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Does dialect similarity add value to banks? Evidence from China

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ABSTRACT

This study examines the value of language, as an important dimension of culture, to banks. Based on a unique hand-collected dataset of Chinese commercial banks and a county-level dialect dataset, we find that a higher degree of dialect similarity between the chairman and the CEO is associated with a higher return on assets, a higher return on equity, and a lower cost-to-income ratio, suggesting that dialect similarity plays a positive role in improving bank performance. Further analyses show that dialect similarity has no significant association with bank risk and bank expansion. In addition, it does not cause higher CEO pay or lower pay-performance sensitivity. These results indicate that dialect similarity does not lower the monitoring effectiveness. We also investigate the relation between dialect similarity and banks' agency costs and the results show that dialect similarity reduces agency costs significantly. Our findings are robust to alternative measures of dialect similarity, the separation of the "dialect level effect", and the potential endogeneity of dialect similarity.

1. Introduction

There is a widespread agreement that culture plays an important role in economic activities. In recent years, there is a "cultural revolution" in finance (Zingales, 2015) and several studies have started to examine the effect of cultural factors (e.g., religions, trust, personality traits) on financial outcomes and business decisions (Li et al., 2013; Cline and Williamson, 2016; Fisman et al., 2017). In this paper, we complement the literature by examining the value of language, as an important dimension of culture, to banks: financial firms with high leverage ratios in a highly regulated industry.

As a socially learned tool of communication, we use language to express our thoughts, feelings, and needs. A shared language usually helps a community achieve social cohesion and form social norms (Trousdale, 2010). However, it is worth noting that every language has a lot of variation (Yule, 2006). Due to geographic, ethnic, and social factors, a language can further break down into different dialects according to the pronunciation, vocabulary, and grammar. In this paper, we focus on the dialect similarity between the bank chairman and the CEO, who are the highest-ranking persons of shareholders and managers, and examine its effect on bank performance.

The agency theory predicts that the misalignment of interests between shareholders and managers can lead to the agency problem, which may impair firm performance (Jensen and Meckling, 1976; Chen et al., 2012). As a type of connection forged through language between the chairman and the CEO, dialect similarity could either aggravate or mitigate the agency problem between shareholders and managers, which in turn affects bank performance. On the one hand, language, as the basic tool of communication, can play a positive role in the transmission of valuable information between the chairman and the CEO. Given the existence of informational asymmetries between management and shareholders (Leland and Pyle, 1977; Jensen and Murphy, 1990), for shareholders who have incomplete information, it is critical to keep good communication with managers. The same dialect between the chairman and the CEO can help them comprehend the ideas and expressions with each other, which improves the effectiveness of the communication and reduces the communication costs (Lang, 1986). In addition, language is an important dimension of ethnic identity and community membership (Pendakur and Pendakur, 2002). According to social psychological studies, mother-tongue dialect is said to be a particularly important aspect of identity since it is viewed as being immutable and inherited from birth (Fishman, 1991). People who share the same dialect usually have common topics and communicate easier

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as they possess similar cultural and historical ties. The belonging feeling of the same group naturally helps them construct mutual trust. Tajfel et al. (1971) find that people are inclined to favor their ingroup members against outgroup members. The cultural identity and mutual trust, to some extent, induce CEO's loyalty to the boards, which helps restrain CEOs' self-interested behavior. Based on the cross-country evidence, Cline and Williamson (2016) find that trust is negatively associated with formal self-interested regulation, which provides direct evidence on the effect of trust on the self-interested behavior of corporate insiders. Therefore, dialect similarity can play a positive role in reducing the agency problem, which is conductive for bank performance.

On the other hand, the close relationship between the chairman and the CEO due to dialect similarity may lower the monitoring effectiveness of the board, which could destroy corporate value. The key function of the board is to monitor management on behalf of shareholders. However, dialect similarity, as a form of social tie, may lower the monitoring effectiveness. Fracassi and Tate (2012) provide strong evidence that stronger CEO-director connections formed through career paths and nonprofessional activities are associated with lower firm value. Hwang and Kim (2009) find that the social connections between the CEO and the directors beyond financial and familial ties impedes the effective supervision of the audit committee. In the same vein, dialect similarity between the chairman and the CEO may cloud objective monitoring of the board to the CEO and aggravate the agency problem between shareholders and managers. Specifically, the shared dialect and similar culture ties may induce the chairman to grant more powers to the CEO and to be less likely to reject the CEO's proposals. The greater power of the CEO and the weakened monitoring effectiveness of the chairman may have several effects. First, the CEO may engage in risky activities, which has a negative effect on a firm's stability. Lu and Hu (2014) notice that firms with a larger proportion of directors who were born in the same province with the CEO have higher stock return volatility. Second, in the absence of effective monitoring, the CEO has great incentives to overinvest and engage in "empire building," as it is often related with more resources under control, higher compensation, and enhanced prestige (Murphy, 1985; Jensen, 1986; Coles et al., 2014). Third, due to the intimate relationship with the CEO, the chairman may adopt more liberal compensation policies such as higher CEO compensation and lower pay-performance sensitivity (Huang and Kim, 2009; Coles et al., 2014). Taken together, the net impact of dialect similarity on bank performance is an empirical question that needs to be further explored.

Note that the Chinese context offers an excellent setting to examine this issue. First, as early as the Zhou dynasty (1046–256 BCE), there were regional linguistic varieties in China (Yuan, 2001). Due to the vast territory, varied terrain, and numerous ethnic groups, an increasing number of dialects appeared, which were used by people living in local areas and had characteristics of their own. Although the Chinese government is devoted to the popularity of the standardized national language, various kinds of dialects are still widely spoken in daily communications, and even in local authorities and TV stations (Lü, 2000; Kurpaska, 2010). According to the classification of the *Language Atlas of China*, there are 10 supergroups, 20 groups, and 105 subgroups of Chinese dialects. Numerous types of dialects elicit large variations of our main variable of interest, allowing us to obtain more accurate estimation results. Second, China is characterized by its weak law enforcement system and poor investor protection (Allen et al., 2005). Given the inefficient formal institutions, the informal institutions such as culture may play a more important role in economic activities. Third, it is quite time-consuming and costly to conduct a survey on language variation, and, thus, there are not many datasets documenting various kinds of dialects within a language around the world.[1] For the case of China, the Australian Academy of the Humanities and the Chinese Academy of Social Sciences published the *Language Atlas of China*, which allows us to identify the dialects that the chairman and the CEO speak.

In this paper, we merge our unique hand-collected dataset of Chinese commercial banks with a county-level dialect dataset to examine the effect of dialect similarity on bank performance. We use an ordered variable to measure the extent of dialect similarity between the chairman and the CEO. It takes the value of zero if the dialects that the chairman and the CEO speak belong to different supergroups; it takes the value of one if the dialects that the chairman and the CEO speak belong to different groups under the same supergroup; it takes the value of two if their dialects belong to different subgroups under the same group; it takes the value of three if their dialects belong to the same subgroup. A higher value indicates a higher level of dialect similarity.

Based on the data of 83 Chinese commercial banks over the period of 2007–2014, we find that a higher degree of dialect similarity between the chairman and the CEO is positively associated with bank performance, which is reflected as a higher return on assets, a higher return on equity, and a lower cost-to-income ratio. The results suggest that dialect similarity adds value to banks. However, we still have two different explanations behind this finding: One is that the positive effect of dialect similarity is larger than the negative effect; it is also likely that the negative effect is not pronounced in the banking industry and only the positive effect plays a relevant role. To look into the reasons behind our finding, we conduct two sets of tests.

The first set of the test examines the effect of dialect similarity on monitoring effectiveness. To do so, we investigate the impact of dialect similarity on bank risk, bank expansion, and CEO pay. The results show that, first, dialect similarity between the chairman and the CEO has no significant effect on credit risk, capital inadequacy risk, or bankruptcy risk; second, dialect similarity is not significantly associated with the growth rate of bank asset, bank income, or the number of branches, suggesting that it does not cause the CEO's "empire building"; third, dialect similarity does not cause higher CEO compensation or lower pay-performance sensitivity.

The second set of the test explores the relation between dialect similarity and agency costs directly. The results indicate that a higher degree of dialect similarity is associated with a lower expense ratio and a higher asset utilization ratio, suggesting that dialect similarity reduces banks' agency costs. In addition, as a marker of social identity, the effect of dialect similarity is likely to be context-specific (Jaspal, 2009). We further divide the whole sample into two subgroups and find that the "dialect similarity effect" is more pronounced in banks whose chairman and CEO both work outside their hometowns.

We also perform several robustness checks for our findings. First, we use an alternative measure for dialect similarity. Given the multi-layered classification of Chinese dialects, we introduce three dummies to identify the classification of the dialects in each layer. The main findings in our baseline model still hold. Second, given that people who speak *Yue* dialect have good reputation in doing business, we additionally include a dummy variable to separate the "dialect level effect" from the "dialect similarity effect". The positive association between dialect similarity and bank

[1] The first comprehensive language survey was conducted by the linguist Georg Wenker between 1879 and 1888, which provides the distribution of the German dialects. The survey on American English dialects was pioneered by the famous geographic linguist Hans Kurath in 1929.

performance remains unchanged. Third, to address the potential endogeneity concern, we first calculate the difference of the proportion of mountainous areas in the birthplaces between the chairman and the CEO, and then use the absolute value of this difference as the instrument for dialect similarity. The two-stage least squares regression result confirms our findings in the baseline model.

This paper contributes to the literature in several ways. First, prior studies have identified corporate governance, institutional arrangements, and financial factors as important determinants of bank performance (e.g., Lin and Zhang, 2009; Fu and Heffernan, 2009; Mergaerts and Vander Vennet, 2016). Our paper extends the literature and highlights the impacts of an informal institution, that is language, on bank performance.

Second, our study is related to the literature on culture and financial decisions. A large body of literature has examined the relation between national-level culture and financial activities (e.g., Beugelsdijk and Frijns, 2010; El Ghoul and Zheng, 2016; Karolyi, 2016; Mourouzidou-Damtsa et al., 2017). However, it is difficult to rule out the effect of unobserved country-specific factors on financial outcomes when cross-country data is used. Note that in recent years, several studies have started to use the firm-level or even individual-level measure of culture and examine its effect on financial decision-making. For instance, based on the loan-level information of a large state-owned bank in India, Fisman et al. (2017) focus on the effect of the religion proximity between the borrower and the branch head officer on loan outcomes. They find that having an in-group officer (the same religion category with borrowers) increases the borrowers' credit access, reduces the collateral requirements, and induces better payment. Our paper uses the bank-level data to construct the dialect similarity between the chairman and the CEO and examines its impact on bank performance.

