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Talavera, Oleksandr and Yin, Shuxing and Zhang, Mao

University of Sheffield, University of Sheffield, University of Sheffield

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# **Managing the diversity: board age diversity, directors' personal values, and bank performance**

Oleksandr Talavera, Shuxing Yin, and Mao Zhang<sup>1</sup>

Management School, University of Sheffield

## **Abstract**

This study examines the role of board age diversity on bank performance. Using a sample of 97 Chinese banks, we document a negative and significant relationship between age diversity and bank performance. To further investigate the negative link between age diversity and bank performance, we decompose age diversity into personal value diversities. In particular, a variety of directors' views with respect to work, prudence, and wealth harm bank performance. This indicates that age diversity among directors can affect bank performance via their values.

JEL codes: G21, G30, J10

Keywords: corporate governance, board of directors, age diversity, value diversity, bank performance

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<sup>1</sup> Corresponding author.

# 1. Introduction

The functions of the board of directors are generally believed to include monitoring and controlling management, providing advice and counseling, and setting strategies for the company (e.g., Mace, 1971; Lorsch and MacIver, 1989; Demb and Neubauer, 1992; Monks and Minow, 2004). The composition of the board influences the way in which it performs these functions, which ultimately affects firm performance. Despite the strong intuitive belief for a positive role of board diversity in the corporate world<sup>2</sup>, the theoretical framework, which is traditionally underpinned by the resource dependency theory (Pfeffer and Salancik, 1978), agency theory (Jensen and Meckling, 1976) and social psychology theories (Byrne, 1971; Williams and O'Reilly, 1996), does not give a clear prediction. A more diverse board matches the diversity of a company to the diversity of its customers and suppliers, being more creative and independent. However, heterogeneity could lead to more conflicts (Cox and Blake, 1991; Robinson and Dechant, 1997) and does not necessarily result in more effective monitoring (Cater et al. 2003).

Board diversity is one of the most significant governance issues currently faced by modern corporations (Milliken and Martins, 1996) and has become increasingly

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<sup>2</sup> See for example, "Boards drive higher and more sustainable investment returns if they benefit from fresh perspectives, new ideas, vigorous challenge and broad experience." -- Euan Munro, the Chief Executive of Aviva Investors.

"Board diversity makes business and social sense." -- Lucy P. Marcus, the founder and CEO of Marcus Venture Consulting Ltd.

important to policy makers interested in good governance. Compared with other attributes of directors, such as gender and ethnicity<sup>3</sup>, age, a key diversity dimension, so far has attracted little attention in the finance literature. When profiling an individual, age offers more than descriptive statistics. It is a dynamic proxy of an individual's life experience, indicating multifarious characteristics (Mannheim, 1949). During the life span, aging encompasses a wide range of factors that shape the formation of their personal values (Medawar, 1952; Rhodes, 1983). In a shared context marked by the same social and cultural environments, a cohort of individuals at similar ages is more likely to share commonalities in their attitudes and values (Byrne, 1971; Zenger and Lawrence, 1989).

Age is also a major feature of the social context in which organizational members interact within groups (Ferris et al., 1991). In relation to corporate boards, younger directors tend to behave differently from older directors with respect to different values. Younger directors appear to be more energetic and have greater risk appetites, while older ones are likely to be more conservative with a steady personality (Mishra and Jhunjhunwala, 2013). A small body of literature has shown mixed economic consequences of board age diversity. There is some evidence that age-diverse boards lead to improved firm financial performance (Ararat et al., 2010; Kim and Lim, 2010; Mahadeo et al., 2012) by providing comprehensive resources to the board,

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<sup>3</sup> Increasing attention has been recognized to board diversities by gender (Erhardt et al., 2003; Huang and Kisgen, 2013; Liu et al., 2014; Sila et al., 2016), nationality (Ruigrok et al., 2007 and García-Meca et al., 2015) and ethnicity (Cater et al., 2003; Cater et al., 2010).

enhancing the pipeline of expertise, and improving the quality of boardroom decision-making. However, age-diverse boards are also found to harm firm social performance (Hafsi and Turgut, 2013), profitability (Ali et al., 2014), and strategic change (Tarus and Aime, 2014) due to the communication breakdown and conflicts among directors.

Age diversity is particularly important in transition countries that have experienced significant economic development and political transformation over a relatively short period. Along with the transition of economic system, there is simultaneously a push toward its cultural change (Stulz and Williamson, 2003). Thus, people in different generations in transition countries are likely to share thoroughly different life experience and hold diverse values.

During the last few decades, China has been experiencing an immense transformation in economy, politics, and culture. Our sample shows that a large proportion of directors in Chinese firms are aged from 35 to 70 and have grown up in Mao Zedong's or Deng Xiaoping's era<sup>4</sup>. Under Chairman Mao's socialist orthodoxy, the Chinese government launched an initiative of collectivization, emphasizing the conformity to a group and discouraging individuals from standing out (Ralston et al., 1999). Thus, generation born in Mao's time is more likely to be less educated and is dedicated to a single and conventional way of doing things, sacrificing creativity. In

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<sup>4</sup> In 1949, Chinese Civil War ended with Mao Zedong's Communist Party in power. Mao's era covers Communist Consolidation (1949-1965) and Great Cultural Revolution (1966-1976), while Deng Xiaoping initiated Social Reform Era (1978-1992) and part of Societal Transition Era(1992-now) (Ralston et al., 1999; Egri and Ralston, 2004; Sun and Wang, 2010).

1978, Deng Xiaoping launched some modern policies which have encouraged individual achievement, materialism, entrepreneurship and economic efficiency (Tian, 1998), shifting China from a planned economy to a market-based one (Egri and Ralston, 2004). The “open-door” policy introduced western capitalistic ideology into Chinese business (Vohra, 2000), with rapid industrialization and modernization resulting unprecedented prosperity. The decision to resume China’s National College Entrance Test encouraged younger people to pursue higher education (Huang et al., 2016). As Ralston et al. (1999) and Huang et al. (2016) suggest, the generation born during Deng’s era is likely to be better educated, more qualified, confident, and individualistic, emphasizing innovation and creativity. As people grew up in each distinctive cultural environment, previous studies show that, in China, there are significant differences in values between age cohorts (Sun and Wang, 2010).

The banking sector has been under great scrutiny since the financial crisis in 2007. Banking holds a unique role in a nation’s economy, and poor bank governance is more likely to trigger bank failure, leading to serious systemic risk and negative externalities (Pathan, 2009; Pathan and Faff, 2013; García-Meca et al., 2015). Accordingly, the Basel Committee on Banking Supervision (2014) points out that the bank board should be composed of diverse directors to reflect its complexity and risk profile.

To study the link between board age diversity and bank performance, we examine a sample of 97 Chinese banks over the period from 2009 to 2013. We

document a negative relationship between age diversity in the boardroom and bank performance with return on assets (*ROA*) and return on equity (*ROE*), showing that the costs of age diversity outweigh the benefits on bank performance in China. As age difference is likely to lead to variation in personal values (Egri and Ralston, 2004; Sun and Wang, 2010), we further decompose age diversity by value diversity. We find that the heterogeneity of directors' value on work, prudence, and wealth reduce banks' profitability. This negative relation indicates that age diversity could negatively affect bank performance via directors' different values.

Our study contributes to the existing literature in a number of ways. First, our work offers a new perspective on the impact of age heterogeneity on firm performance. Earlier literature focuses on the direct relationship between age diversity among directors and organizational outcomes (Ararat et al., 2010; Mahadeo et al., 2012; Hafsi and Turgut, 2013; Tarus and Aime, 2014; Ali et al., 2014) or estimates the role of age difference between chairman and CEO (Goergen et al., 2015). Differently from them, we take a step further to estimate why age diversity can affect bank performance by introducing directors' personal values, an unobservable dimension of heterogeneity. We decompose directors' age diversity into value diversity and investigate whether the heterogeneity of directors' ages could affect bank performance via their personal values.

Secondly, to the best of our knowledge, this is the first study to statistically show age-value changes. In general, previous studies always provide propositions that individuals in different age cohorts "tend to" hold diverse personal values. We extract

eight specific personal value indicators from the World Values Survey and estimate the changes of these values across age cohorts. The results prove that individuals' personal values with respect to risk, work, prudence, and wealth vary widely across different ages, while values (namely, success, thoroughness, creativity, and helping others) change only slightly across age cohorts.

Thirdly, with the existing work mostly limited to non-financial firms, our work extends board age diversity to the banking sector. Facing greater liquidity problems with high leverage and severe information asymmetry, directors in banks are different from non-bank directors as they are accountable to not only shareholders but also depositors and regulators (Levine, 2004; García-Meca et al., 2015). This requires the boards to be equipped with more specialized skills and wider knowledge (Nguyen et al., 2015). Having the right board composition is crucial for the success of a bank.

Lastly, we provide the first empirical study on board age (value) diversity and bank performance in China. The existing literature on China mainly concentrates on gender diversity (Liu et al., 2014; Cumming et al., 2015). Regarding the Chinese banking sector, existing studies mainly focus on ownership structure rather than board characteristics. The only work related to bank board characteristics is Liang et al. (2013) who find that independent directors are beneficial to bank performance, while political-connected directors are negatively associated with bank profitability.

We believe that findings from this study are not only relevant for China but also for other transition countries. Due to the immense transition in the economic and



cultural systems, directors from different generations are more likely to hold heterogeneous values. Hence, there is a growing need to manage the generational gaps between directors and have a better understanding of optimal board composition that can influence firm performance.

The rest of the paper is organized as follows. Section 2 presents a critical review of literature on board age diversity and firm performance. Section 3 describes the data collection and methodology. Section 4 provides the empirical analysis. Finally, Section 5 provides the summary and the conclusion.

## **2. Literature review and hypothesis development**

### **2.1 Board age diversity and performance**

Grounded in resource dependency theory, the board is regarded as the provider of advice and counsel, legitimacy, and communication channels (Pfeffer and Salancik, 1978). A diverse board can enhance the firm's performance by providing comprehensive and valuable resources to the board, improving information quality and creating a balanced board (Wiersema and Bantel, 1992; Carter et al., 2010). Furthermore, a more age-diverse board facilitates the bank to meet the need of different customers and penetrate deep into the market (Mishra and Jhunjhunwala, 2013).

