds the substitutive effects between merchant guild culture (informal systems) and Marketization (formal institutions) on mitigating owner-manager agency costs. This result validates the substitutive effects between formal institutions and formal systems on corporate behavior in extant studies (Du 2013, 2014a, b; El Ghoul et al. 2013), marginally contributing to the argument in Williamson (2000).

Managerial Implications

In addition to theoretical contributions, our study has several managerial and ethical implications. First, merchant guild culture still has its continuous impacts on contemporary corporate behavior, embodying the negative influence on owner-manager agency costs in this study. In this regard, our findings motivate the academia, the practical circle, and regulators to attach the importance to the influence of various cultural factors on corporate behavior. Although merchant guild culture usually affects corporate behavior implicitly rather than explicitly, it is uninterrupted, continuous, and stable. Therefore, merchant guild culture, as well as other informal systems such as religion and Confucianism, should never be neglected in academic research and policy making. Moreover, our finding validates the argument in Williamson (2000) and provides important support to the influence of informal systems on corporate governance and business ethics.

Second, the mitigating role of provincial Marketization level in the negative association between merchant guild culture and owner-manager agency costs echoes findings in extant studies (Du 2013), and further lends important support to the argument that institutional environment can restrain top managers from unethical behavior such as excessive salaries and bonus, spending a firm's scarce resources on "eat, drink, travel, entertainment, other perk consumption, or overinvestment for the purpose of empire-building" (Jensen 1986; Du 2013). Moreover and importantly, the substitutive effect between merchant guild culture and provincial Marketization level on mitigating owner-manager agency costs is especially important for and is likely to fit in well with emerging markets and developing countries in which the current status of institutional environment is far from perfect and formal institutions are incomplete (Du 2013).

Finally, our study explores the influence of merchant guild culture on corporate behavior, especially owner-manager agency costs, and thus our findings may be partially applied to merchant guilds historically existed in Asia countries such as Korea and Japan in which merchant guilds in ancient ages had remarkable impacts on country-level economy, the beginning of contemporary enterprises, and even the seeds of capitalism (Dessí and Ogilvie 2004; Grief et al. 1994). Even if our findings may not fit in well with the contexts of other countries, our study *does* play its role of inspiring scholars to discuss and examine whether merchant guilds historically existed in different countries have similar or asymmetric influence on corporate behavior.

Limitations and Future Research

Our study has several limitations that can be further addressed in future research. First, this study constructs a set of geographic-proximity-based variables of merchant guild culture and argues their rationale. Therefore, in essence, this study captures the influence of merchant guild cultural atmosphere around a firm on owner-manager agency costs. However, similar to extant studies, geographic-proximity-based variables of merchant guild culture may not fully recognize whether a top manager looks up to merchant guild culture as the standard or his/her philosophy, although this approach is relatively objective and replicable to a great extent. Second, in this study, we only focus on ten nationally famous merchant guilds to construct geographic-proximity-based variables of merchant guild culture in ancient China because of data limitation and the lack of universal consensus on them. As a

result, here comes an unresolved matter about the representativeness about whether ten nationally famous merchant guilds can serve as the appropriate proxy for hundreds of merchant guilds in China. Finally, this study does not discuss how merchant guild culture in ancient China is inherited and continuously developed and further still exerts the uninterrupted influence on contemporary corporate behavior. In this regard, it is an uphill but interesting task that needs to be addressed in future research.

Our study can motivate several branches of future research directions as below: First, to ensure the validity and to better investigate the influence of merchant guild culture on corporate behavior including owner-manager agency costs, researchers should try to obtain data from the surveys and then jointly use survey data and the data based on geographic proximity between a firm and merchant guilds to examine the economic consequence of merchant guild culture. Second, because of "the worldwide distribution of Chinese people" (Du 2014c), it is also necessary for researchers to employ the international setting and examine the influence of merchant guild culture on corporate behavior. Finally, we conduct this study based on the context of China and examine the influence of merchant guild culture on owner-manager agency costs, so our finding may not fit in well with other contexts such as European countries, in which merchant guilds historically existed (Liu 1988). In fact, considering the function of merchant guilds from the late middle Ages, it will be a challenging task for researchers to investigate whether and how merchant guild culture originated in the medieval European countries still has its continuous influence on corporate behavior and further compare the asymmetric or similar influence between merchant guild culture in ancient Europe and that in ancient China.

Conclusions

Extending prior literature on the association between culture and business ethics, this study further examines the influence of merchant guild culture on owner-manager agency costs and the moderating role of Marketization. Using a sample of Chinese listed firms and a set of geographic-proximity-based variables of merchant guild culture, this study finds that merchant guild culture is significantly negatively associated with owner-manager agency costs, surrogated by expense ratio or asset utilization ratio. Moreover, the negative association between merchant guild culture and owner-manager agency costs is less pronounced for firms located in provinces with higher Marketization levels than for firms in provinces with lower Marketization levels.