Third, this study is related to the literature on language and economics. Based on the speech data from the validation interviews of the National Longitudinal Survey of Youth in the U.S., Grogger (2011) documents that speech patterns help explain racial wage differences. Specifically, the wage of black workers whose speech is distinctly identified as black is 12 percent less than that of white workers with similar skills; the indistinctly identified black workers earn essentially the same as the whites. In addition, several studies find that language sharing improves migration flows and international trade (Lohmann, 2011; Egger and Lassmann, 2012; Falck et al., 2012). In this paper, we introduce language to the bank literature.

It should be noted that the only paper that is similar to us is Dai et al. (2016), who investigate the effect of dialect similarity on agency costs of industrial public firms that are listed in Shanghai or Shenzhen Stock Exchanges. They provide evidence that dialect similarity reduces the expense ratio. Different from them, we focus on financial institutions, and examine the effect of dialect similarity on bank performance, taking both the positive and the negative impacts into consideration. The impact on agency costs is only one of the several mechanisms to explain the relation between dialect similarity and bank performance. In this paper, we provide a comprehensive analysis of the impacts of dialect similarity on banks' profitability, efficiency, risk level, empire building, CEO pay and pay-performance sensitivity, and agency costs. More importantly, banks are quite different from non-financial firms given their unique features (Adams and Mehran, 2003; Chen and Ebrahim, 2018). It is likely that the general findings for non-financial firms in the corporate finance literature may not hold for financial institutions. To the best of our knowledge, we are the first to examine the role of language, as an important dimension of culture, in the banking industry. Our findings exactly reflect unique features of banks and indicate the necessity and significance to focus on the banking industry only and examine the value of language to banks.

The remainder of this paper is organized as follows. Section 2 describes the data, introduces the definitions of variables, and provides descriptive statistics. Section 3 presents the regression results of the relation between dialect similarity and bank performance. Moreover, we explore the reasons behind our findings and further examine the impacts of dialect similarity on monitoring effectiveness and agency costs. Section 4 provides several robustness checks. Section 5 concludes the paper.

2. Data and variables

2.1. Data source

The data on banks' financial information is manually collected from the annual reports of each bank over the period 2007-2014. In July of 2007, China Banking Regulatory Commission (CBRC) enacted *The Regulations on Information Disclosure of Commercial Banks in China*, requiring all commercial banks to disclose annual reports on their websites. We exclude foreign banks and domestic banks with annual reports available in less than three consecutive years. We also exclude eight bank-year observations where the bank chairman is also the CEO.

For the non-financial information of the bank chairman and the CEO, we collect that from three sources: annual reports, the Top Executive Database from China Economic Net, and the official website of CBRC.[2] Through reading the biography, we could identify their age, birthplaces, education background, and working experiences. The data on CEO compensation is from WIND and CSMAR databases.

The county-level dialect data is from Sun Yat-sen University, where the dialects in 2615 counties are manually collected from the *Language Atlas of China* and *The Great Dictionary of Chinese Dialects* (Liu et al., 2015). The Chinese dialects are classified into 10 supergroups based on their phonology, grammar, and lexis, including Mandarin, Jin dialect, Wu dialect, Hui dialect, Gan dialect, Xiang dialect, Min dialect, Yue dialect, Hakka dialect, and Pinghua dialect. These supergroups are then classified into 20 groups and further divided into 105 subgroups. Note that there are 34 provinces (including 2 special administration regions), 294 prefecture-level cities, and 2876 counties in China, the Chinese dialects break the boundaries of geographic regions and improve communication among people living in different places.[3]

In this paper, we first identify the birthplace of the bank chairman (or the CEO), and then search the supergroup, group, and subgroup of the dialect that people speak in this place. For instance, the chairman of China Construction Bank in 2012 is Hongzhang Wang, whose birthplace is Changtu County, Tieling City, Liaoning Province. The dialect that people speak in Changtu County belongs to the Mandarin supergroup, the Northeastern Mandarin group, and the Hafu subgroup.

Our final sample consists of 83 Chinese commercial banks, including 4 Big-four state-owned commercial banks, 12 joint-stock commercial banks, 54 city commercial banks, and 13 rural commercial banks.[4] In 2014, the total assets of our sample banks ac-

[2] It should be noted that the reporting of the information on the chairman and the CEO is not mandatory in annual reports of Chinese non-bank financial institutions such as insurance companies and securities companies. In this paper, we mainly focus on the sample of Chinese banks.

[3] Data source: The Administrative Divisions of the People's Republic of China 2017, SinoMaps Press, Beijing.

[4] The Big-four state-owned banks include the Industrial and Commercial Bank of China, China Construction Bank, Agricultural Bank of China, and Bank of China. Both the Big-four state-owned banks and joint-stock commercial banks can do busi-

count for 93.32% of the total assets of the Chinese banking industry, showing good representativeness.[5]

2.2. Dialect similarity

The main independent variable of interest is *Lg_similar*, which is an ordered variable to measure the degree of dialect similarity between the chairman and the CEO. It takes the value of zero if the dialects that the chairman and the CEO speak belong to different supergroups; it takes the value of one if the dialects that the chairman and the CEO speak belong to different groups under the same supergroup; it takes the value of two if their dialects belong to different subgroups under the same group; it takes the value of three if their dialects belong to the same subgroup.

2.3. Bank performance

Following prior studies in the banking literature (e.g., Lin and Zhang, 2009; Fu and Heffernan, 2009; Mergaerts and Vander Vennet, 2016), we employ three proxies to measure bank performance in our analysis. The return on assets (*ROA*), defined as the ratio of net income to total assets, and the return on equity (*ROE*), defined as the ratio of net income to total equity, are used to gauge bank profitability. The ratio of costs to operating income (*COI*) is used to measure bank efficiency.

2.4. Bank risk

After establishing the relationship between dialect similarity and bank performance, we further investigate the effects of dialect similarity on bank risk, bank expansion (or empire building), CEO pay and pay-performance sensitivity.

We measure the risk level of banks from three dimensions. The non-performing loans ratio (*NPLs*), computed as non-performing loans over gross loans, the loan loss reserves ratio (*Loss_reserve*), computed as loan loss reserves over gross loans, and the attention loans ratio (*Attention*), computed as attention loans over gross loans, are used to measure credit risk.[6] The capital adequacy ratio (*Cap1*), computed as total capital over risk-weighted assets, and the tier 1 capital adequacy ratio (*Cap2*), computed as core capital equity over risk-weighted assets, are used to measure capital inadequacy risk. The *Z-score*, calculated as the ratio of *ROA* plus the capital-asset ratio to the standard deviation of *ROA*, measures the number of standard deviations that a bank is away from insolvency. The *Z-score* is an indicator of bank stability, which is inversely related to the probability of bank failure. Following Mergaerts and Vander Vennet (2016) and Hung et al. (2017), we use the natural logarithm of *Z-score* (*Lnzscore*) due to its highly-skewed characteristics.

2.5. Bank expansion

We use three proxies to measure the level of bank expansion: the growth rate of total assets (*g_asset*), the growth rate of total operating income (*g_tot_inc*), and the growth rate of the number of branches (*g_branch*). The growth rate of these three measures are calculated over the fiscal year.

2.6. CEO pay

Note that the reporting of CEO pay is not mandatory for Chinese unlisted banks, we restrict our sample to 16 public banks who are listed in Shanghai or Shenzhen stock exchanges when examining the effect of dialect similarity on CEO pay. Two proxies are widely used to measure CEO pay in the existing literature (e.g., Hwang and Kim, 2009; Coles et al., 2014; Gao and Li, 2015): cash compensation composed of salary plus bonus, and total compensation composed of salary, bonus, the value of restricted stock grants, the value of stock option grants, and long-term incentive payouts. Given that only three banks grant a small number of stocks and only one bank grants stock options to CEOs in our sample, we focus on the CEO's cash compensation (*CEO_pay*), the values of which are in thousands of RMB.

2.7. Agency cost

In this paper, we also examine the relation between dialect similarity and agency costs. To do so, we construct two measures to proxy for banks' agency costs, with reference to prior studies (Ang et al., 2000; Singh and Davidson III, 2003; Fleming et al., 2005; Rashid, 2016). The first measure (the expense ratio) is the general and administrative expenses divided by total operating income (*r_expense*) .[7] Note that the general and administrative expenses of a bank consist of salaries of employees, rents, insurance, utilities, advertising costs, travel expenses, consulting fees, and conference expenses. This accounting item, to a large extent, reflects excessive perquisite consumptions of managers such as large office space, private dining, and high-end hotel and first-class cabin expenses. The second measure is the asset utilization ratio (*r_income*), which is calculated as total operating income divided by total earning assets. This ratio, to some extent, reflects the management shirking or suboptimal investments, since a low value may arise from managers' insufficient efforts and poor lending decisions. In summary, a high value of the expense ratio (*r_expense*) indicates high agency costs, while a high value of the asset utilization ratio (*r_income*) indicates low agency costs.

2.8. Control variables

We also include bank-specific and board-specific control variables. For bank-specific variables, we control bank size (*Size*), which is calculated as the natural logarithm of total assets, the capital ratio (*r_equity*), which is calculated as bank equity over total assets, and loan portfolio orientation (*r_loans*), which is proxied by gross loans as a percentage of total assets. For board-specific variables, we control the age, the education level, and the political connections of the bank chairman and the CEO. The age (*Age_p* and *Age_m*) is calculated as the sample year minus the year of birth for a bank chairman or CEO. The education level (*Edu_p* and *Edu_m*) of a bank chairman or CEO is proxied by a discrete variable that ranges from zero to three. This variable is equal to one if the bank chairman (or CEO) has earned a bachelor's degree; equal to two if the chairman (or CEO) has earned a master's degree; equal to three if the chairman (or CEO) has earned a doctoral degree; and zero otherwise. The political connection of a bank chairman or CEO (*Gov_p* and *Gov_m*) is proxied by a dummy variable, which is equal to one if the chairman (or CEO) has current or former government working experiences, and zero otherwise. Both Hung et al. (2017) and Chen et al. (2018) find that political connections of bank CEOs have significant impacts on bank performance,

ness nationwide. In comparison, city commercial banks and rural commercial banks mainly operate in local areas.

[5] We obtain the total assets of the Chinese banking sector in 2014 from the annual report of CBRC.

[6] It should be noted that the number of observations on attention loans ratio is lower than other risk measures, as the reporting of this item is not mandatory for banks.

[7] Total operating income includes interest income and non-interest income.