Based on agency theory, the board of directors is an important internal mechanism to mitigate conflicts between shareholders and managers (Fama and Jensen, 1983). Board diversity can enhance firm's performance by increasing board

independence as diversity can bring more ultimate outsiders into boards and enhance mutual monitoring (Kandel and Lazear, 1992; Wiersema and Bantel, 1992; Cater et al., 2003). However, some studies such as Carter et al. (2003) argue that board diversity may not lead to more effective monitoring since diverse board members may be marginalized.

Empirically, Ararat et al. (2010) find that a diversified representation of different generations in boards enhances the flexibility of the decision-making by balancing risks and ultimately leads to better firm performance in Turkey. Kim and Lim (2010) prove that age diversity in independent directors can increase firms' values due to directors' comprehensive human capital. Mahadeo et al. (2012) also suggest that a mixed-age board is beneficial to firm performance in Mauritius.

By contrast, board age diversity may come at a cost and hamper firms' performance. On the basis of the "similarity-attraction paradigm" (i.e., the similarity in directors' attributes facilitates group thinking), individuals perceive other people who are demographically different from them as "outsiders" who are holding different values. They tend to be reluctant to share information with "outside" individuals and providing thoroughly different opinions, leading to interpersonal attraction breakdown (Adams et al., 2010; Estélyi and Nisar, 2016). When it comes to the boards, different perspectives and cognitive abilities in the board may generate conflicts among different groups of directors (Byrne, 1971; Williams and O'Reilly 1996). Such conflicts are likely to hinder the development of boardroom cohesiveness, produce barriers for

communication, protract decision-making processes, and weaken firm performance (Westphal and Bednar, 2005; Wang and Hsu, 2013).

Tarus and Aime (2014) provide evidence that age diversity on the board negatively affects corporate strategic change since the old and the young have conflicts in decision-making. Ali et al. (2014) show that the level of board age diversity falls with the increase in firm profitability, which supports the argument of Hafsi and Turgut (2013) that age diversity in the boardroom negatively affects corporate social performance. Therefore, the above discussions suggest that board age diversity is a “double-edged-sword”.

## **2.2 Age and personal values**

As a demographic attribute, age is different from gender, ethnicity, and other facets that make each of us unique as individuals. An individual’s age conveys information about his preference and lifestyle as culture is transmitted across generations. During the life span, ageing effects involve a wide range of factors influencing the development of personal values, such as risk-taking behavior, decision-making, and attitudes to work (Medawar, 1952; Child, 1974; Rhodes, 1983; Ferris et al., 1991; Sun and Wang, 2010; Serfling, 2014).

At the group level, individuals of similar age prefer to interact with those whom they perceive to be similar to them. This can be explained by the “similarity-attraction paradigm”, where individuals born at similar times are more likely to develop similar views on their life experience since they are similarly minded. Such similarity may in

turn foster interpersonal attraction, group thinking, and cooperation (Byrne, 1971; Zenger and Lawrence, 1989; Kunze et al., 2011; Goergen et al., 2015).

In the psychology literature, the socialization hypothesis proposes that the values of each generation change in accordance with the prevailing condition during their formative years (Inglehart, 2008). Rokeach (1973, p.25) argues that “personal value is an enduring prescriptive and proscriptive belief that a specific mode of behavior is preferred to an opposite mode behavior – this belief transcends attitudes towards objects and situations”. It has been a tradition to explore the value changes between generations since age difference is likely to lead to variation in personal values (Bantel and Jackson, 1989; Egri and Ralston, 2004; Sun and Wang, 2010). In turn, the difference in values can also cause a generation gap between young and old (Prasad, 1992). Thus, age might be one of the predictors of value. Furthermore, previous studies generally agree that individuals’ values are entrenched since their late-teens (Ralston et al., 1999). Consistent with this, Ghitza and Gelman (2014) find that social events between the ages of 18 to 24 are far more influential than those that occur at an older age.

### **2.3 Board value diversity and performance**

Personal values are vital to management decisions and corporate actions (Marcus et al., 2015). Certain values such as creativity, loyalty, hard work and sense of responsibility are desirable for the board.

Some studies suggest that there are significant value differences among

executives across age cohorts. Younger executives appear to be more creative with greater risk appetite and are able to bring better cognitive resources to decision-making tasks (Bantel and Jackson, 1989; Mishra and Jhunjhunwala, 2013). Young managers are found to have a higher probability to challenge the existing system of company rules and make risky decisions (Child, 1974; Hambrick and Mason, 1984; Cheng et al., 2010) to signal to the market that they possess superior abilities (Prendergast and Stole, 1996). Older executives tend to be more cautious and conservative (Bantel and Jackson, 1989), more capable in dealing with external agencies such as regulators and authorities (Grove et al. 2011).

Assessing values and the value difference across different generations constitutes a basic approach to understand the generational gap. So far, no study has examined why age-diverse boards influence performance. We decompose directors' age into their personal values and argue that board age diversity may affect bank performance via directors' value diversity. In the absence of empirical evidence on directors' personal values and firm performance, Jehn et al. (1999) provide some theoretical explanations that personal value diversity in the workforce leads to conflicts as the dissimilarity protracts the interaction in the group. In our study, we expect that directors' diverse values affect bank performance via their different values.

### **3. Data and methodology**

#### **3.1 Data and sample selection**

We build a sample with information on directors' characteristics, ownership structure, and financial statements for 97 Chinese banks during the period 2009-2013. We start with the universe of 190 Chinese banks available on Bankscope. We focus on commercial banks, cooperative banks, and savings banks. To allow hand-collection of data on the board and ownership structure, we exclude banks that fail to have at least one annual report during the study period. Finally, we focus on banks that disclose directors' demographic characteristics, especially age, in their annual reports. The filtering procedure results in a final sample of 97 banks, which represent about three quarters of the total assets of Chinese banking institutions at the end of 2013 (China Banking Regulatory Commission, 2014).

Bank-specific financial information is mainly extracted from Bankscope. We replace the missing values and questionable values in Bankscope by hand-collected data from each individual bank's annual report. Most of the banks in our sample follow the local GAAP Chinese Accounting Standards (CAS), while the listed commercial banks<sup>5</sup> employ the International Financial Reporting Standards (IFRS). The CAS was developed recently following the principle of IFRS, and there is no material difference between the financial statements of the same bank under IFRS and CAS (Berger et al.,

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<sup>5</sup> 18 Chinese banks in our sample are listed.

2009; Liang et al., 2013). Additionally, the data for the economic indicator (i.e., GDP per capita) are extracted from China City Statistical Yearbook published by China Statistics Press.

To predict directors' values, we employ the World Values Survey Sixth Wave, a cross-country project containing information about demographics (age, gender, and education), self-reported economic information (income and social class), and answers to specific questions on fifteen categories of values on the economy, work ethics, religions, democracy, and other attitudes. The China Survey was conducted in 2012 and measures values and attitudes held by Chinese citizens. The respondents are aged from 18 to 75 and they reside in all provinces of China. We employ World Values Survey

China (2012)<sup>6</sup> to predict the values of Chinese directors.

Among the 6,195 directors who served on the board of sample banks, we have 177 (around 2%) foreign directors from 13 other countries/regions. To predict foreign directors' values, we also download the respective 13 foreign countries/regions' World Values Surveys, including the United Kingdom, the United States, the Switzerland, Spain, the Netherlands, Taiwan, Singapore, Germany, Australia, France, Hong Kong, and Italy. From the World Value Survey, we extract work-related value indicators.

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<sup>6</sup> The World Values Survey has six waves, each wave with five-year period. In each wave, there is only one survey for one country. In our study, we employ the latest wave of China - China Survey (2012) which covers most of the period (2009-2013) in our sample.

### 3.2 Model specifications and descriptive statistics

To examine the impacts of board age diversity on bank performance, we employ the following main model (1) specified:

$$Bank\_performance_{i,t} = \alpha + \beta Board\_age\_diversity_{i,t-1} + \gamma Control\_variables_{i,t-1} + \theta_t + \mu_i + \varepsilon_{i,t} \quad (1)$$

Where  $i$  is the bank identifier and  $t$  is the year. The key coefficient of interest  $\beta$  captures the impact of board age diversity on bank performance.  $\mu$  is an individual-specific effect, which varies across banks, and  $\varepsilon$  denotes to the error term, which varies both among banks and periods of time. Model (1) is estimated by a fixed-effects estimator, which is justified using the Hausman Test. The reported standard errors are adjusted for potential heteroscedasticity.

*Bank\_performance* is measured by both profitability and risks. As for bank profitability, return on assets (*ROA*) is net income over total assets, which shows how efficiently the bank produces profit by the given assets. Return on equity (*ROE*) is calculated as net income divided by total equity, assessing the return on shareholders' investment. In terms of risk, the *Z*-score, defined as return on assets plus the equity to assets ratio divided by the standard deviation of return on assets, is the inverse of the probability that bank losses surmount bank capital<sup>7</sup> and measures the distance to default (Laeven and Levine, 2009; Dong et al., 2014). Thus, a higher *Z*-score indicates lower

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<sup>7</sup> That is probability ( $-ROA < E/A$ ), where  $E/A$  is the capital to assets ratio (equity/assets).



risk in the bank. Since *Z*-scores are highly skewed, we take the natural log of the *Z*-score (*Z*-score) in further analysis. We also use non-performing loan ratio (*NPLratio*), calculated as non-performing loans to total loans, as an alternative risk measure.

<Insert Table 1 about here>

Panel A of Table 1 reports the descriptive statistics for the bank performance measures. During the sample period, the average *ROA* and *ROE* are 0.01 and 0.19, which is comparable to 0.01 and 0.14 given in Liang et al. (2013) who study a sample of 52 Chinese banks during the period from 2003 to 2010. The average *Z*-score value is 3.87. On average, *NPLratio* is 0.01, which is smaller compared to 0.0262 given in Dong et al. (2014) for a sample of Chinese commercial banks during 2003-2011.

*Board\_age\_diversity* is measured by the coefficient of variation of age (*CV*) calculated by the ratio of the standard deviation of board age to mean of board age.<sup>8</sup>

<Insert Figure 1 about here>

Figure 1 and Panel B of Table 1 show substantial board age diversity in Chinese banks. The average age of board directors in Chinese banks is 51.95, and the standard deviation is high at 7.99. The youngest is 29 years old, while the oldest is 83. The average coefficient of variation of board age (*CV*) is 0.14. The majority of directors on Chinese boards appear to be in their forties (39%) and fifties (39%).

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<sup>8</sup> Alternative measures of age diversity are the Blau Index (*Blau*) and standard deviation of board age (*SD*). These three measures (*CV*, *Blau* and *SD*) are significantly correlated at 0.7 or above.