Acknowledgments We appreciate constructive comments from Prof. Samuel Michael Natale (the section editor) and one reviewer. Our study also benefits a lot from valuable suggestions from Zongfeng Xiu, Zejiang Zhou, Wentao Feng, Dongchang Ke, Wei Jian, Yingying Chang, Shaojuan Lai, Jun Lu, Hao Xiong, Fei Hou, Junting Zhou, Weidong Li, Jianguo Sun, and participants of our presentations (On Informal Systems: China's Realities and Research Opportunities) at Xiamen University, Anhui University, and Shanghai University.

Funding This study was funded by the financial support from the Key Project of Key Research Institute of Humanities and Social Science in Ministry of Education (approval number: 13JJD790027).

Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

Appendix

See Table 10.

Table 10 Variable definitions

Variable	Variable definition	Data source
AC_ER	Expense ratio, the proxy for owner-manager agency costs (Ang et al. 2000; Du 2013; Singh and Davidson 2003), measured as the sum of sale expenses and administrative expenses scaled by annual sales revenue	Calculated based on *CSMAR*
MGC_R	Geographic-proximity-based variables of merchant guild culture in China, measured as the number of merchant guilds within a radius of R kilometers ($R = 100, 120, 140, 160, 180, 200$ km) around a firm's registered address	Hand-collected
MKT	The Marketization Index (Fan et al. 2011), which measures the whole institutional development level and investor protection level in a province	Fan et al. (2011)
FIRST	The percentage of common shares owned by the largest shareholder	*CSMAR*
MAN_SHR	The total percentage of shares owned by a firm's top managers	*CSMAR*
INDR	The ratio of independent directors, measured as the number of independent directors scaled by the total number of directors in the boardroom	*CSMAR*
DUAL	An indicator variable for managerial power, equaling 1 if the *CEO* and the chairman of the board are the same person and 0 otherwise	*CSMAR*
BOARD	Board size, measured as the natural logarithm of the number of directors in the boardroom	*CSMAR*

Table 10 continued

Variable	Variable definition	Data source
MEET	The attendance of shareholders at the general meeting of shareholders	*CSMAR*
CEO_CH	An indicator variable, equaling 1 if a firm changes its *CEO* in the year and 0 otherwise	*CSMAR*
REL	A dummy variable, equaling 1 if there are one or more religious sites (Buddhist monasteries and Taoist temples) within a radius of 100 km around a firm's registered address (Du 2013)	Hand-collected
TOBIN'Q	A firm's growth opportunity, measured as a firm's market value to its book value	*CSMAR*
SIZE	Firm size, measured by the natural logarithm of total assets	*CSMAR*
LEV	Financial leverage, measured as total liabilities with interests scaled by total assets	*CSMAR*
DA	The absolute value of discretional accruals based on the change of operating cash flows following Ball and Shivakumar (2006)	Calculated
LISTAGE	The number of years since a firm's IPO	*CSMAR*
STATE	A dummy variable, equaling 1 when the ultimate controlling shareholder of a firm is a (central or local) government agency or government-controlled enterprise and 0 otherwise	*CSMAR*
AC_AUR	Assets utilization ratio, an inverse proxy for owner-manager agency costs (Ang et al. 2000; Du 2013; Singh and Davidson 2003), measured as sales revenue in the year scaled by total assets	Calculated based on *CSMAR*
MGC_DUM_R	A dummy variable, equaling 1 if there are one or more merchant guilds within a radius of *R* kilometers ($R = 100, 120, 140, 160, 180, 200$ km) around a firm's registered address	Hand-collected
MGC_DIS_N	The reciprocal value of the average distance between a firm and the nearest *N* merchant guilds ($N = 1, 2, 3, 4, 5, 6, 7, 8, 9, 10$)	Hand-collected
METRO	A dummy variable, equaling 1 if a firm is located in a vice-provincial or provincial city	Hand-collected
R&D	*R&D* investment intensity in a province in which a firm is located	China Statistical Yearbook
CROSS	An indicator variable, equaling 1 if a firm is listed in two or more stock markets and 0 otherwise	*CSMAR*

References

Abdolmohammadi, M. J., Read, W. J., & Scarbrough, D. P. (2003). Does selection-socialization help to explain accountants' weak ethical reasoning? *Journal of Business Ethics, 42*(1), 71–81.

Allen, F., Qian, J., & Qian, M. (2005). Law, finance, and economic growth in China. *Journal of Financial Economics, 77*(1), 57–116.