Table 1
Descriptive statistics.
This table presents descriptive statistics of the variables. The data on banks' financial information is manually collected from the annual reports of each bank; the non-financial information of the bank chairman and the CEO is manually collected from three sources: annual reports, the Top Executive Database from China Economic Net, and the official website of CBRC; the data on CEO pay is from WIND and CSMAR databases; the county-level dialect data is from Sun Yat-sen University. Definitions of all variables are provided in the Appendix. We exclude foreign banks and domestic banks with annual reports available in less than three consecutive years. We also exclude the observations where the bank chairman is also the CEO. Our final sample consists of 83 Chinese commercial banks over the period 2007–2014.

Variable	N	Mean	Std. dev.	Min	Max
Lg_similar	503	1.847	1.320	0	3
Performance measures:					
ROA	503	1.495	0.440	0.167	3.456
ROE	503	24.058	6.964	3.561	50.195
COI	503	60.983	7.114	21.750	85.180
Risk measures:					
NPLs	503	1.210	1.982	0.000	38.218
Loss_reserve	503	2.551	0.873	0.380	7.993
Attention	445	3.803	4.144	0.000	28.150
Cap1	503	12.790	2.653	5.770	40.350
Cap2	503	10.799	2.866	4.300	39.150
Lnzscore	503	3.233	0.626	0.426	4.829
Bank growth measures:					
g_asset	469	23.405	13.762	−28.437	102.882
g_tot_inc	469	28.504	32.327	−36.218	534.537
g_branch	385	9.999	12.626	−18.750	78.462
CEO pay					
CEO_pay	122	2942.596	2246.279	517.9	10,046.1
Agency cost measures:					
r_expense	499	21.658	5.846	9.055	51.960
r_income	499	5.943	1.329	1.466	11.779
Control variables:					
Size	503	19.092	1.695	15.789	23.749
r_equity	503	6.442	1.845	1.843	23.592
r_loans	503	47.590	10.096	16.760	65.764
Age_p	503	52.594	5.019	37	67
Age_m	503	50.034	5.257	38	64
Edu_p	503	1.744	0.770	0	3
Edu_m	503	1.795	0.747	0	3
Gov_p	503	0.596	0.491	0	1
Gov_m	503	0.449	0.498	0	1
Board_num	503	13.785	2.839	6	20
r_indepent	503	26.850	10.675	0	50

while contradictory results are reached. We also include the number of board directors (*Board_num*) and the proportion of independent directors (*r_indepent*), as previous studies document that, in general, a larger board and a lower proportion of independent directors are associated with lower firm performance (e.g., Vafeas, 1999; Hossain et al., 2001; O'Connell and Cramer, 2010).

Table 1 reports descriptive statistics of the variables in our analysis. The average dialect similarity is 1.85 with the standard deviation 1.32, showing great variations across banks. In terms of profitability and efficiency, an average bank in our sample has return on assets of 1.50%, return on equity of 24.06%, and a cost-to-income ratio of 60.98%. In terms of the risk level, an average bank in our sample has a non-performing loans ratio of 1.21%, a loan loss reserves ratio of 2.55%, an attention loan ratio of 3.80%, a capital adequacy ratio of 12.79%, a tier 1 capital adequacy ratio of 10.80%, and a Z-score of 30.25. In terms of bank expansion, the average growth rates of total assets, total operating income, and the number of branches for a bank are about 23.41%, 28.50%, and 10.00%, respectively. On average, a CEO receives 2.94 million RMB from a bank every year. In terms of agency costs, the means of the expense ratio and the asset utilization ratio are 21.66% and 5.94%, respectively. The average bank has total assets of 1.10 trillion RMB, an equity-to-asset ratio of 6.44%, and a loan-to-asset ratio of 47.59%. It is also worth noting that 59.6% of bank chairmen and 44.9% of bank CEOs have current or former working experiences in government agencies, suggesting that personal relationships with the government (*guanxi*) are prevalent in China's banking sector. On average, the number of board members in a bank is 13.79 with 26.85% independent directors.

3. Empirical results

3.1. Dialect similarity and bank performance

We begin our empirical analysis by examining the effect of dialect similarity between the chairman and the CEO on bank performance. The corresponding model is specified as follows:

$$Performance_{i,t} = \alpha + \beta_1 Lg\_similar_{i,t} + Province_{i,t} + \gamma_1' Z_{1,it} + \gamma_2' Z_{2,it} + \delta_{Type} + \delta_{Location} + \lambda_t + \varepsilon_{i,t}, \quad (1)$$

where i denotes the bank, and t denotes the year. The dependent variable is bank performance, which is proxied by return on assets (*ROA*), return on equity (*ROE*), and the cost-to-income ratio (*COI*). The independent variable of interest is *Lg_similar*, which is an ordered variable measuring the strength of dialect similarity between the chairman and the CEO. In order to separate the "same birthplace effect" from the "dialect similarity effect", we also add a dummy variable *Province* that equals one if the chairman and the CEO are born from the same province and zero otherwise.[8] $Z_{1,it}$ is a set of bank-specific control variables including bank size (*Size*), capital ratio (*r_equity*), and loan-to-asset ratio (*r_loan*). $Z_{2,it}$ is a set of board-specific control variables including the age (*Age_p* and *Age_m*), the education level (*Edu_p* and *Edu_m*), and the political connections (*Gov_p* and *Gov_m*) of the chairman and the CEO, the number of board directors (*board_num*), and the proportion of independent directors (*r_indepent*). We include bank type fixed effects (δ_{Type}) and bank location fixed effects ($\delta_{Location}$) to control unobserved time-invariant omitted variables that are correlated with dialect similarity.[9] We also include year fixed effects λ_t to control for variation in common factors through time. $\varepsilon_{i,t}$ is the error term.

Table 2 presents the regression results, where columns (1)–(3) show the results of the relation between dialect similarity and *ROA*; columns (4)–(6) show the results of the relation between dialect similarity and *ROE*; columns (7)–(9) show the results of the relation between dialect similarity and *COI*. The results indicate a positive association between dialect similarity and bank performance, both statistically significant and economically meaningful. On average, a higher level of dialect similarity between the chairman and the CEO is associated with roughly a 0.08 percentage points higher *ROA* (column (3)), a 1.18 percentage points higher *ROE* (column (6)), and a 0.86 percent points lower cost-to-income ratio (column (9)).

The coefficients on *Province* indicate that the chairman-CEO connection forged through birthplace seems to have negative impacts on bank profitability, while it is generally insignificant. The coefficients on bank-specific variables indicate that larger banks have better performance; better-capitalized banks have higher *ROA* and lower *COI*; a larger proportion of gross loans in total assets is associated with higher profitability and higher efficiency. For board-specific variables, the age of the bank chairman seems to have no impact on bank performance, while the age of the bank CEO is negatively associated with bank performance. In addition, the education background of the chairman and the CEO seems to play no relevant role in bank performance. It is worth noting that

[8] We thank the referee for this valuable suggestion.

[9] Three dummy variables are included to differentiate four types of banks in our sample. The Big-four state-owned commercial banks are the benchmark group. The location dummy variables control the province where the headquarter of the bank is located.

Table 2
Dialect similarity and bank performance.
This table reports the effect of dialect similarity between the chairman and the CEO on bank performance. The sample consists of 83 Chinese commercial banks over the period 2007–2014. The dependent variables are the return on assets (*ROA*), the return on equity (*ROE*), and the cost-to-income ratio (*COI*). The independent variable of interest is *Lg_similar*. We also include a dummy variable *Province* that equals one if the bank chairman and the CEO are born from the same province and zero otherwise. The bank-specific control variables include *Size, r_equity*, and *r_loans*. The board-specific control variables include *Age_p, Age_m, Edu_p, Edu_m, Gov_p, Gov_m, board_num*, and *r_indepent*. We include bank type fixed effects and bank location fixed effects to control for time-invariant omitted variables that are correlated with dialect similarity. We also include year fixed effects to control for variation in common factors through time. Definitions of all variables are provided in the Appendix. Columns (1)–(3) present the results of the relation between dialect similarity and *ROA*; columns (4)–(6) present the results of the relation between dialect similarity and *ROE*; columns (7)–(9) present the results of the relation between dialect similarity and *COI*. Standard errors, clustered at the bank level, are reported in parenthesis. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively.

	ROA			*ROE*			*COI*		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Lg_similar	0.109***	0.092***	0.080***	0.872*	1.324***	1.179***	−1.379***	−0.789**	−0.862**
	(0.034)	(0.032)	(0.028)	(0.510)	(0.461)	(0.419)	(0.426)	(0.363)	(0.364)
Province	−0.216*	−0.144	−0.075	−2.236	−1.912	−0.830	1.631	0.190	−0.240
	(0.115)	(0.112)	(0.102)	(1.525)	(1.482)	(1.368)	(1.314)	(1.052)	(1.025)
Size		0.061**	0.119***		0.676	1.598***		−0.806*	−1.427***
		(0.028)	(0.039)		(0.425)	(0.566)		(0.424)	(0.494)
r_equity		0.047***	0.052***		−1.779***	−1.716***		−0.780***	−0.867***
		(0.014)	(0.014)		(0.234)	(0.221)		(0.204)	(0.216)
r_loans		0.017***	0.017***		0.176***	0.185***		−0.339***	−0.333***
		(0.002)	(0.002)		(0.035)	(0.035)		(0.034)	(0.036)
Age_p			−0.008			−0.115			−0.046
			(0.005)			(0.080)			(0.063)
Age_m			−0.007*			−0.114*			0.159***
			(0.004)			(0.064)			(0.060)
Edu_p			−0.049			−0.581			0.354
			(0.036)			(0.513)			(0.454)
Edu_m			0.043			0.575			−0.232
			(0.028)			(0.480)			(0.372)
Gov_p			0.015			0.563			0.247
			(0.046)			(0.711)			(0.607)
Gov_m			−0.079*			−1.637**			−0.154
			(0.045)			(0.676)			(0.603)
board_num			−0.015			−0.177			0.154
			(0.010)			(0.155)			(0.124)
r_indepent			−0.003			−0.079**			0.057
			(0.002)			(0.038)			(0.036)
Constant	1.519***	−0.759	−0.914	27.256***	18.021*	14.214	56.906***	93.709***	97.451***
	(0.101)	(0.674)	(0.723)	(2.710)	(10.479)	(11.260)	(1.550)	(9.958)	(10.218)
Bank type fixed effect	YES	YES	YES	YES	YES	YES	YES	YES	YES
Bank location fixed effect	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year fixed effect	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	503	503	503	503	503	503	503	503	503
Adjusted R^2	0.247	0.376	0.389	0.129	0.362	0.376	0.267	0.474	0.479

the political connections of the bank CEO have a significantly negative effect on bank profitability. The board size seems to have a negative effect on bank performance while it is insignificant. The independent directors do not play a positive role on bank performance.