*Control\_variables* includes four categories. First, three variables on board characteristics include the natural logarithm of board size (*Board Size*), which is found to have a significant effect on bank performance (Staikouras et al., 2007; Adams and Mehran, 2012), the percentage of independent directors (*Independent Director*) who may have strong incentives to scrutinize the management (Erkens et al., 2012; Adam and Mehran, 2012), and a dummy variable (*Duality*), which equals one if the chief executive officer (CEO) is also the chairman.

Second, the ownership variables control for both the type and level of the ownership structure (Liang et al., 2013). We include the proportion of shares owned by the largest shareholder if the largest shareholder is the government or state-owned enterprises (*State*), a foreign investor (*Foreign*), and a private investor (*Private*).

Some additional variables to capture bank-specific characteristics (Berger et al., 2009; Lin and Zhang, 2009; Liang et al., 2013; Dong et al., 2014; García-Meca et al., 2015) are also included. Bank size is measured by the natural logarithm of total assets (*Size*). The capital ratio is measured as total equity to total assets (*Capital Ratio*), reflecting the bank capitalization. We also calculate the loan ratio by total loans to total assets (*Loan Ratio*), which is related to the banks' credit. A dummy variable for listed banks (*Listed*) equals one if the bank is listed. We also include the natural logarithm of the number of years since the bank has been established (*Bank Age*) as banks with a long history tend to have a more mature operation system that is related to better performance.

Lastly, to account for the potential regional effects on bank performance, we follow previous studies (Ferri, 2009; Zhang et al., 2012; Qian et al., 2015) and employ the natural logarithm of GDP per capita for the city (*City GDP*) where the bank's headquarters are located. To control for macroeconomic shocks, all of our regressions contain a full set of year dummies.

Panel D of Table 1 reports the summary statistics for the control variables. The average board size in Chinese banks is 13.77, which is comparable to that of 12.68 in the US (Pathan and Faff, 2013) and 12.79 in nine developed countries<sup>9</sup> (García-Meca et al., 2015). On average, 25% of directors in Chinese banks are independent directors. In our sample, only 3% of CEOs in Chinese banks have the duality position. In the ongoing process of privatization, only about 18% (18) of the sample banks are listed on the stock exchange. On average, in our sample, around 24% of shares are owned by the largest shareholder if the largest shareholder is the government or state-owned enterprise.

In order to explore the reasons why board age diversity affects bank performance, we introduce directors' personal values. As discussed before, directors' values are not directly observable but are assumed to be framed by their ages. To obtain the impact of value diversity on bank performance, we take three steps. In the first stage, we extract 17 value indicators which are related with work and business from China

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<sup>9</sup> Nine developed countries include Canada, France, Germany, Italy, the Netherlands, Spain, Sweden, the UK and the US.

Values Survey (2012), namely, risk, work, happiness, prudence, wealth, success, thoroughness, pressure, outgoing, active, creativity, helping others, finding faults, reserved, life satisfaction, slackness, tension<sup>10</sup>. Then we apply a logit model (2) to predict the parameters based on China Values Survey (2012). To create the dependent variable, following Ahern et al. (2015), we rescale the responses to each question (each value indicator) into a binary variable, taking values of zero or one (See Appendix A). For example, for a value on risk taking, we assess whether taking risk is important to the person by scaling answers “Very Important” and “Rather Important” as one and “Not very important” and “Not at all important” as zero.

The following logit model is used to predict each director’s values:

$$\Pr(\text{value}_{ij} = 1) = F(\beta_0 + \beta_1 \text{age}_j + \beta_2 \text{education}_j + \beta_3 \text{gender}_j + \beta_4 \text{income}_j + \beta_5 \text{social class}_j + \beta_6 \text{supervisory status}_j + \beta_7 \text{employment} + \varepsilon) \quad (2)$$

$F$  is the cumulative standard logistic distribution.  $\text{value}_{ij}$  equals one if the respondent  $j$ ’s response to the question (value indicator  $j$ ) is recorded as one.  $\varepsilon$  denotes the random error, and the values are all measured by the probability of holding this value. Independent variables in Model (2) include available key demographic and socio-economic variables taken from the background information provided in the

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<sup>10</sup> World Values Survey measures support for democracy tolerance of foreigners and ethnic minorities, support for gender equality, the role of religion and changing levels of religiosity, the impact of globalization, attitudes toward the environment, work, family, politics, national identity, culture, diversity, insecurity, and subjective well-being. In the China Values Survey (2012), we try our best to identify all the available value indicators that are related with work/business.

survey. *Age* is given in years. Except for *Age*, *Education*, *Income* and *Social Class* are specified as categorical variables. *Education* is divided into three groups: *university* (university or higher), *second school* (specialized secondary or vocational technical school), and *primary school* (primary school or less). *Income* is consolidated from nine into three categories: *high*, *middle*, and *low*. *Social Class* is assessed in four categories: *lower class*, *working class*, *middle class*, and *upper class*. *Gender* is indicated with a zero for female and a one for male. *Supervisory Status* equals one if he/she is supervising other people at work and 0 otherwise. *Employment* is denoted as one for those in employment and zero otherwise. After we estimate parameters for each value indicator, we can identify the value indicators that are significantly affected by age shown by  $\beta_1$  in model (2) and keep them for later analysis. After this step, we keep only eight out of seventeen value indicators, namely, risk, work, prudence, wealth, success, thoroughness, creativity, and helping others (see Panel B of Appendix B).

In the second stage, we predict directors' personal values on these eight value indicators in our sample, inputting directors' information including age, education level, gender, income level, social class, and supervisory status into model (2) using the parameters predicted in the first step. Apart from age, education level, gender and supervisory status, we assume that all the bank directors in our sample have the same income level<sup>11</sup>, and the same social class. Since some foreign directors have stayed in

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<sup>11</sup> In the World Values Survey, individuals' income level is scaled across nine levels (1-9). We rescale them into three categories: low (1-3), middle (4-6) and high (7-9). In our study, we assume all directors are in the high-income level.

China for a long time, they are likely to be influenced by Chinese culture and lifestyle. These foreign directors' values are affected not only by their own country but also by China. Thus, we calculate foreign directors' values based on the China survey and their own country survey with equal weights.

In the third stage, we employ the following model, which is similar to model (1), to examine the impacts of these value diversities on bank performance:

$$Bank\_performance_{i,t} = \alpha + \beta Board\_value\_diversity_{i,t-1} + \gamma Control\_variables_{i,t-1} + \theta_t + \mu_i + \varepsilon_{i,t} \quad (3)$$

*Board\_value\_diversity* includes eight value diversities which are calculated by the coefficient of variation of each value indicator, respectively. From Panel C of Table 1, we find that values on risk, work, prudence, and wealth have higher coefficients of variation (0.11, 0.06, 0.06, 0.07, respectively) compared with the rest of the value indicators. Furthermore, after the estimation, if the  $\beta$  in model (3) is in the same sign (positive or negative) as  $\beta$  in model (1), we can conclude that age is one of the strongest predictors of value, and age diversity can affect bank performance via directors' values.

## 4. Empirical results

### 4.1 Does age diversity affect bank performance?

We first examine whether the age diversity affects bank performance. Table 2 shows the results of model (1) with bank profitability and bank risk presented in

columns (1)-(2) and (3)-(4), respectively. Age diversity has a significant and negative impact on bank profitability. Specifically, a two standard deviation increase in age diversity (*CV*) shrinks *ROA* by 10.4% and *ROE* by 9.68%, which is comparable with a strand of existing literature in non-bank samples (Murray, 1989; Ali et al., 2014; Tarus and Aime, 2014).

This result is in line with the argument that age diversity lessens the cohesion in the boardroom, leads to barriers such as difficult communication, and generates conflicts (Williams and O'Reilly 1996; Pelled et al., 1999; Westphal and Bednar, 2005). Such conflicts can protract the decision-making process and weaken the effectiveness of the board. When the effects of conflicts in board communication, cooperation, and decision-making processes outweigh the benefits of providing comprehensive perspectives and different external information by directors at different ages, the role of the board as a monitor and advisor will be impeded. As a result, an insufficient board may subsequently weaken the bank's profitability. However, in terms of risk performance, we do not find any significant relationship between age diversity and bank risk.

<Insert Table 2 about here>

With respect to other board characteristics, *Duality* has a significantly negative relationship with *ROA* (significance at the 10% level) and a strong positive impact on *NPLratio* (significance at the 1% level), which indicates that banks with CEO duality

position perform worse. In terms of board independence, the coefficient of *Independent Directors* is significantly positive on bank profitability and negative on bank credit risk, which is consistent with previous studies (Liang et al., 2013; García-Meca et al., 2015). This relationship suggests that independent directors are beneficial to Chinese banks. With regard to other bank characteristics, *Private* ownership harms bank performance measured by ROA, while the larger *Bank Size* weakens bank performance by decreasing *ROE* and augmenting non-performing loans. We also find that bank *Capital Ratio* is negatively related with *ROE* and positively related with *Z-score* (at the significance level of 1% and 5%, respectively), indicating that banks with a higher degree of capitalization have lower insolvency risk.

#### **4.2 Age and values**

Generational gaps are often caused by differences in values (Prasad, 1992). It appears that there is no consensus about how to define generations in China. Studies generally reach an agreement each generation comes into existence with a particular social movement with a shared experience (Sun and Wang, 2010) and that most of an individual's values become entrenched in one's late-teens (Ralston et al., 1999). Based on this framework of value formation, in our work, we define our generation as two main groups that correspond to specific social and political events at the age of 18: Mao's generation (born during 1931-1958) and Deng's generation (born during 1959-1990) (See Figure 2). According to some specific social events, we further divide Mao generation into Early Mao generation (born during 1931-1947) who experienced



Communist Consolidation period and late Mao generation (born during 1948-1958) who underwent Great Cultural Revolution. Similarly, we decompose Deng generation into Early Deng generation (born during 1959-1974) who experienced Social Economic Reform and Late Deng generation (born during 1975-1990) who are in the societal transition period. (Ralston et al., 1999; Egri and Ralston, 2004; Sun and Wang, 2010)

<Insert Figure 2 about here>

Our value analysis first focuses on 17 values based on the World Values Survey. Table 3 shows the predicted parameters of different values. Coefficients of eight values are significantly affected by age, including risk, work, prudence, wealth, success, thoroughness, creativity, and helping others.