Ang, J. S., Cole, R. A., & Lin, J. W. (2000). Agency costs and ownership structure. *Journal of Finance, 55*(1), 81–106.

Ball, R., & Shivakumar, L. (2006). The role of accruals in asymmetrically timely gain and loss recognition. *Journal of Accounting Research, 44*(2), 207–242.

Bebchuk, L. A., Fried, J. M., & Walker, D. I. (2002). Managerial power and rent extraction in the design of executive compensation. *University of Chicago Law Review, 69*, 751–846.

Belsley, D. A. (1991). A guide to using the collinearity diagnostics. *Computer Science in Economics and Management, 4*(1), 33–50.

Belsley, D. A., Kuh, E., & Welsch, R. E. (1980). *Regression diagnostics: Identifying influential observations and sources of collinearity*. New York: Wiley.

Berthrong, J. H. (1998). *Transformations of the Confucian way*. Boulder, Colorado: Westview Press.

Bonn, I., & Fisher, J. (2005). Corporate governance and business ethics: Insights from the strategic planning experience. *Corporate Governance: An International Review, 13*(6), 730–738.

Brook, T. (1981). The merchant network in the 16th century China. *Journal of Economic and Social History of the Orient, 24*(2), 165–214.

Caijing. (2005). *New merchant guilds and the change of China's economic domain*. Retrieved Jan 10, 2015, from http://business.sohu.com/s2005/xinshangbang.shtml.

Conroy, S. J., & Emerson, T. L. N. (2004). Business ethics and religion: Religiosity as a predictor of ethical Awareness among students. *Journal of Business Ethics, 50*, 383–396.

Core, J. E., Guay, W., & Larcker, D. F. (2008). The power of the pen and executive compensation. *Journal of Financial Economics, 88*, 1–25.

DeFond, M., Francis, J., & Hu, X. (2011). *The geography of SEC enforcement and auditor reporting for financially distressed clients*. SSRN. http://ssrn.com/abstract=1132885.

Dehejia, R. H., & Wahba, S. (2002). Propensity score-matching methods for non-experimental causal studies. *Review of Economics and Statistics, 84*(1), 151–161.

Dessí, R. & Ogilvie, S. (2004). Social capital and collusion: The case of merchant guilds. CWPE, Working paper No. 0417.

Du, X. (2013). Does religion matter to owner-manager agency costs? Evidence from China. *Journal of Business Ethics, 118*(2), 319–347.

Du, X. (2014a). Does religion mitigate tunneling? Evidence from China. *Journal of Business Ethics, 125*(2), 299–327.

Du, X. (2014b). Does Confucianism reduce minority shareholder expropriation? Evidence from China. *Journal of Business Ethics,*. doi:10.1007/s10551-014-2325-2.

Du, X. (2014c). Does Confucianism reduce board gender diversity? Firm-level evidence from China. *Journal of Business Ethics*, doi:10.1007/s10551-014-2508-x.

Du, X., Jian, W., Lai, S., Du, Y., & Pei, H. (2014). Does religion mitigate earnings management? Evidence from China. *Journal of Business Ethics*, doi: 10.1007/s10551-014-2290-9.

Dyreng, S. D., Mayew, W. J., & Williams, C. D. (2012). Religious social norms and corporate financial reporting. *Journal of Business Finance & Accounting, 39*(7–8), 845–875.

El Ghoul, S., Guedhami, O., Ni, Y., Pittman, J., & Saadi, S. (2013). Does information asymmetry matter to equity pricing? Evidence