In summary, the results in Table 2 suggest that dialect similarity between the chairman and the CEO improves bank performance. However, we still have two different explanations behind the results. One is that the positive effect of dialect similarity is larger than the negative effect. It is also likely that the negative effect is not pronounced in the banking industry, and only the positive effect plays a relevant role. In order to explore the reasons behind our findings, we further examine the impacts of dialect similarity on the monitoring effectiveness and the agency costs.

3.2. Dialect similarity and monitoring effectiveness

First, we examine if the dialect similarity between the chairman and the CEO induces the CEO to engage in risky activities that increase the risk level of banks. We use six measures to gauge bank risk from three dimensions, with an attempt to provide a comprehensive landscape for bank risk. The non-performing loans ratio (*NPLs*), the loan loss reserves ratio (*Loss_reserves*), and the attention loans ratio (*Attention*) are used to measure credit risk; the capital adequacy ratio (*Cap1*) and tier 1 capital adequacy ratio (*Cap2*) are used to measure capital inadequacy risk; the logarithm of *Z-score* (*lnzscore*) is used to measure the likelihood of bankruptcy. The corresponding regression model is specified as follows:

$$Risk_{i,t} = \alpha + \beta_1 Lg\_similar_{i,t} + Province_{i,t} + \gamma_1' Z_{1,it} + \gamma_2' Z_{2,it} + \delta_{Type} + \delta_{Location} + \lambda_t + \varepsilon_{i,t}, \quad (2)$$

where $Risk_{i,t}$ denotes six measures for bank risk, *Lg_similar* denotes dialect similarity between the chairman and the CEO. The dummy variable *Province* is added to isolate the "same birthplace effect" from the "dialect similarity effect" on bank risk. $Z_{1,it}$ and $Z_{2,it}$ are bank-specific and board-specific control variables that are same as those in Eq. (1). The bank type fixed effects (δ_{Type}), bank location fixed effects ($\delta_{Location}$), and year fixed effects λ_t are included to control for time-invariant or common macroeconomic factors that could affect bank risk.

Table 3 presents the regression results of the association between dialect similarity and bank risk. It is interesting to note that dialect similarity plays no relevant role in bank risk, whatever risk measure is used. The bank CEO seems not to be involved in activities that may increase the risk level of banks.

The second consequence that may occur is the managerial "empire building". The CEO has incentives to engage in excessive investment and excessive growth as it is often related with

Table 3
Dialect similarity and bank risk.
This table reports the effect of dialect similarity between the chairman and the CEO on bank risk. The sample consists of 83 Chinese commercial banks over the period 2007–2014. The dependent variable is nonperforming loans ratio (*NPLs*) in column (1), loan loss reserves ratio (*Loss_reserves*) in column (2), attention loans ratio (*Attention*) in column (3), capital adequacy ratio (*Cap1*) in column (4), tier 1 capital adequacy ratio (*Cap2*) in column (5), and the logarithm of *Z-score* (*lnzscore*) in column (6). The independent variable of interest is *Lg_similar*. We also include a dummy variable *Province* that equals one if the bank chairman and the CEO are born from the same province and zero otherwise. The bank-specific control variables include *Size*, *r_equity*, and *r_loans*. The board-specific control variables include *Age_p*, *Age_m*, *Edu_p*, *Edu_m*, *Gov_p*, *Gov_m*, *board_num*, and *r_indepent*. We include bank type fixed effects and bank location fixed effects to control for time-invariant omitted variables that are correlated with dialect similarity. We also include year fixed effects to control for variation in common factors through time. Definitions of all variables are provided in the Appendix. Standard errors, clustered at the bank level, are reported in parenthesis. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively.

	(1) *NPLs*	(2) *Loss_reserves*	(3) *Attention*	(4) *Cap1*	(5) *Cap2*	(6) *lnzscore*
Lg_similar	−0.021	−0.082	−0.028	0.121	0.080	0.019
	(0.056)	(0.052)	(0.158)	(0.096)	(0.071)	(0.025)
Province	−0.232	0.017	−0.228	0.058	0.129	0.475***
	(0.189)	(0.155)	(0.504)	(0.254)	(0.198)	(0.073)
Size	0.197*	−0.024	0.628**	0.504***	0.038	0.269***
	(0.116)	(0.070)	(0.261)	(0.133)	(0.112)	(0.033)
r_equity	−0.045	−0.003	0.194**	1.224***	1.370***	0.128***
	(0.030)	(0.024)	(0.092)	(0.099)	(0.066)	(0.017)
r_loans	−0.002	0.017***	−0.023	−0.070***	−0.097***	0.012***
	(0.011)	(0.004)	(0.021)	(0.011)	(0.009)	(0.003)
Age_p	0.002	0.005	0.026	−0.025*	−0.013	−0.021***
	(0.013)	(0.010)	(0.037)	(0.015)	(0.011)	(0.005)
Age_m	−0.002	0.002	−0.178***	0.004	0.016	0.002
	(0.010)	(0.008)	(0.040)	(0.017)	(0.013)	(0.004)
Edu_p	0.124	−0.075	−0.424	0.049	−0.012	−0.137***
	(0.090)	(0.066)	(0.277)	(0.099)	(0.080)	(0.035)
Edu_m	−0.027	−0.151***	−0.326	−0.101	−0.069	−0.047*
	(0.143)	(0.055)	(0.245)	(0.112)	(0.080)	(0.028)
Gov_p	0.241	−0.008	−1.307***	0.411***	0.086	−0.057
	(0.244)	(0.096)	(0.373)	(0.155)	(0.113)	(0.039)
Gov_m	0.167	−0.051	0.013	−0.358**	−0.195	−0.019
	(0.126)	(0.089)	(0.338)	(0.164)	(0.122)	(0.041)
board_num	−0.027	0.025	0.010	−0.013	−0.018	−0.038***
	(0.047)	(0.023)	(0.071)	(0.030)	(0.024)	(0.010)
r_indepent	−0.047*	−0.016***	−0.046**	−0.008	−0.017**	0.004
	(0.026)	(0.005)	(0.018)	(0.009)	(0.008)	(0.002)
Constant	−1.787	1.784	6.748	−1.635	7.066***	−1.710**
	(2.381)	(1.427)	(5.878)	(3.016)	(2.513)	(0.727)
Bank type fixed effect	YES	YES	YES	YES	YES	YES
Bank location fixed effect	YES	YES	YES	YES	YES	YES
Year fixed effect	YES	YES	YES	YES	YES	YES
Observations	503	503	462	503	503	503
Adjusted R^2	0.057	0.313	0.450	0.731	0.855	0.648

more resources under control, higher compensation, and enhanced prestige (Murphy, 1985; Jensen, 1986; Coles et al., 2014). These activities may reduce firm performance and destroy firm value. For instance, Hope and Thomas (2008) find that the decrease of the monitoring effectiveness due to nondisclosure of geographic earnings is associated with a significant increase in foreign sales growth. Moreover, it is associated with lower profit margin and lower Tobin's Q. In a similar vein, the dialect similarity may reduce the monitoring capability of the chairman to the CEO, which lead to the CEO's "empire building".

To check this channel, we estimate the regression specified as follows:

$$Expansion_{i,t} = \alpha + \beta_1 Lg\_similar_{i,t} + Province_{i,t} + \gamma_1' Z_{1,it} + \gamma_2' Z_{2,it} + \delta_{Type} + \delta_{Location} + \lambda_t + \varepsilon_{i,t}, \quad (3)$$

where $Expansion_{it}$ denotes the degree of a CEO's empire building. Following Hope and Thomas (2008) and Humphery-Jenner (2012), we use two common measures including the growth rate of total asset (*g_asset*) and the growth rate of total operating income (*g_tot_inc*), which are calculated over a fiscal year. We also propose another measure, that is the growth rate of the number of branches within a year (*g_branch*), as it is directly related to bank expansion. As seen from Table 4, dialect similarity between the chairman and the CEO does not lead to the CEO's empire building, as the coefficient on *Lg_similar* is all insignificant across model specifications.

Third, we investigate the effect of dialect similarity between the chairman and the CEO on CEO pay. If dialect similarity weakens the monitoring effectiveness and aggravates the agency problem, it is natural for CEOs to extract higher compensation (Core et al., 1999). In addition, the pay-performance sensitivity for CEOs will decrease as dialect similarity results in lower efficiency pressures on the management team (Hwang and Kim, 2009; Coles et al., 2014).

We first examine the effect of dialect similarity between the chairman and the CEO on CEO pay. It should be noted that we focus on the subsample of 16 listed Chinese banks only, because the reporting of CEO pay is not mandatory for unlisted banks. The corresponding regression model is specified as follows:

$$CEOpay_{i,t} = \alpha + \beta_1 Lg\_similar_{i,t} + \gamma_1' Z_{1,it} + \gamma_2' Z_{2,it} + \alpha_i + \lambda_t + \varepsilon_{i,t}, \quad (4)$$

where the dependent variable is CEO's cash compensation (*CEOpay*), and the independent variable of interest is the dialect similarity between the chairman and the CEO (*Lg_similar*). $Z_{1,it}$ and

Table 4
Dialect similarity and the CEO's empire building.
This table reports the effect of dialect similarity between the chairman and the CEO on CEO's empire building. The sample consists of 83 Chinese commercial banks over the period 2007–2014. The dependent variable is the growth rate of total assets (*g_asset*) in column (1), the growth rate of total operating income (*g_tot_inc*) in column (2), and the growth rate of the number of branches (*g_branch*) in column (3). The independent variable of interest is *Lg_similar*. We also include a dummy variable *Province* that equals one if the bank chairman and the CEO are born from the same province and zero otherwise. The bank-specific control variables include *Size*, *r_equity*, and *r_loans*. The board-specific control variables include *Age_p*, *Age_m*, *Edu_p*, *Edu_m*, *Gov_p*, *Gov_m*, *board_num*, and *r_indepent*. We include bank type fixed effects and bank location fixed effects to control for time-invariant omitted variables that are correlated with dialect similarity. We also include year fixed effects to control for variation in common factors through time. Definitions of all variables are provided in the Appendix. Standard errors, clustered at the bank level, are reported in parenthesis. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively.