<Insert Table 3 about here>

<Insert Figure 3 about here>

Figure 3 shows the changes of eight personal values (average probability of holding this value) in the different generations of directors in our sample. In Panel A, directors from the late Deng generation are shown to have greater risk appetite than directors in from the early Mao generation. Regarding the value on creativity in Panel G, directors growing up in Deng's era are more creative and come up with new ideas, whereas the ones who grew up in Mao's era are more coherent in a conventional process and work out the solution in a single and conventional way, which is consistent with

views by Ralston et al. (1999) and Sun and Wang (2010).

Panel B of Figure 3 shows that Deng's generation values work more than the other generations and devotes great passion into their work. Additionally, the late Deng generation appreciates wealth more, pursuing profit maximization (see Panel D of Figure 3). Consistent with previous studies (Sun and Wang, 2010), younger directors enjoy the feeling of being successful and yearn for achievement recognition.

In terms of work ethics, to behave properly is essential for older directors. Panel C of figure 3 shows that they are more prudent and cautious than the younger ones. Furthermore, Panel F shows that directors who are from the early Mao generation insist on doing a job more thoroughly than the younger ones. However, the massive shifts in China also pose slight impacts on some dimensions of directors' values. For example, there is a relatively small difference in directors' attitudes to help others nearby across age cohorts, as shown in Panel H.

### **4.3 Why does age diversity affect bank performance?**

In order to further investigate the negative relationship between age diversity and bank performance, we decompose age diversity into value diversity and test whether diversity in different values influences bank performance. Similar to age diversity, the results presented in Table 4 show that the heterogeneity of directors' views in some cases poses a negative impact on bank performance.

<Insert Table 4 about here>

The coefficients of directors' diverse views on work, prudence, and wealth impose negative impacts on banks' profitability<sup>12</sup>. An increase of two standard deviations in value diversity on work is associated with a decrease in *ROA* of 10.4% and in *ROE* of 11.92%. With regard to prudence, increases of two standard deviations exert negative impacts on *ROA* and *ROE* of 12% and 14.74%, respectively. Furthermore, increases of two standard deviations in directors' value diversity of wealth reduce banks' *ROA* by 30.4% and *ROE* by 34.74%. Additionally, we can observe that the coefficients of directors' diverse values on creativity and helping others affect *ROE* negatively at the 10% level. These results are consistent with Jehn et al. (1999) who argue that value diversity can trigger intragroup conflicts in the workforce and cause a negative impact on group performance.

As shown in Figure 3, directors' values on work, prudence, wealth, and creativity change across the different generations. Directors growing up in Deng's era are more creative, devote greater passion to their work, and pursue profit maximization. However, directors growing up in Mao's era are more cautious, they value work less, and they are more coordinated. Taken together, these differences in personal values across generations are more likely to weaken the interpersonal relations between groups but may spark intragroup conflicts in decision-making. This conflict hampers the board

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<sup>12</sup> As the directors' values are imputed, we employ a bootstrap approach to check the robustness of the results reported in Table 4. The idea here is to resample the residuals with replacement a specified number of times. Appendix C5 resamples the residuals using 1,000 replications and shows similar parameters and standard errors with those in Table 4.

from functioning effectively, which ultimately reduces bank performance.

With respect to bank risk, Panel D in Table 4 illustrates that directors' diverse values on risk are positively associated with *NPLratio* (at the 10% level), indicating that the variability of views on risks increases bank credit risk.

In summary, taking together the results shown in Tables 2, 3, and 4, the effect of value diversity has the same sign with that of age diversity on bank performance. Thus, we can conclude that age diversity may affect bank performance negatively via their diverse values with respect to work, prudence, and wealth. Put differently, directors in different age cohorts hold diverse personal values in work, prudence, and wealth (creativity and helping others) and approach decisions and policies differently. Consequently, it is more likely to create conflicts, hamper the board from effective functioning, and lead to worse bank performance.

## **4.4 Robustness**

### **4.4.1 Potential endogeneity concern**

A key concern for analysis of board effects on firm performance is the endogeneity. In our main model, we partially address this issue by employing one-year lagged board characteristics since board structure needs time to affect bank performance. In board composition research, dynamic endogeneity is also a major issue. Wintoki et al. (2012) argue that most of the exiting literatures on board structure neglects the fact that current board structure might be the realization of past firm

performance. Current firm performance may affect future board composition, and these, in turn, may affect future firm performance. In our study, shareholders may call for changes to the board. Replacing a younger director with an older individual could change the age distribution on the board and, ultimately, affect bank performance. Thus, previous bank performance can affect the motivation of boards to hire new directors.

As a possible solution, our empirical analysis is extended to employ the Arellano-Bond (1991) dynamic Generalized Method of Moments (GMM) estimator, which accounts for unobserved heterogeneity as well as dynamic relation between board structure and past firm performance (Wintoki et al., 2012; Liu et al., 2014). We report the GMM regressions in Appendix C1. All the independent variables are assumed to be endogenous variables, except *Bank Age* and the year dummies. The lags (t-2, t-3, and t-4) of the dependent variable and endogenous variables, together with all the lags of the exogenous variables, are instrument variables. In Appendix C1, we still find a significant negative effect (at 10% level) of board age diversity on bank profitability. Therefore, our main results in model (1) are robust and are not driven by endogeneity.

#### **4.4.2 Additional robustness tests**

In examining the relationship between age diversity and bank performance in model (1), we use the standard deviation of board age (*SD*) and Blau index of board age (*Blau*) as alternative measures of age diversity. We find a consistently negative relation between age diversity and bank profitability (shown in Appendix C2 and C3). Further,

we employ an alternative measure to calculate foreign directors' values only based on their own country survey as a robust check in Appendix C4. Consistent with Table 4, we also find negative relations between directors' value diversities on work, prudence, and helping others at one side and bank profitability at the other side.

## **5. Conclusion**

This paper extends the existing literature on board diversity by providing the first empirical evidence of the effect of board age diversity on bank performance in China. Our results show that age diversity in Chinese banks has a significant and negative influence on bank performance. Although previous studies based on resource dependency theory argue that a more diverse board provides more valuable information and enhances firm performance, this study suggests that this type of age diversity is not beneficial to Chinese banks. That is, age-diverse boards are more likely to suffer from communication barriers and generate interpersonal frictions and conflicts in the boardroom, and ultimately reduce bank performance.

To examine why age diversity negatively affects bank performance, we further decompose directors' age diversity into their personal value diversity. Given the immense transition in China over the past decades, Chinese directors growing up in Mao's and Deng's eras experienced different historical events and cultural phenomena, which in turn affected their formulation of values and cognitive abilities. We find that the heterogeneity of directors' views with respect to work, prudence, and wealth

negatively affects bank profitability. This negative relation confirms that directors' age diversity affect bank performance via directors' diverse values, as age is one of the strongest predictors of value. Put differently, directors with diverse values on work, prudence, approach decisions differently (i.e., they are more likely to slow down the decision process in the boardroom and make it more conflicts), leading to worse bank performance. In this way, we conclude that the ultimate success of the board depends not only directors' resources but also the interactions between them.

Our findings provide useful guidance for regulators, policymakers, and bank directors concerning board diversity and shed light on the direction of further banking governance reform. In particular, our findings suggest that, in the current weak corporate governance system in China, an age-diverse board is not beneficial to the bank. Banks with weak governance should look into adding directors with similar ages into their board, to lower the generation gap in the board.

We believe that findings from this study are relevant not only for China but also for other transition countries that are transforming from a centrally planned economy to a market-based economy. For these countries, directors from different generations are more likely to hold heterogeneous values, as cultural change is an ingredient of economic development. To strive for excellence, the board should appreciate the diverse personal values among directors, learn to manage value differences, and utilize the benefits of directors' different personal values to improve the effectiveness of the board. Managing the difference among directors is likely to lead to a better

understanding of optimal board composition.