from firms' geographic location. *Contemporary Accounting Research, 30*(1), 140–181.
Fama, E. F., & Jensen, M. C. (1983). Separation of ownership and control. *Journal of Law and Economics, 26*(2), 301–325.
Fan, G., Wang, X., & Zhu, H. (2011). *The report on the relative process of Marketization of each region in China*. Beijing: The Economic Science Press.
Felo, A. J. (2001). Ethics programs, board involvement, and potential conflicts of interest in corporate governance. *Journal of Business Ethics, 32*(3), 205–218.
Francis, J. R., Khurana, I. K., Martin, X., & Pereir, R. (2011). The relative importance of firm incentives versus country factors in the demand for assurance services by private entities. *Contemporary Accounting Research, 28*(2), 487–516.
Gaumnitz, B. R., & Lere, J. C. (2004). A classification scheme for codes of business ethics. *Journal of Business Ethics, 49*(4), 329–335.
Golas, P. J (1977). Early Ch'ing guilds. In G. W. William Skinner (Ed.), *The city in late imperial China* (pp. 555–580). Stanford: Stanford University Press.
Grief, A., Milgrom, P., & Weingast, B. (1994). Coordination, commitment, and enforcement: The case of merchant guilds. *Journal of Political Economy, 102*(4), 745–776.
Hamilton, G. G. (1979). Regional associations and the Chinese city: A comparative perspective. *Comparative Studies in Society and History, 21*(3), 346–361.
Hunt, S. D., & Vitell, S. J. (2006). The general theory of marketing ethics: A revision and three questions. *Journal of Macromarketing, 26*(2), 1–11.
Jensen, M. C. (1986). Agency costs and free cash flow, corporate finance and takeovers. *American Economics Reviews, 76*, 659–665.
Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics, 3*(4), 305–360.
Jian, M., & Wong, T. J. (2010). Propping through related party transactions. *Review of Accounting Studies, 15*(1), 70–105.
Jiang, G., & Wang, H. (2008). Should earnings thresholds be used as delisting criteria in stock market? *Journal of Accounting and Public Policy, 27*(5), 409–419.
John, K., Knyazeva, A., & Knyazeva, D. (2011). Do shareholders care about geography? *Journal of Financial Economics, 101*(3), 533–551.
Koehn, D., & Ueng, J. (2010). Is philanthropy used by corporate wrongdoer to buy good will? *Journal of Management and Governance, 14*, 1–16.
Kurland, N. B. (1995). Ethics, incentives, and conflicts of interest: A practical solution. *Journal of Business Ethics, 14*(6), 465–475.
Liu, K.-C. (1988). Chinese merchant guilds: An historical inquiry. *Pacific Historical Review, 57*(1), 1–23.
Longenecker, J. G., McKinney, J. A., & Moore, C. W. (2004). Religious intensity, evangelical Christianity, and business ethics: An empirical study. *Journal of Business Ethics, 55*(4), 371–384.
Loughran, T. (2007). Geographic dissemination of information. *Journal of Corporate Finance, 13*, 675–694.
Loughran, T., & Schultz, P. (2005). Liquidity: Urban versus rural firms. *Journal of Financial Economics, 78*, 341–374.
Marquis, C., Glynn, M., & Davis, G. F. (2007). Community isomorphism and corporate social action. *Academy of Management Review, 32*, 925–945.
McGuire, S. T., Omer, T. C., & Sharp, N. Y. (2012). The impact of religion on financial reporting irregularities. *The Accounting Review, 87*(2), 645–673.
North, D. C. (1990). *Institutions, institutional change and economic performance*. Cambridge: Cambridge University Press.
Pearson, M. M. (1994). The janus face of business associations in China: Socialist corporatism in foreign enterprises. *The Australian Journal of Chinese Affair, 31*(1), 25–46.
Petersen, M. A. (2009). Estimating standard errors in finance panel data sets: Comparing approaches. *Review of Financial Studies, 22*(1), 435–480.
Petrick, J. A., & Quinn, J. F. (2000). The integrity capacity construct and moral progress in business. *Journal of Business Ethics, 23*(1), 3–18.
Rising, B. (2000). *SPHDIST: Stata module to compute spherical distances*. Statistical software components S372502. Boston College Department of Economics. Retrieved Jan 10, 2015, from http://ideas.repec.org/c/boc/bocode/s372502.html#refs.
Sims, R. R., & Brinkmann, J. (2003). Enron ethics (Or: Culture matters more than codes). *Journal of Business Ethics, 45*(3), 243–256.
Singh, M., & Davidson, W. N, I. I. I. (2003). Agency costs, ownership structure and corporate governance mechanisms. *Journal of Banking & Finance, 27*(5), 793–816.
Thomsen, S. (2001). Business ethics as corporate governance. *European Journal of Law and Economics, 11*(2), 153–164.
Wang, Q., Wong, T. J., & Xia, L. (2008). State ownership, the institutional environment, and auditor choice. *Journal of Accounting and Economics, 46*(1), 112–134.
Watts, R. L. (1977). Corporate financial statements: A product of the market and political processes. *Australian Journal of Management, 2*(1), 53–75.
Weaver, G. R., & Agle, B. R. (2002). Religiosity and ethical behavior in organizations: A symbolic interactionist perspective. *Academy of Management Review, 27*(1), 77–97.
Williamson, O. E. (2000). The new institutional economics: Taking stock, looking ahead. *Journal of Economic Literature, 38*(3), 595–613.
Yao, X. (2000). *An introduction to Confucianism*. Cambridge: Cambridge University Press.
Zhang, J. (2011). Top 10 regional merchant groups in ancient China. Retrieved Jan 14, 2015, from http://www.china.org.cn/top10/2011-11/16/content_23932778.htm.
Zhang, H.-P., & Zhang, H.-Y. (1993). *Ten nationally famous merchant guilds*. Anhui: Huangshan Publishing House.