	(1) *g_asset*	(2) *g_tot_inc*	(3) *g_branch*
Lg_similar	0.708	1.755	0.719
	(0.715)	(1.347)	(0.780)
Province	−6.707***	−17.971***	−2.347
	(2.005)	(4.789)	(2.594)
Size	−2.044*	−2.918	0.464
	(1.153)	(3.168)	(1.242)
r_equity	0.503	1.400	0.907*
	(0.698)	(0.965)	(0.498)
r_loans	−0.784***	−1.112***	−0.271***
	(0.119)	(0.225)	(0.103)
Age_p	−0.224	0.481	−0.101
	(0.153)	(0.451)	(0.150)
Age_m	0.175	0.153	−0.122
	(0.134)	(0.208)	(0.149)
Edu_p	0.086	1.042	0.307
	(0.829)	(1.365)	(1.233)
Edu_m	−0.852	−3.649**	1.138
	(0.881)	(1.797)	(1.073)
Gov_p	−2.672**	−9.178***	−1.632
	(1.221)	(2.994)	(1.700)
Gov_m	2.007*	7.469***	0.338
	(1.177)	(2.614)	(1.566)
board_num	0.234	0.815	0.258
	(0.368)	(0.620)	(0.293)
r_indepent	0.223**	0.262*	−0.005
	(0.089)	(0.154)	(0.093)
Constant	104.119***	113.914*	7.677
	(28.618)	(65.681)	(29.055)
Bank type fixed effect	YES	YES	YES
Bank location fixed effect	YES	YES	YES
Year fixed effect	YES	YES	YES
Observations	469	469	385
Adjusted R^2	0.433	0.335	0.228

$Z_{2,it}$ are bank-specific and board-specific control variables which may affect CEO pay. Following prior studies (Core et al., 1999; Hwang and Kim, 2009; Gao and Li, 2015), these control variables include the logarithm of total assets (*Size*), the ratio of market value of equity to book value of equity (*M_B*), the return on assets (*ROA*), the annual stock return (*RET*), the number of board members (*Board_num*), the proportion of independent directors (*r_indepent*), and the number of years the CEO has been in office (*CEO_tenure*). We also include bank fixed effects and year fixed effects to control any unobservable firm-level and year-level differences.

Table 5 presents the regression results, where the dependent variable is the level of a CEO's cash compensation in thousands of RMB in columns (1)-(3) and the logarithm of a CEO's cash compensation in columns (4)-(6). The coefficients on *Lg_similar* are negative and statistically significant across all specifications. It appears that dialect similarity does not weaken the monitoring capability as a higher level of dialect similarity between the chairman and the CEO is associated with a lower level of CEO pay.

Next, we examine the effect of dialect similarity between the chairman and the CEO on the CEO's pay-performance sensitivity. Specifically, we estimate the following regression:

$$\begin{aligned} CEOpay_{i,t} = \alpha + (\beta_1 + \beta_2 Lg\_similar_{i,t} + \beta_3 Size_{i,t} + \beta_4 Leverage_{i,t} \\ + \beta_5 Firm\_risk_{i,t}) \times Performance_{i,t} + \gamma_1 Lg\_similar_{i,t} \\ + \gamma_2 Size_{i,t} + \gamma_3 Leverage_{i,t} + \gamma_4 Firm\_risk_{i,t} + \alpha_i \\ + \lambda_t + \varepsilon_{i,t}. \end{aligned} \quad (5)$$

The main coefficient of interest is β_2, where a positive value indicates that the CEO's pay-performance sensitivity increases with dialect similarity. We use the annual stock return to measure firm performance as it reflects the return to shareholders (Cichello, 2005). Given that few CEO in our sample is granted stock or stock options, CEO pay may not respond to stock return strongly. We also use the accounting measure *ROA* to proxy for firm performance (Gao and Li, 2015). We include firm size (*Size*), the leverage ratio (*Leverage*), and firm risk (*Firm_risk*) in our regression, all of which have been shown to have great impacts on pay-performance sensitivity (Aggarwal and Samwick, 1999; John et al., 2010; Gao and Li, 2015). The firm fixed effects and year fixed effects are also included. According to the results in Table 6, the coefficient estimate β_2 is insignificant when firm performance is measured as annual stock return (columns (1) and (2)), and is positive and statistically significant when firm performance is measured as *ROA* (columns (3) and (4)). These results regarding CEO pay do not support the conjecture that dialect similarity between the bank chairman and the CEO lowers the monitoring effectiveness.

The results thus far indicate that dialect similarity between the chairman and the CEO improves bank performance. Further analyses show that dialect similarity does not lower the monitoring effectiveness as it does not cause higher bank risk, more bank expansions, higher CEO compensation, or lower pay-performance sensitivity. These results seem to be confusing at first glance because prior studies regarding non-financial firms document that social ties, in general, weaken monitoring capability, which in turn causes more severe agency problems and destroys firm value (Hwang and Kim, 2009; Coles et al., 2014; Khanna et al., 2015).

However, we should realize that banks, as an important type of financial institutions, have several unique features that are different from non-financial firms. Besides the internal monitoring from the board, banks are also subject to strong external monitoring from uninsured debtholders and regulators (John et al., 2010). While the insured depositors do not have incentives to monitor banks as they receive protection from the deposit insurance agency, uninsured debtholders have strong incentives to monitor bank operations and management. Moreover, banks are subject to rigid regulations and frequent examinations by regulatory authorities as bank failures can have devastating consequences to the real economy (Chen and Ebrahim, 2018). In practice, the CAMELS is an internationally standardized rating system for regulators to supervise banks' overall conditions. This system assesses a bank from six dimensions: capital adequacy, asset quality, management capability, earnings, liquidity, and sensitivity.[10] Banks with low ratings will receive close supervisory attention or even severe punishment from regulators. In a highly regulated industry, bank CEOs have much less managerial discretion and flexibility over business. In addition, the cost to engage in risky activities is much higher because it is more likely to be detected by

[10] For China's banking industry, the CAMELS rating system was implemented in 2006.

Table 5
Dialect similarity and CEO pay.
This table reports the effect of dialect similarity between the chairman and the CEO on CEO pay. We restrict our sample to 16 public banks that are listed in Shanghai or Shenzhen stock exchanges over the period 2007–2014. The dependent variable is the CEO's cash compensation (*CEO_pay*) in columns (1)–(3), and the logarithm of CEO's compensation (*Ln*(*CEO_pay*)) in columns (4)–(6). The cash compensation is in thousands of RMB. The independent variable of interest is *Lg_similar*. The control variables include *Size, MB, ROA, RET, Board_num, r_indepent,* and *CEO_tenure*. We also include bank fixed effects and year fixed effects in the regression. Definitions of all variables are provided in the Appendix. Standard errors, clustered at the bank level, are reported in parenthesis. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively.

	(1) *CEO_pay*	(2) *CEO_pay*	(3) *CEO_pay*	(4) *Ln*(*CEO_pay*)	(5) *Ln*(*CEO_pay*)	(6) *Ln*(*CEO_pay*)
Lg_similar	−669.8***	−299.8*	−473.9***	−0.184***	−0.127*	−0.216***
	(112.9)	(158.6)	(169.1)	(0.0371)	(0.0697)	(0.0640)
Size			2489.3**			0.841***
			(1055.3)			(0.285)
M_B			97.26			0.0607
			(382.2)			(0.0707)
ROA			690.4			0.294
			(986.1)			(0.243)
RET			27.40			−0.0159
			(642.0)			(0.162)
Board_num			22.00			−0.00176
			(106.8)			(0.0317)
r_indepent			170.7			−1.128
			(4133.3)			(1.177)
CEO_tenure			182.5***			0.0774***
			(67.99)			(0.0248)
Constant	3541.0***	6138.4***	−27,662.2*	7.904***	8.616***	−2.442
	(274.9)	(963.2)	(15,111.4)	(0.0795)	(0.204)	(3.825)
Bank fixed effect	NO	YES	YES	NO	YES	YES
Year fixed effect	NO	YES	YES	NO	YES	YES
Observations	122	122	122	122	122	122
Adjusted R^2	0.136	0.749	0.781	0.107	0.714	0.769

Table 6
Dialect similarity and the CEO's pay-performance sensitivity.
This table reports the effect of dialect similarity between the chairman and the CEO on the CEO's pay-performance sensitivity. We restrict our sample to 16 public banks that are listed in Shanghai or Shenzhen stock exchanges over the period 2007–2014. The dependent variable is the CEO's cash compensation (*CEO_pay*) in columns (1) and (3), and the logarithm of CEO's cash compensation (*Ln*(*CEO_pay*)) in columns (2) and (4). The independent variable *Performance* is measured as annual stock return in columns (1) and (2); The independent variable *Performance* is measured as return on assets (*ROA*) in columns (3) and (4). We also include bank fixed effects and year fixed effects in the regression. Definitions of all variables are provided in the Appendix. Standard errors, clustered at the bank level, are reported in parenthesis. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively.

	(1) *CEO_pay*	(2) *Ln*(*CEO_pay*)	(3) *CEO_pay*	(4) *Ln*(*CEO_pay*)
Performance	7004.1	0.295	−109153.3***	−36.51***
	(11638.4)	(4.814)	(39156.2)	(12.51)
Lg_similar	−229.1	−0.0917	−1875.9**	−0.662**
	(175.7)	(0.0649)	(760.6)	(0.257)
Size	1928.9	0.428	1221.0	0.323
	(1170.2)	(0.321)	(1318.5)	(0.345)
Leverage	−185.0	−0.0155	−1215.6**	−0.354**
	(145.2)	(0.0388)	(529.5)	(0.158)
Firm_risk	−1338.4	0.183	−3972.0	−0.353
	(7696.5)	(2.279)	(27652.6)	(6.827)
Lg_similar Performance*	−57.14	−0.0206	1411.2**	0.484**
	(167.6)	(0.0629)	(643.9)	(0.225)
*Size * Performance*	−114.7	−0.103	315.7	0.169
	(186.6)	(0.0707)	(733.2)	(0.259)
*Leverage * Performance*	−6.510	0.0254	1101.4**	0.363***
	(127.9)	(0.0533)	(441.6)	(0.136)
*Firmrisk * Performance*	−27798.1***	−8.162***	502.4	−0.873
	(7858.1)	(2.790)	(24155.2)	(5.839)
Constant	−1476.9	4.460	107,049.5**	38.22**
	(9135.9)	(3.710)	(49291.0)	(15.28)
Bank fixed effect	YES	YES	YES	YES
Year fixed effect	YES	YES	YES	YES
Observations	122	122	122	122
Adjusted R^2	0.796	0.754	0.786	0.757