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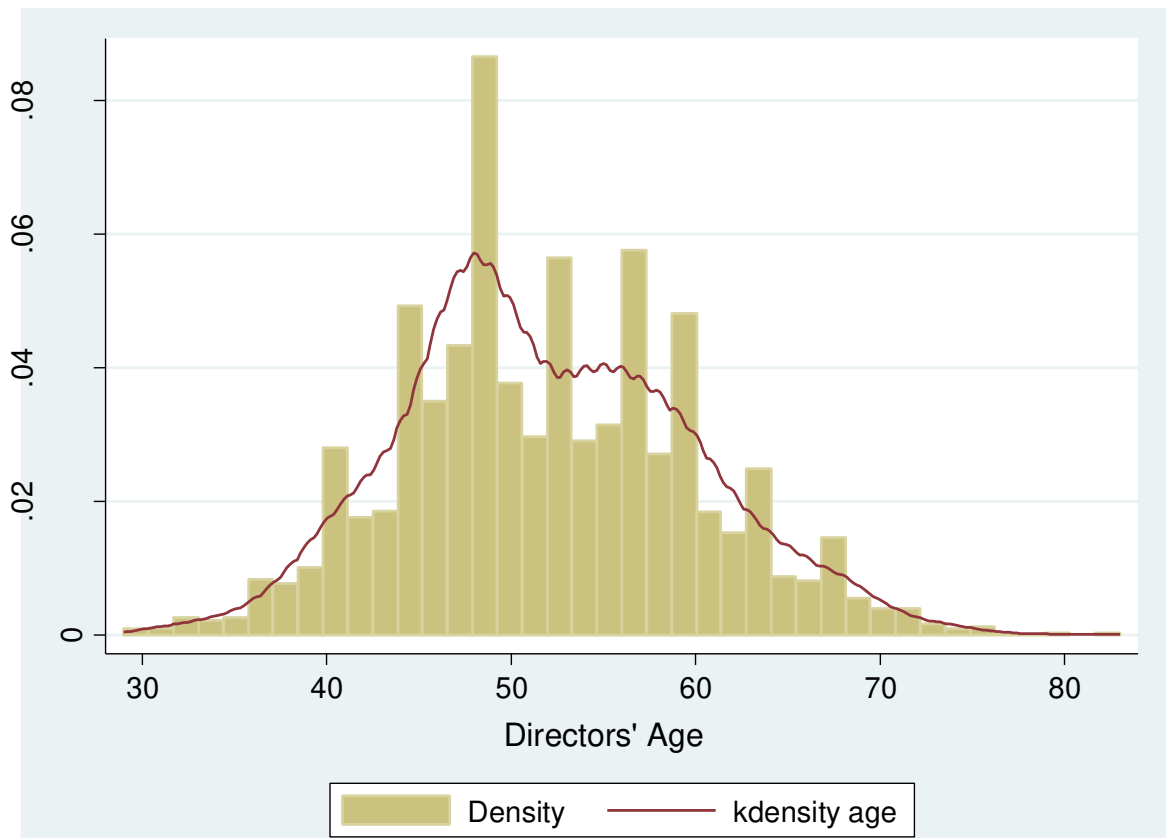
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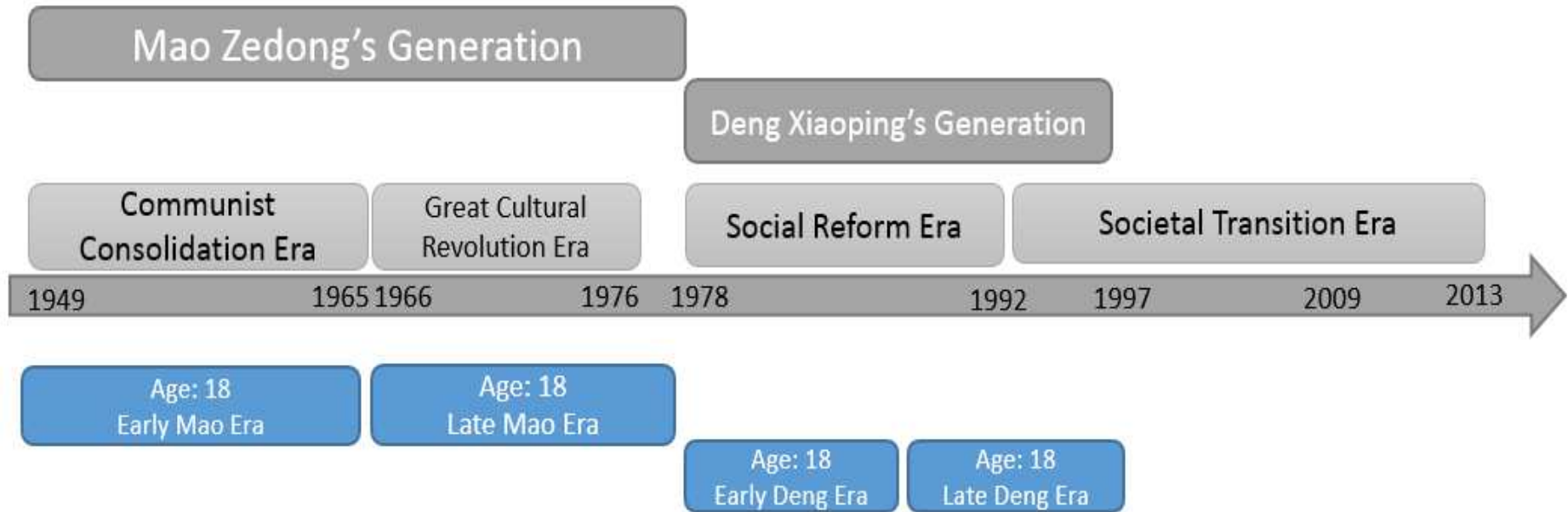
Figure 1 Distribution of Directors' Age in Chinese Banks from 2009- 2013



Source: Chinese bank annual report (2009, 2010, 2011, 2012 and 2013)

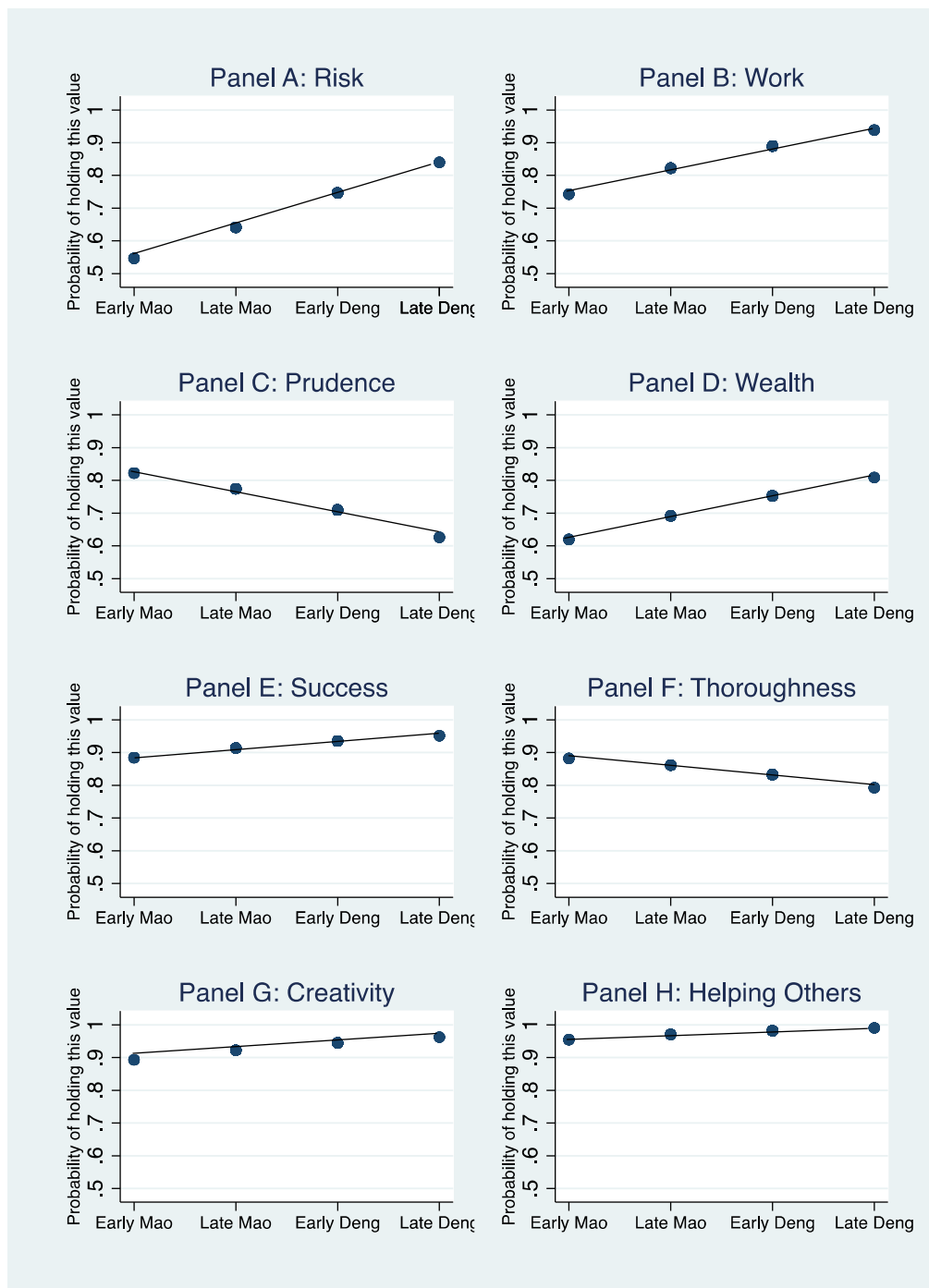
Notes: This figure reports the age distribution of all the directors on the board. Age is on the horizontal axis.

Figure 2 Chinese Generation Timeline



*Notes:* This figure shows the generation timeline in China. Mao's era covers the Communist Consolidation (1949-1965) and Great Cultural Revolution (1966-1976), while Deng Xiaoping initiated the Social Reform Era (1978-1992) and part of Societal Transition Era(1993-now) (Ralston et al., 1999; Egri and Ralston, 2004; Sun and Wang, 2010). Since social events at the age of 18 is far more influential than those that occur at an older age (Ghitza and Gelman, 2014), we divided different sub-generations based on this age (18).

Figure 3 Personal Value Differences of Directors in the Sample (Chinese Banks: 2009 – 2013)



Source: Chinese bank annual report (2009, 2010, 2011, 2012, and 2013), World Values Survey 6<sup>th</sup> Wave

Notes: Panels A to H show directors' personal value (mean) changes across different age groups, namely, risk, work, prudence, wealth, success, thoroughness, creativity, and helping others. We define our generation groups that correspond to specific social and political events at the age of 18: Early Mao generation (born during 1931-1947), late Mao generation (born during 1948-1958), Early Deng generation (born during 1959-1974) and Late Deng generation (born during 1975-1990). Generation groups are on the horizontal axis.



**Table 1** Summary statistics

Variables	Mean	Std	P25	P50	P75	Obs
<b><i>Panel A: Bank Performance</i></b>						
ROA	0.01	0.00	0.01	0.01	0.01	448
ROE	0.19	0.07	0.15	0.18	0.22	448
Z-score	3.87	0.71	3.39	3.80	4.31	441
NPLratio	0.01	0.01	0.01	0.01	0.01	435
<b><i>Panel B: Bank Board Age Diversity</i></b>						
Age diversity (CV)	0.14	0.04	0.11	0.14	0.17	450
Age diversity (SD)	7.24	1.96	6.03	6.96	8.61	450
Age diversity (Blau)	0.58	0.11	0.52	0.60	0.65	450
<b><i>Panel C: Bank Board Value Diversity</i></b>						
Value diversity (risk)	0.11	0.03	0.09	0.11	0.13	302
Value diversity (work)	0.06	0.02	0.04	0.05	0.07	302
Value diversity (prudence)	0.06	0.02	0.05	0.06	0.07	302
Value diversity (wealth)	0.07	0.04	0.04	0.06	0.08	302
Value diversity (success)	0.02	0.02	0.01	0.02	0.02	302
Value diversity (thoroughness)	0.03	0.01	0.02	0.03	0.03	302
Value diversity (creativity)	0.02	0.01	0.01	0.02	0.02	302
Value diversity (helping others)	0.01	0.01	0.01	0.01	0.01	302
<b><i>Panel D: Control Variables</i></b>						
<i>Board Characteristics</i>						
Independent Director	0.25	0.12	0.15	0.27	0.33	450
Board Size	13.77	3.37	11.00	14.00	15.00	450
Duality	0.03	0.16	0.00	0.00	0.00	439
<i>Ownership characteristics</i>						
State	0.18	0.19	0.00	0.12	0.21	451
Foreign	0.02	0.06	0.00	0.00	0.00	451
Private	0.03	0.07	0.00	0.00	0.00	451
<i>Bank-Specific measures</i>						
Capital Ratio	0.07	0.02	0.05	0.06	0.08	444
Loan Ratio	0.46	0.11	0.40	0.48	0.54	446
Size	18.83	1.65	17.70	18.44	19.56	446
Bank Age	2.40	0.88	1.95	2.56	2.77	442
Listed	0.18	0.39	0.00	0.00	0.00	451
<i>Location effects</i>						
City GDP	10.98	0.49	10.63	11.07	11.38	454

*Notes:* This table reports descriptive statistics on key variables. The sample is an unbalanced panel covering 97 banks over the period of 2009 -2013. Panel A reports the summary statistics of bank performance variables. Panel B reports the summary statistics of Bank Board Age Diversity variables. Panel C reports the summary statistics of board value diversity variables. Panel D reports the summary statistics of other control variables.