Table 7
The dialect similarity and banks' agency costs.
This table reports the effect of dialect similarity between the chairman and the CEO on banks' agency costs. The sample consists of 83 Chinese commercial banks over the period 2007–2014. The dependent variable is the ratio of the general and administrative expenses to total operating income (*r_expense*) in columns (1)–(3), and the ratio of total operating income to total earning assets (*r_income*) in columns (4)–(6). The independent variable of interest is *Lg_similar*. We also include a dummy variable *Province* that equals one if the bank chairman and the CEO are born from the same province and zero otherwise. The bank-specific control variables include *Size, r_equity*, and *r_loans*. The board-specific control variables include *Age_p, Age_m, Edu_p, Edu_m, Gov_p, Gov_m, board_num*, and *r_indepent*. We include bank type fixed effects and bank location fixed effects to control for time-invariant omitted variables that are correlated with dialect similarity. We also include year fixed effects to control for variation in common factors through time. Definitions of all variables are provided in the Appendix. Standard errors, clustered at the bank level, are reported in parenthesis. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively.

	r_expense			*r_income*		
	(1)	(2)	(3)	(4)	(5)	(6)
Lg_similar	−0.566	−0.887*	−1.021**	0.218***	0.191***	0.168**
	(0.475)	(0.465)	(0.451)	(0.072)	(0.071)	(0.068)
Province	0.025	0.404	−0.058	−0.862***	−0.626**	−0.585**
	(1.365)	(1.282)	(1.200)	(0.240)	(0.244)	(0.253)
Size		−0.683	−0.748*		−0.079	0.034
		(0.428)	(0.449)		(0.072)	(0.087)
r_equity		0.243**	0.224*		0.017	0.016
		(0.121)	(0.130)		(0.026)	(0.027)
r_loans		0.048	0.056		0.044***	0.045***
		(0.038)	(0.037)		(0.006)	(0.006)
Age_p			−0.135**			−0.021**
			(0.053)			(0.010)
Age_m			0.100**			−0.013
			(0.043)			(0.009)
Edu_p			0.087			−0.129*
			(0.308)			(0.067)
Edu_m			−1.169***			−0.089
			(0.316)			(0.067)
Gov_p			−1.566***			−0.013
			(0.518)			(0.126)
Gov_m			0.987**			−0.168
			(0.440)			(0.105)
board_num			−0.091			−0.017
			(0.109)			(0.021)
r_indepent			0.050			−0.003
			(0.031)			(0.005)
Constant	20.951***	34.822***	41.822***	5.290***	4.259**	4.473***
	(1.240)	(10.696)	(10.631)	(0.194)	(1.692)	(1.710)
Bank type fixed effect	YES	YES	YES	YES	YES	YES
Bank location fixed effect	YES	YES	YES	YES	YES	YES
Year fixed effect	YES	YES	YES	YES	YES	YES
Observations	499	499	499	499	499	499
Adjusted R^2	0.368	0.424	0.462	0.568	0.625	0.632

regulators. As a result, the external supervisory and institutional governance factors may offset the potential decrease of the board monitoring capability due to dialect similarity between the chairman and the CEO. Our findings indicate the necessity and significance to focus on the bank sample only and examine the value of language to banks, because of the unique features of financial institutions.

3.3. Dialect similarity and agency costs

In order to provide more convincing evidence, we examine the effect of dialect similarity on banks' agency costs directly in this subsection. To do so, we estimate the following regression model:

$$Agency_{i,t} = \alpha + \beta_1 lang\_similar_{i,t} + Province_{i,t} + \gamma_1' Z_{1,it} + \gamma_2' Z_{2,it} + \delta_{Type} + \delta_{Location} + \lambda_t + \varepsilon_{i,t}, \quad (6)$$

where $Agency_{i,t}$ denotes two measures of the agency costs for bank i in year t. The definitions of the other variables are the same as those in Eq. (1). Table 7 reports the regression results.[11] First, a higher degree of dialect similarity is negatively associated with the expense ratio (*r_expense*). The coefficient on *Lg_similar* is significant at 10 percent level when bank-specific variables are controlled and significant at 5 percent level when both bank-specific and board-specific are controlled. To get a sense of the economic magnitude, a higher level of dialect similarity between the chairman and the CEO is, on average, associated with a 1.021 percentage points decrease of the expense ratio (column (3)). For a bank with the average total operating income 6.43 billion RMB, the result indicates a 6.57 million RMB reduction of the general and administration expenses. Second, the coefficients on *Lg_similar* in columns (4)–(6) indicate that dialect similarity has a significantly positive effect on the asset utilization ratio across all model specifications. A higher level of dialect similarity between the chairman and the CEO is, on average, associated with a 0.168 percentage points increase of the ratio of total operating income to total earning assets. For a bank with the average total earning assets 933 billion RMB, the result indicates a 1.57 billion RMB increase of total operating income. In summary, the results in Table 7 indicate that dialect

[11] Four observations (Bank of Xi'an in 2009, Qingdao Rural Commercial Bank in 2014, Wuxi Rural Commercial Bank in 2010, and JH Bank in 2014) are excluded from our sample due to the missing values in the general and administrative expenses, and thus the total observations are 499 in this regression.

Table 8
The dialect similarity and banks' agency costs: heterogeneity.
This table reports the heterogeneity of the effect of dialect similarity between the chairman and the CEO on banks' agency cost. The sample consists of 83 Chinese commercial banks over the period 2007–2014. We divide the whole sample into two subsamples: the bank goes to the subsample *work_outside=1* if the location of the bank headquarter is different from both the chairman's and the CEO's hometowns, otherwise the bank goes to the subsample *work_outside=0*. Then we re-estimate the relation between dialect similarity and banks' agency costs for these two subsamples, respectively. The dependent variable is the ratio of the general and administrative expenses to total operating income (*r_expense*) in columns (1)–(2), and the ratio of total operating income to total earning assets (*r_income*) in columns (3)–(4). The independent variable of interest is *Lg_similar*. We also include a dummy variable *Province* that equals one if the bank chairman and the CEO are born from the same province and zero otherwise. The bank-specific control variables include *Size, r_equity*, and *r_loans*. The board-specific control variables include *Age_p, Age_m, Edu_p, Edu_m, Gov_p, Gov_m, board_num*, and *r_indepent*. We include bank type fixed effects and bank location fixed effects to control for time-invariant omitted variables that are correlated with dialect similarity. We also include year fixed effects to control for variation in common factors through time. Definitions of all variables are provided in the Appendix. Standard errors, clustered at the bank level, are reported in parenthesis. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively.

	r_expense		*r_income*	
	work_outside=1	*work_outside*=0	*work_outside*=1	*work_outside*=0
	(1)	(2)	(3)	(4)
Lg_similar	−1.437***	−0.778	0.522***	0.106
	(0.488)	(0.573)	(0.122)	(0.074)
Province	3.517**	−0.990	−1.554***	−0.498
	(1.755)	(1.517)	(0.498)	(0.315)
Size	−5.347***	0.112	−0.103	0.030
	(1.251)	(0.562)	(0.279)	(0.122)
r_equity	0.713***	−0.015	−0.066	−0.001
	(0.191)	(0.168)	(0.059)	(0.029)
r_loans	0.087	0.108***	0.039**	0.045***
	(0.059)	(0.039)	(0.016)	(0.008)
Age_p	−0.153**	−0.129*	−0.016	−0.005
	(0.073)	(0.076)	(0.022)	(0.012)
Age_m	−0.120	0.191***	0.005	0.001
	(0.079)	(0.055)	(0.017)	(0.011)
Edu_p	1.435**	0.036	−0.078	−0.098
	(0.663)	(0.414)	(0.161)	(0.082)
Edu_m	1.134**	−2.269***	−0.100	−0.136*
	(0.461)	(0.403)	(0.125)	(0.080)
Gov_p	0.050	−1.627**	−0.135	0.054
	(0.812)	(0.649)	(0.216)	(0.142)
Gov_m	1.753**	−0.471	−0.051	−0.319**
	(0.859)	(0.633)	(0.268)	(0.132)
board_num	0.096	−0.205	0.177***	−0.054**
	(0.206)	(0.154)	(0.059)	(0.026)
r_indepent	0.099***	0.026	−0.010	0.011*
	(0.028)	(0.048)	(0.008)	(0.006)
Constant	139.784***	18.015	4.032	3.305
	(27.242)	(12.162)	(5.289)	(2.422)
Bank type fixed effect	YES	YES	YES	YES
Bank location fixed effect	YES	YES	YES	YES
Year fixed effect	YES	YES	YES	YES
Observations	143	356	143	356
Adjusted R^2	0.755	0.448	0.790	0.626

similarity indeed reduces banks' agency costs, which is conducive for bank performance.

In addition, if dialect similarity alleviates banks' agency problem through improved communication and mutual trust among in-group members, we conjecture that this effect is more pronounced among banks whose chairman and CEO both work outside their hometowns. As a marker for social identify, the effect of dialect similarity is likely to be context-specific (Jaspal, 2009). As mentioned by Cohen (2000), "One can be Muslim in the Mosque, Asian in the street, Asian British at political hustlings and British when travelling abroad, all in a single day." In a similar vein, dialect similarity would be a strong marker for group identity for those working outside their hometown.

To check it, we divide the whole sample into two subsamples: the bank goes to the subsample *work_outside* = 1 if the location of the bank headquarter is different from both the chairman's and the CEO's hometowns, otherwise the bank goes to the subsample *work_outside* = 0. Then we re-estimate the relation between dialect similarity and agency costs. As seen from Table 8, the coefficient on *Lg_similar* is significant in subsample *work_outside* = 1, while it is insignificant in the subsample *work_outside* = 0. Moreover, the magnitude of the coefficients on *Lg_similar* in subsample *work_outside* = 1 is larger than that in the whole sample. These results strongly lend support to our conjecture.

4. Robustness checks

In this section, we perform several robustness checks for our main findings.

4.1. Alternative measures for dialect similarity

In the baseline model, we use an ordered variable to measure the strength of dialect similarity between the chairman and the CEO. Here we introduce three dummy variables as alternative measures: *Dialect1* is equal to one if the dialects that the chairman and the CEO speak belong to the same supergroup and zero otherwise; *Dialect2* is equal to one if the dialects that the chairman and the

Table 9
Dialect similarity and bank performance: alternative measures.
This table reports the effect of dialect similarity between the chairman and the CEO on bank performance when alternative measures are used to proxy for dialect similarity. The sample consists of 83 Chinese commercial banks over the period 2007–2014. The dependent variables are the return on assets (*ROA*), the return on equity (*ROE*), and the cost-to-income ratio (*COI*). The independent variables of interest are three dummy variables *Dialect1, Dialect2*, and *Dialect3. Dialect1* is equal to one if the dialects that the chairman and the CEO speak belong to the same supergroup and zero otherwise; *Dialect2* is equal to one if the dialects that the chairman and the CEO speak belong to the same group and zero otherwise; *Dialect3* is equal to one if the dialects that the chairman and the CEO speak belong to the same subgroup and zero otherwise. We also include a dummy variable *Province* that equals one if the bank chairman and the CEO are born from the same province and zero otherwise. The bank-specific control variables include *Size, r_equity*, and *r_loans*. The board-specific control variables include *Age_p, Age_m, Edu_p, Edu_m, Gov_p, Gov_m, board_num*, and *r_indepent*. We include bank type fixed effects and bank location fixed effects to control for time-invariant omitted variables that are correlated with dialect similarity. We also include year fixed effects to control for variation in common factors through time. Definitions of all variables are provided in the Appendix. Columns (1)–(3) present the results of the relation between dialect similarity and *ROA*; columns (4)–(6) present the results of the relation between dialect similarity and *ROE*; columns (7)–(9) present the results of the relation between dialect similarity and *COI*. Standard errors, clustered at the bank level, are reported in parenthesis. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively.

	ROA			*ROE*			*COI*		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Dialect1	0.126**			1.294			−1.670*		
	(0.062)			(0.946)			(0.853)		
Dialect2		0.190**			3.043***			−2.328**	
		(0.075)			(1.085)			(0.954)	
Dialect3			0.172***			2.826***			−1.386*
			(0.058)			(0.900)			(0.776)
Province	−0.008	−0.054	−0.030	0.474	−0.681	−0.328	−0.785	−0.284	−0.975
	(0.091)	(0.099)	(0.087)	(1.250)	(1.340)	(1.222)	(0.974)	(1.008)	(0.920)
Size	0.125***	0.118***	0.113***	1.671***	1.576***	1.492***	−1.510***	−1.410***	−1.379***
	(0.041)	(0.039)	(0.039)	(0.589)	(0.559)	(0.559)	(0.509)	(0.491)	(0.499)
r_equity	0.052***	0.052***	0.052***	−1.700***	−1.715***	−1.717***	−0.876***	−0.866***	−0.870***
	(0.014)	(0.014)	(0.014)	(0.222)	(0.219)	(0.223)	(0.216)	(0.217)	(0.215)
r_loans	0.018***	0.017***	0.017***	0.194***	0.187***	0.183***	−0.338***	−0.333***	−0.334***
	(0.002)	(0.002)	(0.002)	(0.036)	(0.035)	(0.036)	(0.036)	(0.036)	(0.036)
Age_p	−0.009*	−0.009*	−0.007	−0.140*	−0.128	−0.102	−0.031	−0.037	−0.044
	(0.005)	(0.005)	(0.005)	(0.080)	(0.080)	(0.081)	(0.062)	(0.063)	(0.064)
Age_m	−0.006	−0.006*	−0.008**	−0.095	−0.103	−0.125**	0.148**	0.151**	0.159***
	(0.004)	(0.004)	(0.004)	(0.064)	(0.063)	(0.064)	(0.060)	(0.059)	(0.061)
Edu_p	−0.057	−0.049	−0.044	−0.696	−0.572	−0.501	0.449	0.344	0.337
	(0.037)	(0.036)	(0.036)	(0.530)	(0.519)	(0.515)	(0.462)	(0.456)	(0.462)
Edu_m	0.043	0.042	0.044	0.578	0.559	0.592	−0.233	−0.220	−0.242
	(0.028)	(0.028)	(0.029)	(0.472)	(0.476)	(0.488)	(0.370)	(0.371)	(0.372)
Gov_p	0.023	0.031	0.012	0.740	0.793	0.477	0.186	0.082	0.217
	(0.046)	(0.045)	(0.045)	(0.714)	(0.707)	(0.708)	(0.615)	(0.607)	(0.611)
Gov_m	−0.083*	−0.090*	−0.085*	−1.744**	−1.780***	−1.692**	−0.153	−0.053	−0.068
	(0.046)	(0.046)	(0.046)	(0.694)	(0.685)	(0.679)	(0.610)	(0.608)	(0.614)
board_num	−0.018*	−0.018*	−0.016	−0.231	−0.207	−0.178	0.175	0.174	0.175
	(0.010)	(0.010)	(0.010)	(0.159)	(0.156)	(0.157)	(0.124)	(0.122)	(0.123)
r_indepent	−0.003	−0.003	−0.003	−0.071*	−0.077**	−0.078**	0.054	0.056	0.054
	(0.002)	(0.002)	(0.002)	(0.038)	(0.038)	(0.038)	(0.036)	(0.036)	(0.036)
Constant	−1.062	−0.864	−0.747	12.741	15.009	16.940	99.434***	96.849***	96.080***
	(0.764)	(0.717)	(0.708)	(11.679)	(11.172)	(11.056)	(10.603)	(10.163)	(10.252)
Bank type fixed effect	YES	YES	YES	YES	YES	YES	YES	YES	YES
Bank location fixed effect	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year fixed effect	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	503	503	503	503	503	503	503	503	503
Adjusted R^2	0.381	0.386	0.388	0.366	0.375	0.378	0.477	0.479	0.476

CEO speak belong to the same group and zero otherwise; *Dialect3* is equal to one if the dialects that the chairman and the CEO speak belong to the same subgroup and zero otherwise. Given the multi-layered classification of Chinese dialects, this specification allows us to identify the role that each layer plays in affecting bank performance. As seen from Table 9, our main finding of the positive association between dialect similarity and bank performance remains unchanged.

4.2. The separation of the "dialect level effect" from the "dialect similarity effect"

Note that people who speak a specific dialect may have their own culture, which could have a significant impact on a person's personality traits (Mai and Hoffmann, 2011). In particular, people who speak a specific dialect may have an outstanding reputation and enjoy high social prestige. For example, English speakers with German accent are considered being harsh in quality control (Mai and Hoffmann, 2011). In China, the majority of people who speak *Yue* dialect are born in Guangdong, a province with a long history of running business and a strong trading connection with other countries (Hunter, 2013). These businessmen are also known as "Cantonese merchants", who have strong market sensitivity and put great priority on pragmatism and robustness. These characteristics could have a significant impact on bank performance. Therefore, we also take the possible "dialect level effect" into account and add a dummy variable *Yue_CEO* that equals one if the CEO speaks *Yue* Dialect and zero otherwise in Eq. (1). Then we re-estimate the relation between dialect similarity and bank performance. As seen from Table 10, dialect similarity is still positively associated with bank performance. In addition, the coefficients on *Yue_CEO* are positive and significant when the dependent variables are *ROA* and *ROE*, and are negative and significant when the dependent variable is *COI*, suggesting that the CEOs who

Table 10
Dialect similarity and bank performance excluding the "dialect level effect".
This table reports the effect of dialect similarity between the chairman and the CEO on bank performance when we additionally control the "dialect level effect". The sample consists of 83 Chinese commercial banks over the period 2007–2014. The dependent variables are return on assets (*ROA*) in columns (1)–(2), return on equity (*ROE*) in columns (3)–(4), and the cost-to-income ratio (*COI*) in columns (5)–(6). The independent variable of interest is *Lg_similar*. The dummy variable *Yue_CEO* is equal to one if the CEO speaks *Yue* Dialect and zero otherwise. We also include a dummy variable *Province* that equals one if the bank chairman and the CEO are born from the same province and zero otherwise. The bank-specific control variables include *Size, r_equity*, and *r_loans*. The board-specific control variables include *Age_p, Age_m, Edu_p, Edu_m, Gov_p, Gov_m, board_num*, and *r_indepent*. We include bank type fixed effects and bank location fixed effects to control for time-invariant omitted variables that are correlated with dialect similarity. We also include year fixed effects to control for variation in common factors through time. Definitions of all variables are provided in the Appendix. Columns (1)–(2) present the results of the relation between dialect similarity and *ROA*; columns (3)–(4) present the results of the relation between dialect similarity and *ROE*; columns (5)–(6) present the results of the relation between dialect similarity and *COI*. Standard errors, clustered at the bank level, are reported in parenthesis. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively.

	ROA		*ROE*		*COI*	
	(1)	(2)	(3)	(4)	(5)	(6)
Lg_similar	0.080***	0.089***	1.179***	1.276***	−0.862**	−0.935***
	(0.028)	(0.029)	(0.419)	(0.422)	(0.364)	(0.357)
Yue_CEO		0.351***		4.141**		−3.132*
		(0.130)		(2.037)		(1.674)
Province	−0.075	−0.140	−0.830	−1.602	−0.240	0.344
	(0.102)	(0.110)	(1.368)	(1.492)	(1.025)	(1.108)
Size	0.119***	0.118***	1.598***	1.586***	−1.427***	−1.418***
	(0.039)	(0.039)	(0.566)	(0.565)	(0.494)	(0.495)
r_equity	0.052***	0.049***	−1.716***	−1.741***	−0.867***	−0.847***
	(0.014)	(0.014)	(0.221)	(0.225)	(0.216)	(0.214)
r_loans	0.017***	0.017***	0.185***	0.183***	−0.333***	−0.331***
	(0.002)	(0.002)	(0.035)	(0.036)	(0.036)	(0.036)
Age_p	−0.008	−0.007	−0.115	−0.110	−0.046	−0.050
	(0.005)	(0.005)	(0.080)	(0.079)	(0.063)	(0.063)
Age_m	−0.007*	−0.005	−0.114*	−0.082	0.159***	0.135**
	(0.004)	(0.004)	(0.064)	(0.066)	(0.060)	(0.061)
Edu_p	−0.049	−0.042	−0.581	−0.502	0.354	0.294
	(0.036)	(0.035)	(0.513)	(0.510)	(0.454)	(0.451)
Edu_m	0.043	0.053*	0.575	0.685	−0.232	−0.315
	(0.028)	(0.028)	(0.480)	(0.480)	(0.372)	(0.370)
Gov_p	0.015	0.026	0.563	0.689	0.247	0.152
	(0.046)	(0.045)	(0.711)	(0.706)	(0.607)	(0.607)
Gov_m	−0.079*	−0.075*	−1.637**	−1.584**	−0.154	−0.194
	(0.045)	(0.045)	(0.676)	(0.673)	(0.603)	(0.603)
board_num	−0.015	−0.015	−0.177	−0.173	0.154	0.150
	(0.010)	(0.009)	(0.155)	(0.154)	(0.124)	(0.122)
r_indepent	−0.003	−0.003	−0.079**	−0.078**	0.057	0.056
	(0.002)	(0.002)	(0.038)	(0.037)	(0.036)	(0.035)
Constant	−0.914	−1.063	14.214	12.461	97.451***	98.777***
	(0.723)	(0.737)	(11.260)	(11.315)	(10.218)	(10.209)
Bank type fixed effect	YES	YES	YES	YES	YES	YES
Bank location fixed effect	YES	YES	YES	YES	YES	YES
Year fixed effect	YES	YES	YES	YES	YES	YES
Observations	503	503	503	503	503	503
Adjusted R^2	0.389	0.396	0.376	0.379	0.479	0.481

speak *Yue* Dialect, on average, have better management skills to improve bank performance than other CEOs.