**Table 2**  
Relation between board age diversity and bank performance

	Profitability		Risk	
	ROA	ROE	Z-score	NPLratio
	(1)	(2)	(3)	(4)
Age Diversity	-0.013** (-2.021)	-0.230* (-1.922)	-0.026 (-0.055)	0.025 (0.715)
Board Size	0.000 (1.307)	0.001 (0.657)	-0.001 (-0.195)	0.000 (0.142)
Duality	-0.002* (-1.810)	-0.024 (-1.317)	0.086 (0.950)	0.005*** (2.867)
Independent Director	0.005* (1.691)	0.055 (1.019)	0.247 (1.562)	-0.025** (-2.278)
State	0.008 (1.382)	0.186 (1.629)	0.095 (0.290)	-0.038 (-0.958)
Foreign	0.001 (0.144)	0.224 (1.406)	-0.348 (-0.897)	0.004 (0.111)
Private	-0.008* (-1.739)	-0.065 (-0.757)	0.029 (0.111)	0.044 (1.530)
Size	-0.002 (-1.366)	-0.051** (-2.039)	-0.078 (-0.923)	0.018* (1.754)
Listed	0.001 (1.091)	0.016 (1.037)	-0.022 (-0.414)	0.000 (0.029)
Loan Ratio	-0.005 (-1.363)	-0.085 (-1.202)	-0.274 (-0.990)	0.035 (1.359)
Capital Ratio	0.014 (0.961)	-0.998*** (-4.003)	1.444** (2.028)	-0.014 (-0.300)
City GDP	-0.001 (-0.899)	-0.023 (-0.843)	0.008 (0.095)	-0.000 (-0.044)
Bank Age	0.000 (0.084)	0.010 (0.472)	0.044 (0.749)	0.009* (1.751)
Year Controls	Yes	Yes	Yes	Yes
Obs	325	325	325	322
R <sup>2</sup>	0.224	0.204	0.154	0.207

*Notes:* The table presents the results of the effects of age diversity on bank performance in model (1). The dependent variables are bank profitability and risks. The left panel presents results of bank profitability measured by *ROA* and *ROE* in columns (1) and (2). The right panel presents of bank risk measured by *Z-score* and *NPLratio* in columns (3) and (4). *Age Diversity* is measured by coefficient of variation of board age (*CV*). *Board Size* is the natural log of board size. The dummy variable *Duality* is equal to 1 if the bank governor is also the chairman of the board and 0 otherwise. *Independent Director* is the percentage of independent directors. *State* is the percentage of shares held by the largest shareholders if the largest shareholder is government or state-owned enterprise. *Foreign* is the percentage of shares held by the largest shareholders if the largest shareholder is a foreign investor. *Private* is the percentage of shares held by the largest shareholders if the largest shareholder is a private investor. *Size* is the natural log of total assets. *Bank Age* is the natural log of bank age. The dummy *Listed* equals 1 if the bank has been listed at the end of the year and 0 otherwise. *City GDP* is the natural log of GDP per capita of the city in which the bank's headquarters is located. It employs the panel fixed effect estimator with lagged independent variables. The robust t-statistics of each coefficient is shown in parentheses. \*, \*\*, \*\*\* indicate statistical significance level at 10%, 5%, and 1%, respectively.

**Table 3a**  
Regression of prediction of values (China)

	Value (risk)	Value (work)	Value (happiness)	Value (prudence)	Value (wealth)	Value (success)	Value (thoroughness)	Value (pressure)	Value (outgoing)
Age	-0.046*** (0.006)	-0.051*** (0.009)	0.000 (0.007)	0.030*** (0.007)	-0.026*** (0.007)	-0.025*** (0.008)	0.020*** (0.007)	0.001 (0.006)	-0.007 (0.006)
<i>Education</i>									
2(secondary school)	-0.304* (0.172)	-0.042 (0.214)	0.245 (0.207)	-0.059 (0.218)	-0.439** (0.194)	0.187 (0.213)	0.378* (0.194)	0.258 (0.180)	0.269 (0.177)
3(university)	-0.067 (0.223)	-0.018 (0.318)	0.342 (0.311)	-0.177 (0.261)	-0.222 (0.259)	0.700** (0.337)	0.692*** (0.266)	-0.172 (0.231)	-0.099 (0.229)
Employment	0.275 (0.179)	0.833*** (0.215)	0.059 (0.238)	0.410* (0.213)	0.707*** (0.195)	0.477** (0.229)	0.149 (0.206)	-0.101 (0.186)	-0.035 (0.185)
<i>income</i>									
2(middle)	0.053 (0.162)	0.094 (0.254)	0.028 (0.203)	-0.404* (0.233)	0.427** (0.189)	0.112 (0.231)	-0.020 (0.182)	0.261 (0.168)	0.234 (0.165)
3 (high)	0.479** (0.232)	0.608* (0.367)	0.396 (0.380)	-0.960*** (0.297)	0.435 (0.269)	-0.027 (0.356)	0.027 (0.283)	0.599** (0.255)	0.178 (0.243)
gender	0.323** (0.130)	0.241 (0.185)	-0.275 (0.179)	-0.121 (0.158)	0.054 (0.152)	0.251 (0.186)	0.225 (0.149)	0.140 (0.135)	0.257* (0.133)
<i>Social class</i>									
2 (working)	-0.368** (0.155)	0.280 (0.237)	-0.481** (0.210)	0.130 (0.194)	-0.343* (0.185)	-0.339 (0.231)	-0.323* (0.174)	-0.349** (0.162)	-0.200 (0.162)
3 (middle)	-0.599*** (0.216)	-0.223 (0.321)	-1.239*** (0.254)	-0.133 (0.286)	-0.357 (0.254)	-0.753** (0.294)	-0.238 (0.246)	-0.068 (0.227)	-0.372* (0.221)
4(upper)	0.557* (0.298)	-0.311 (0.379)	0.299 (0.550)	-0.054 (0.322)	-0.166 (0.311)	0.173 (0.451)	-0.241 (0.339)	-0.147 (0.302)	-0.166 (0.293)
Supervisor	-0.087 (0.153)	-0.166 (0.210)	0.477** (0.232)	-0.055 (0.181)	-0.682*** (0.173)	-0.194 (0.219)	0.163 (0.185)	-0.073 (0.157)	0.279* (0.158)
Constant	1.807*** (0.419)	3.339*** (0.600)	1.914*** (0.517)	0.432 (0.480)	2.213*** (0.472)	2.517*** (0.590)	-0.296 (0.495)	0.242 (0.440)	0.318 (0.449)
Obs	1175	1235	1253	1174	1181	1176	1037	1046	1050
R <sup>2</sup>	0.094	0.151	0.064	0.038	0.071	0.066	0.023	0.017	0.018

Notes: This table presents the results of prediction of values based on world values survey (China). It employs a logit model with robust standard errors. The robust t-statistics of each coefficient is shown in parentheses. \*, \*\*, \*\*\* indicate statistical significance level at 10%, 5%, and 1%, respectively.

**Table 3b**  
Regression of prediction of values (China)

	Value (active)	Value (creativity)	Value (helping other)	Value (finding faults)	Value (reserved)	Value (life satisfaction)	Value (slack)	Value (nervous)
Age	-0.006 (0.006)	-0.033*** (0.007)	-0.046*** (0.017)	0.002 (0.006)	-0.006 (0.006)	-0.003 (0.006)	-0.011 (0.009)	-0.009 (0.007)
<i>Education</i>								
2(secondary school)	0.234 (0.182)	0.066 (0.184)	0.181 (0.450)	0.098 (0.192)	0.071 (0.186)	-0.050 (0.160)	-0.066 (0.273)	-0.117 (0.190)
3(university)	0.548** (0.232)	0.729** (0.284)	-0.578 (0.650)	0.020 (0.243)	0.252 (0.238)	0.130 (0.215)	0.203 (0.334)	-0.210 (0.248)
Employment	0.039 (0.184)	0.312 (0.200)	0.250 (0.503)	-0.141 (0.191)	-0.194 (0.189)	0.077 (0.169)	0.364 (0.268)	-0.134 (0.195)
<i>Income</i>								
2 (middle)	0.099 (0.173)	0.022 (0.186)	0.239 (0.577)	0.055 (0.181)	-0.133 (0.171)	0.090 (0.152)	0.169 (0.237)	-0.039 (0.172)
3 (high)	0.568** (0.255)	-0.028 (0.283)	1.285 (1.025)	0.839*** (0.252)	0.017 (0.246)	1.261*** (0.258)	-0.017 (0.373)	-0.047 (0.258)
Gender	-0.044 (0.135)	0.143 (0.152)	-0.348 (0.452)	0.199 (0.141)	-0.513*** (0.134)	-0.136 (0.125)	-0.490** (0.192)	-0.290** (0.141)
<i>Social class</i>								
2 (working)	-0.200 (0.164)	-0.190 (0.185)	0.066 (0.564)	0.014 (0.177)	0.178 (0.163)	-0.270* (0.148)	0.058 (0.237)	0.088 (0.173)
3 (middle)	0.080 (0.232)	-0.734*** (0.241)	-0.855 (0.655)	0.198 (0.238)	0.307 (0.230)	-0.473** (0.202)	0.761*** (0.292)	0.316 (0.233)
4 (upper)	0.389 (0.298)	0.637 (0.403)	-0.829 (0.869)	-0.324 (0.298)	-0.081 (0.288)	0.372 (0.331)	-0.044 (0.471)	-0.683* (0.361)
Supervisor	0.326** (0.156)	0.321* (0.190)	0.638 (0.550)	0.330** (0.161)	-0.206 (0.157)	0.063 (0.149)	-0.197 (0.249)	-0.109 (0.169)
Constant	-0.323 (0.431)	2.282*** (0.507)	5.715*** (1.108)	-1.148** (0.465)	0.299 (0.447)	0.464 (0.399)	-1.738*** (0.618)	-0.018 (0.467)
Obs	1001	1181	1180	1025	1005	1249	1058	1025
R <sup>2</sup>	0.034	0.086	0.089	0.024	0.021	0.051	0.028	0.016

Notes: This Table presents the results of prediction of values based on world values survey (China). It employs the logit model with robust standard errors. The robust t-statistics of each coefficient is shown in parentheses. \*, \*\*, \*\*\* indicate statistical significance level at 10%, 5%, and 1%, respectively.