4.3. The potential endogeneity of dialect similarity

In general, the endogeneity of the key independent variable of interest may arise from reverse causality or omitted variables bias. Given that the dialects that the bank chairman and the CEO speak are determined by their birthplaces, and do not change afterwards, the endogeneity is unlikely to be driven by reverse causality. However, it is possible that some unobserved factors are jointly associated with both dialect similarity and bank performance, which contributes to the endogeneity. In this paper, we use the instrumental variable approach to address the concern. A good instrument for dialect similarity should satisfy the following two conditions: first, it must exhibit a strong correlation with dialect similarity (relevance condition); second, it must be uncorrelated with the error term and influence bank performance only through dialect similarity (exclusion condition).

Our choice of the instrument is largely inspired by Michalopoulos (2012), who investigates the determinants of ethnolinguistic diversity within and across countries.[12] They find that geographic variability is a fundamental determinant of contemporary linguistic diversity. In particular, the pairwise analysis of contiguous regions indicate that the absolute difference in geographic factors such as land quality and elevation is negatively associated with the percentage of common languages that these two regions have. Based on the findings of Michalopoulos (2012), we use the absolute difference of the proportion of mountainous areas in counties that the chairman and the CEO are born (*Diff_MTN*) as the instrument for dialect similarity.[13] When the

[12] We thank the associate editor for recommending this literature, which helps us construct the instrument variable for dialect similarity.

[13] For instance, in 2010, the chairman of the Agricultural Bank of China was Junbo Xiang, whose birthplace has 75.33% mountainous area, while the CEO of the Agricultural Bank of China was Yun Zhang, whose birthplace has 16.36% mountainous areas. Then *Diff_MTN* is equal to 58.97% (=|75.33%−16.36%|) for the Agricultural Bank of China in 2010. Data source: the CNKI Yearbook Database.

Table 11
Dialect similarity and bank performance: IV regression.
This table reports the results of the effect of dialect similarity between the chairman and the CEO on bank performance using the two-stage least squares estimation procedures. The sample consists of 83 Chinese commercial banks over the period 2007–2014. Panel A shows the results of the second stage regression, while Panel B shows the results of the first regression. The dependent variables are the return on assets (*ROA*), the return on equity (*ROE*), and the cost-to-income ratio (*COI*). The independent variable of interest is *Lg_similar*. The instrument for *Lg_similar* is the absolute difference of the proportion of mountainous areas in counties that the chairman and the CEO are born (*Diff_MTN*). We also include a dummy variable *Province* that equals one if the bank chairman and the CEO are born from the same province and zero otherwise. The bank-specific control variables include *Size, r_equity*, and *r_loans*. The board-specific control variables include *Age_p, Age_m, Edu_p, Edu_m, Gov_p, Gov_m, board_num*, and *r_indepent*. We include bank type fixed effects and bank location fixed effects to control for time-invariant omitted variables that are correlated with dialect similarity. We also include year fixed effects to control for variation in common factors through time. Definitions of all variables are provided in the Appendix. Standard errors, clustered at the bank level, are reported in parenthesis. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively.

Panel A: second stage regression	(1) *ROA*	(2) *ROE*	(3) *COI*
Lg_similar	0.288***	4.218***	−3.664***
	(0.070)	(1.111)	(1.032)
Province	−0.433***	−6.067***	4.637**
	(0.133)	(2.099)	(1.950)
Size	0.115***	1.546***	−1.397***
	(0.033)	(0.520)	(0.483)
r_equity	0.049***	−1.761***	−0.834***
	(0.011)	(0.172)	(0.160)
r_loans	0.016***	0.159***	−0.314***
	(0.002)	(0.039)	(0.037)
Age_p	−0.002	−0.028	−0.131*
	(0.005)	(0.074)	(0.068)
Age_m	−0.012***	−0.177**	0.220***
	(0.004)	(0.071)	(0.066)
Edu_p	−0.033	−0.343	0.153
	(0.029)	(0.455)	(0.423)
Edu_m	0.042	0.554	−0.194
	(0.028)	(0.449)	(0.417)
Gov_p	−0.038	−0.202	1.004
	(0.048)	(0.752)	(0.699)
Gov_m	−0.035	−0.990	−0.842
	(0.045)	(0.713)	(0.663)
board_num	−0.000	0.044	−0.042
	(0.010)	(0.155)	(0.144)
r_indepent	−0.005**	−0.110***	0.083**
	(0.002)	(0.038)	(0.036)
Constant	−0.949	13.809	98.737***
	(0.727)	(11.503)	(10.691)
Bank type fixed effect	YES	YES	YES
Bank location fixed effect	YES	YES	YES
Year fixed effect	YES	YES	YES
F statistic	66.43	66.43	66.43
Observations	503	503	503
Panel B: first stage regression			
Diff_MTN	−0.016***	−0.016***	−0.016***
	(0.002)	(0.002)	(0.002)

geographic difference of the birthplaces of the bank chairman and the CEO is larger, it is less likely for them to speak a common dialect. As a result, the degree of dialect similarity between them is lower.

We use the two-stage least squares estimation procedures to perform the IV regression. As seen from Panel A of Table 11, the coefficient on *Lg_similar* is still positive and statistically significant when the dependent variable is either *ROA* or *ROE*, while it is negative and statistically significant for *COI*. In addition, the result of the first stage regression (see Panel B of Table 11) shows that *Diff_MTN* is negatively associated with dialect similarity between the chairman and the CEO, which is consistent with the findings of Michalopoulos (2012). The *F-statistic* is about 66.43, suggesting that *Diff_MTN* is not a weak instrument according to the rule of thumb suggested by Staiger and Stock (1997). In summary, the IV regression confirms our main findings in the baseline model that dialect similarity improves bank performance.

5. Conclusion remarks

The effect of culture on economic activities and financial decisions has raised increasing concerns as it helps to provide alternative explanations to puzzles that traditional economic models fail to resolve (Zingales, 2015). In this paper, we examine the effect of dialect similarity between the chairman and the CEO on bank performance. Dialect similarity, on the one hand, could increase communication efficiency and improve mutual trust between the chairman and the CEO; on the other hand, it may weaken the monitoring effectiveness. The net impact on bank performance depends on the relative strengths of these two offsetting effects.

Based on a unique hand-collected dataset of Chinese commercial banks and a county-level dialect dataset, the results indicate that a higher degree of dialect similarity between the chairman and the CEO is associated with better bank performance, which is reflected as a higher return on assets, a higher return on equity, and a lower cost-to-income ratio. Further analyses show that dialect similarity between the chairman and the CEO does not lead to lower monitoring effectiveness, because it does not cause higher bank risk levels, more bank expansion ("empire building"), higher CEO compensation, or lower pay-performance sensitivity. We also explore the relation between dialect similarity and banks' agency costs, and the results show that dialect similarity reduces agency costs significantly. In addition, the "dialect similarity effect" is more pronounced for banks whose chairman and CEO both work outside their hometowns. Our findings indicate the necessity and significance to focus on the bank sample and examine the value of language to banks, because of the unique features of financial institutions. Different from non-financial firms, banks are not only subject to internal monitoring from the board, but also subject to external monitoring from uninsured debtholders and regulators. In a highly regulated industry, the close relationship between the chairman and the CEO may not induce the CEO to engage in self-interested activities.

Our findings indicate that special attention should be paid to language, as an important dimension of culture, in corporate governance. The language differences may increase the communication costs and cause distrust among group members, which is detrimental to firm performance. In this paper, we focus on the language issue between the bank chairman and the CEO, but it can be easily extended to other topics including the interaction between the subsidiary and the headquarter in multinational companies (MNCs) and the communication among diversified group members within a firm. In addition, the language may play a more important role in firms with severe information asymmetry or in countries with underdeveloped formal institutions.

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Appendix

Variable definitions

Variables	Definitions
Panel A: dialect similarity	
Lg_similar	An ordered variable equal to zero if the dialects that the bank chairman and the CEO speak belong to different supergroups, equal to one if the dialects that the bank chairman and CEO speak belong to different groups in the same supergroup, equal to two if their dialects belong to different subgroups in the same group, equal to three if their dialects belong to the same subgroup.
Panel B: bank performance	
ROA	The ratio of net income to total assets
ROE	The ratio of net income to total equity
COI	The ratio of costs to total operating income
Panel C: bank risk	
NPLs	The ratio of non-performing loans to total loans
Loss-reserve	The ratio of loan loss reserves to total loans
Attention	The ratio of attention loans to total loans
Cap1	The ratio of total capital to total risk-weighted assets
Cap2	The ratio of tier 1 capital to total risk-weighted assets
Lnzscore	The logarithm of Z-score, where Z-score is the ratio of ROA plus the capital-asset ratio to the standard deviation of ROA
Panel D: bank expansion	
g_asset	The growth rate of total assets over the fiscal year
g_tot_inc	The growth rate of total operating income over the fiscal year
g_branch	The growth rate of the number of branches over the fiscal year
Panel E: CEO pay	
CEO_pay	The cash compensation composed of salary and bonus within a year
Panel F: bank agency costs	
r_expense	The general and administrative expenses divided by total operating income
r_income	Total operating income divided by total earning assets
Panel G: bank-specific control variables	
Size	The logarithm of total assets
r_equity	The ratio of total equity to total assets
r_loans	The ratio of total loans to totoal assets
M_B	The ratio of the market value of equity to the book value of equity
RET	Annual stock return
Panel H: board-specific control variables	
Age_p	The sample year minus the year of birth for a bank chairman
Age_m	The sample year minus the year of birth for a bank CEO
Edu_p	An ordered variable equal to one if the bank chairman has earned a bachelor's degree, equal to two if the bank chairman has earned a master's degree, equal to three if the bank chairman has earned a doctoral degree, and zero otherwise.
Edu_m	An ordered variable equal to one if the bank CEO has earned a bachelor's degree, equal to two if the bank CEO has earned a master's degree, equal to three if the bank CEO has earned a doctoral degree, and zero otherwise.
Gov_p	A dummy variable equal to one if the bank chairman has current or former government working experiences and zero otherwise.
Gov_m	A dummy variable equal to one if the bank CEO has current or former government working experiences and zero otherwise.
Board_num	The total number of directors in a board
r_indepent	The ratio of the number of independent directors to the number of directors
CEO_tenure	The number of years the CEO has been in office

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