**Table 4**  
Relation between board value diversity and bank performance

	Value diversity (risk)	Value diversity (work)	Value diversity (prudence)	Value diversity (wealth)	Value diversity (success)	Value diversity (thoroughness)	Value diversity (creativity)	Value diversity (helping others)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<b>Panel A: Dependent variable is ROA</b>								
ROA	-0.014 (-1.654)	-0.026* (-1.742)	-0.030* (-1.984)	-0.038* (-1.864)	-0.047 (-0.974)	-0.012 (-0.346)	-0.069 (-1.491)	-0.130 (-1.564)
Year Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs	228	228	228	228	228	228	228	228
R <sup>2</sup>	0.282	0.287	0.285	0.293	0.273	0.270	0.281	0.285
<b>Panel B: Dependent variable is ROE</b>								
ROE	-0.297 (-1.533)	-0.566* (-1.869)	-0.700* (-1.830)	-0.825** (-2.105)	-1.305 (-1.109)	-0.548 (-0.859)	-1.680* (-1.758)	-2.911* (-1.958)
Year Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs	228	228	228	228	228	228	228	228
R <sup>2</sup>	0.314	0.321	0.320	0.327	0.307	0.303	0.317	0.320
<b>Panel C: Dependent variable is Z-score</b>								
Z-score	0.105 (0.135)	0.295 (0.256)	0.579 (0.378)	0.598 (0.417)	1.278 (0.270)	1.984 (0.753)	1.965 (0.570)	4.266 (0.937)
Year Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs	228	228	228	228	228	228	228	228
R <sup>2</sup>	0.177	0.177	0.178	0.178	0.177	0.180	0.179	0.180
<b>Panel D: Dependent variable is NPLratio</b>								
NPLratio	0.064* (1.668)	0.095 (1.549)	0.030 (0.394)	0.088 (1.112)	0.147 (0.610)	-0.047 (-0.322)	0.143 (0.700)	0.397 (1.227)
Year Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs	227	227	227	227	227	227	227	227
R <sup>2</sup>	0.272	0.271	0.260	0.265	0.261	0.259	0.261	0.266

*Notes:* This table presents the results of effects of value diversity on bank performance in model (3). Panel A presents results of regressing ROA on various value diversities. Panel B presents results of regressing ROE on various value diversities. Panel C presents results of regressing Z-score on various value diversities. Panel D presents results of regressing NPLratio on various value diversities. For the sake of space, the estimation results of control variables are omitted in this Table. Year fixed effects are controlled in all regression. The robust t-statistics of each coefficient is shown in parentheses. \*, \*\*, \*\*\* indicate statistical significance level at 10%, 5%, and 1%, respectively.

## Appendix A

### Questions from World Values Survey used to identify value indicators:

For each of the following, indicate how important it is in your life. Would you say it is :

**V8:** work    Very important    Rather important    Not very important    Not at all important

Now I will briefly describe some people. Using this card, would you please indicate for each description whether that person is very much like you, like you, somewhat like you, not like you, or not at all like you?

**V70.** It is important to this person think up new ideas and to be creative; to do things one's own way.

1. Very much like me    2. Like me    3. Somewhat like me    4. A little like me    5. Not like me    6. Not at all like me

**V71.** It is important to this person to be rich; to have a lot of money and expensive things.

1. Very much like me    2. Like me    3. Somewhat like me    4. A little like me    5. Not like me    6. Not at all like me

**V74B.** It is important for this people to help the people nearby; to care for their well-being

1. Very much like me    2. Like me    3. Somewhat like me    4. A little like me    5. Not like me    6. Not at all like me

**V75.** Being very successful is important to this person; to have people recognize one's achievements.

1. Very much like me    2. Like me    3. Somewhat like me    4. A little like me    5. Not like me    6. Not at all like me

**V76.** Adventure and taking risks are important to this person; to have an exciting life.

1. Very much like me    2. Like me    3. Somewhat like me    4. A little like me    5. Not like me    6. Not at all like me

**V77.** It is important to this person to always behave properly; to avoid doing anything people would say is wrong.

1. Very much like me    2. Like me    3. Somewhat like me    4. A little like me    5. Not like me    6. Not at all like me

**V160H** I see myself as someone who... does a thorough job

1. Disagree strongly    2. Disagree a little    3. Neither agree nor disagree    4. Agree a little    5. Agree Strongly    6. Don't know

## Appendix B

### Variables definition

Variables	Definition
<b>Panel A: Bank Board Age Diversity</b>	
Age diversity (CV)	Coefficient of variation of board age = $sd$ (age)/mean(age)
Age diversity (SD)	Standard deviation of board age
Age diversity (Blau)	Blau index of board age
<b>Panel B: Directors' Personal Values</b>	
Value (risk)	Probability of thinking taking risk is important
Value (work)	Probability of thinking work is important
Value (happiness)	Probability of being happy
Value (prudence)	Probability of thinking avoiding doing something wrong is important
Value (wealth)	Probability of pursuing wealth
Value (success)	Probability of thinking success is important
Value (thoroughness)	Probability of seeing myself as someone who does a thorough job
Value (pressure)	Probability of handling press well
Value (outgoing)	Probability of being outgoing/sociable
Value (active)	Probability of having an active imagination
Value (creativity)	Probability of thinking being creative is important
Value (helping other)	Probability of thinking helping others is important
Value (finding faults)	Probability of seeing myself as someone who tends to find others' faults
Value (reserved)	Probability of being reserved
Value (life satisfaction)	Probability of being satisfied with life
Value (slackness)	Probability of being slack
Value (tension)	Probability of getting nervous easily
Value Diversity (risk)	Coefficient of variation of directors' value on risk
Value Diversity (work)	Coefficient of variation of directors' value on work
Value Diversity (prudence)	Coefficient of variation of directors' value on prudence
Value Diversity (wealth)	Coefficient of variation of directors' value on wealth
Value Diversity (success)	Coefficient of variation of directors' value on success
Value Diversity (thoroughness)	Coefficient of variation of directors' value on thoroughness
Value Diversity (creativity)	Coefficient of variation of directors' value on creativity
Value Diversity (helping others)	Coefficient of variation of directors' value on helping others
Value Level (risk)	Mean of directors' value on risk
Value Level (work)	Mean of directors' value on work
Value Level (prudence)	Mean of directors' value on prudence
Value Level (wealth)	Mean of directors' value on wealth
Value Level (success)	Mean of directors' value on success
Value Level (thoroughness)	Mean of directors' value on thoroughness
Value Level (creativity)	Mean of directors' value on creativity
Value Level (helping others)	Mean of directors' value on helping others

## Appendix C1

System GMM estimations: relation between board age diversity and bank performance.

	Profitability		Risk	
	ROA	ROE	Z-score	NPLratio
	(1)	(2)	(3)	(4)
Lagged ROA	0.575*** (5.991)			
Age diversity	-0.016* (-1.931)	-0.274* (-1.871)	0.212 (0.305)	0.076 (1.662)
Independent Director	-0.004* (-1.684)	-0.067 (-1.570)	0.402 (1.360)	-0.011 (-0.834)
Board Size	0.000 (1.271)	0.001 (0.421)	-0.021** (-2.081)	0.000 (0.368)
Duality	-0.002 (-0.687)	0.007 (0.444)	-0.005 (-0.045)	0.002 (0.502)
State	0.001 (0.922)	0.041 (1.661)	-0.263 (-1.486)	-0.005 (-0.713)
Foreign	0.005 (0.564)	0.180 (1.369)	1.259* (1.665)	-0.025 (-0.641)
Private	-0.001 (-0.292)	0.013 (0.392)	0.059 (0.265)	-0.003 (-0.271)
Size	-0.000 (-0.283)	-0.001 (-0.156)	0.105** (2.318)	0.003 (1.262)
Listed	-0.001 (-0.527)	-0.007 (-0.309)	-0.098 (-0.977)	-0.007 (-0.904)
Loan Ratio	0.001 (0.299)	-0.019 (-0.501)	0.003 (0.008)	0.007 (0.705)
Capital Ratio	0.030 (1.414)	-0.773** (-2.019)	5.036 (1.584)	-0.001 (-0.011)
City GDP	-0.000 (-0.058)	-0.001 (-0.103)	-0.070 (-1.449)	-0.003 (-0.967)
Bank Age	-0.000 (-0.051)	-0.005 (-0.935)	0.025 (0.981)	-0.001 (-0.925)
Lagged ROE		0.586*** (6.922)		
Lagged Z-score			0.798*** (13.944)	
Lagged NPLratio				0.615*** (3.540)
Year Controls	Yes	Yes	Yes	Yes
Bank-Year	335	335	333	330
AR2 p-val	0.877	0.028	0.813	0.310
Hansen p-val	0.538	0.467	0.598	0.885

*Notes:* The table presents the results of the two-step system GMM estimate of regressing bank performance (profitability/risk) on board characteristics variables. The left panel presents results of bank profitability measured by *ROA* and *ROE*. The right panel presents of bank risk measured by *Z-score* and *NPLratio*. Age diversity is measured by the coefficient of variation of board age (*CV*). AR2 is test for second order serial correlation in the first differenced residuals under the null of no serial correlation. Hansen test statistics is the test of over-identifying restrictions based on the null that instruments are valid. The robust t-statistics of each coefficient is shown in parentheses. \*, \*\*, \*\*\* indicate statistical significance level at 10%, 5% and 1%, respectively.



## Appendix C2

Relation between board age diversity and bank performance: robustness test.

	Profitability		Risk	
	ROA	ROE	Z-score	NPLratio
	(1)	(2)	(3)	(4)
Age Diversity	-0.000* (-1.966)	-0.005* (-1.924)	-0.001 (-0.118)	0.001 (1.035)
Board Size	0.000 (1.298)	0.001 (0.648)	-0.001 (-0.187)	0.000 (0.075)
Duality	-0.002* (-1.787)	-0.024 (-1.306)	0.086 (0.947)	0.005*** (2.780)
Independent Director	0.005* (1.739)	0.058 (1.069)	0.248 (1.558)	-0.026** (-2.299)
State	0.008 (1.401)	0.187 (1.646)	0.094 (0.288)	-0.037 (-0.958)
Foreign	0.001 (0.073)	0.213 (1.367)	-0.351 (-0.902)	0.006 (0.159)
Private	-0.008* (-1.787)	-0.067 (-0.789)	0.028 (0.105)	0.045 (1.553)
Size	-0.002 (-1.310)	-0.050* (-1.981)	-0.078 (-0.920)	0.018* (1.757)
Listed	0.001 (0.953)	0.015 (0.934)	-0.023 (-0.435)	0.001 (0.111)
Loan Ratio	-0.005 (-1.329)	-0.084 (-1.174)	-0.274 (-0.989)	0.035 (1.357)
Capital Ratio	0.014 (0.995)	-0.993*** (-3.990)	1.448** (2.029)	-0.016 (-0.336)
City GDP	-0.001 (-0.892)	-0.022 (-0.838)	0.008 (0.100)	-0.000 (-0.079)
Bank Age	0.000 (0.091)	0.010 (0.481)	0.044 (0.748)	0.009* (1.752)
Year Controls	Yes	Yes	Yes	Yes
Obs	325	325	325	322
R <sup>2</sup>	0.228	0.207	0.154	0.210

*Notes:* The table presents the results robustness test of regression in model (1) in which age diversity is measured by standard deviation of board age (*SD*). The left panel presents results of bank profitability measured by *ROA* and *ROE*. The right panel presents of bank risk measured by *Z-score* and *NPLratio*. *Board Size* is the natural log of board size. The dummy variable *Duality* equals 1 if bank governor is also chairman of the board and 0 otherwise. *Independent Director* is the percentage of independent directors. *State* is the percentage of shares held by the largest shareholders if the Largest shareholder is government or state-owned enterprise. *Foreign* is the percentage of shares held by the largest shareholders if the Largest shareholder is a foreign investor. *Private* is the percentage of shares held by the largest shareholders if the Largest shareholder is a private investor. *Size* is the natural log of total assets. *Bank Age* is the natural log of bank age. The dummy *Listed* equals 1 if the bank has been listed at the end of the year and 0 otherwise. City GDP is the natural log of GDP per capita of city that the bank's headquarter is located. It employs the panel fixed effect estimator with lagged independent variables. The robust t-statistics of each coefficient is shown in parentheses. \*, \*\*, \*\*\* indicate statistical significance level at 10%, 5% and 1%, respectively.

## Appendix C3

Relation between board age diversity and bank performance: robustness test.

	Profitability		Risk	
	ROA	ROE	Z-score	NPLratio
	(1)	(2)	(3)	(4)
Age Diversity	-0.006** (-2.194)	-0.069 (-1.541)	-0.044 (-0.440)	0.009 (1.219)
Board Size	0.000 (1.245)	0.000 (0.501)	-0.001 (-0.177)	0.000 (0.193)
Duality	-0.002* (-1.700)	-0.021 (-1.115)	0.088 (0.973)	0.005*** (2.745)
Independent Director	0.005* (1.834)	0.053 (0.974)	0.248 (1.591)	-0.025** (-2.315)
State	0.008 (1.416)	0.184* (1.670)	0.088 (0.270)	-0.037 (-0.962)
Foreign	-0.001 (-0.118)	0.200 (1.392)	-0.367 (-0.946)	0.007 (0.206)
Private	-0.009* (-1.816)	-0.068 (-0.786)	0.022 (0.083)	0.045 (1.559)
Size	-0.002 (-1.300)	-0.052* (-1.947)	-0.078 (-0.921)	0.018* (1.727)
Listed	0.001 (1.479)	0.020 (1.411)	-0.023 (-0.476)	-0.000 (-0.061)
Loan Ratio	-0.005 (-1.150)	-0.076 (-1.034)	-0.269 (-0.980)	0.034 (1.299)
Capital Ratio	0.011 (0.833)	-1.035*** (-4.157)	1.435** (2.047)	-0.010 (-0.199)
City GDP	-0.001 (-1.013)	-0.025 (-0.957)	0.008 (0.096)	0.000 (0.014)
Bank Age	0.000 (0.215)	0.012 (0.555)	0.045 (0.759)	0.008* (1.691)
Year Controls	Yes	Yes	Yes	Yes
Obs	325	325	325	322
R <sup>2</sup>	0.249	0.208	0.155	0.209

*Notes:* The table presents the results robustness test of regression in model (1) in which age diversity is measured by blau index of board age (*Blau*). The left panel presents result of bank profitability measured by *ROA* and *ROE*. The right panel presents of bank risk measured by *Z-score* and *NPLratio*. *Board Size* is the natural log of board size. The dummy variable *Duality* equals 1 if bank governor is also chairman of the board and 0 otherwise. *Independent Director* is the percentage of independent directors. *State* is the percentage of shares held by the largest shareholders if the Largest shareholder is government or state-owned enterprise. *Foreign* is the percentage of shares held by the largest shareholders if the Largest shareholder is a foreign investor. *Private* is the percentage of shares held by the largest shareholders if the Largest shareholder is a private investor. *Size* is the natural log of total assets. *Bank Age* is the natural log of bank age. The dummy *Listed* equals 1 if the bank has been listed at the end of the year and 0 otherwise. City GDP is the natural log of GDP per capita of city that the bank's headquarter is located. It employs the panel fixed effect estimator with lagged independent variables. The robust t-statistics of each coefficient is shown in parentheses. \*, \*\*, \*\*\* indicate statistical significance level at 10%, 5% and 1%, respectively.

## Appendix C4

Relation between board value diversity and bank performance: robustness test.

	Value diversity (risk) 1	Value diversity (work) 2	Value diversity (prudence) 3	Value diversity (wealth) 4	Value diversity (success) 5	Value diversity (thoroughness) 6	Value diversity (creativity) 7	Value diversity (helping others) 8
<b>Panel A: Dependent variable is ROA</b>								
ROA	-0.007 (-0.892)	-0.026* (-1.716)	-0.029* (-1.752)	-0.004 (-0.880)	-0.002 (-0.270)	-0.006 (-0.311)	-0.078* (-1.670)	-0.108 (-1.665)
Year Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs	228	228	228	228	228	228	228	228
R <sup>2</sup>	0.274	0.287	0.288	0.273	0.270	0.270	0.286	0.283
<b>Panel B: Dependent variable is ROE</b>								
ROE	-0.190 (-1.090)	-0.591* (-1.936)	-0.687* (-1.856)	-0.090 (-1.149)	-0.083 (-0.645)	-0.370 (-1.060)	-1.807* (-1.934)	-2.708** (-2.227)
Year Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs	228	228	228	228	228	228	228	228
R <sup>2</sup>	0.275	0.291	0.294	0.270	0.267	0.269	0.290	0.290
<b>Panel C: Dependent variable is Z-score</b>								
Z-score	0.381 (0.595)	0.541 (0.465)	1.354 (1.193)	0.502* (1.767)	1.145* (1.883)	2.954* (1.886)	1.989 (0.618)	7.422* (1.997)
Year Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs	228	228	228	228	228	228	228	228
R <sup>2</sup>	0.179	0.178	0.185	0.186	0.185	0.193	0.179	0.191
<b>Panel D: Dependent variable is NPLratio</b>								
NPLratio	0.070** (2.077)	0.098 (1.598)	0.053 (0.788)	0.030 (1.255)	0.055 (0.975)	-0.037 (-0.343)	0.168 (0.870)	0.287 (0.990)
Year Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs	227	227	227	227	227	227	227	227
R <sup>2</sup>	0.280	0.275	0.271	0.276	0.273	0.270	0.270	0.277

Notes: This table presents the robustness test results of regression in model (3) in which foreign directors' value is calculated as half based on directors' own country survey. Panel A presents results of regressing *ROA* on various value diversities. Panel B presents results of regressing *ROE* on various value diversities. Panel C presents results of regressing *Z-score* on various value diversities. Panel D presents results of regressing *NPLratio* on various value diversities. For the sake of space, the estimation results of control variables are omitted in this table. The robust standard error of each coefficient is shown in parentheses. \*, \*\*, \*\*\* indicate statistical significance level at 10%, 5% and 1%, respectively.

## Appendix C5

Robust check: bootstrap regression of value diversity and bank performance

	Value diversity (risk)	Value diversity (work)	Value diversity (prudence)	Value diversity (wealth)	Value diversity (success)	Value diversity (thoroughness)	Value diversity (creativity)	Value diversity (helping others)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<b>Panel A: Dependent variable is ROA</b>								
ROA	-0.014 (0.009)	-0.026* (0.016)	-0.030* (0.016)	-0.039* (0.020)	-0.049 (0.052)	-0.011 (0.037)	-0.071 (0.048)	-0.131 (0.090)
Year Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs	302	302	302	302	302	302	302	302
R <sup>2</sup>	0.282	0.288	0.284	0.293	0.273	0.270	0.281	0.286
<b>Panel B: Dependent variable is ROE</b>								
ROE	-0.298 (0.201)	-0.567* (0.319)	-0.700* (0.391)	-0.826** (0.384)	-1.308 (1.225)	-0.546 (0.676)	-1.683 (1.024)	-2.913* (1.533)
Year Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs	302	302	302	302	302	302	302	302
R <sup>2</sup>	0.312	0.318	0.318	0.325	0.304	0.300	0.314	0.317
<b>Panel C: Dependent variable is Z-score</b>								
Z-score	0.089 (0.832)	0.262 (1.198)	0.613 (1.602)	0.581 (1.476)	1.169 (4.608)	2.070 (2.889)	1.868 (3.640)	4.164 (5.247)
Year Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs	302	302	302	302	302	302	302	302
R <sup>2</sup>	0.185	0.185	0.186	0.186	0.186	0.189	0.187	0.189
<b>Panel D: Dependent variable is NPLratio</b>								
NPLratio	0.064* (0.037)	0.095 (0.062)	0.031 (0.068)	0.088 (0.081)	0.146 (0.241)	-0.047 (0.115)	0.143 (0.199)	0.397 (0.31)
Year Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs	302	302	302	302	302	302	302	302
R <sup>2</sup>	0.272	0.271	0.260	0.265	0.261	0.259	0.261	0.266

*Notes:* This table presents the bootstrap results of effects of value diversity on bank performance in model (3). Panel A presents results of regressing ROA on various value diversities. Panel B presents results of regressing ROE on various value diversities. Panel C presents results of regressing Z-score on various value diversities. Panel D presents results of regressing NPLratio on various value diversities. For the sake of space, the estimation results of control variables are omitted in this Table. Year fixed effects are controlled in all regression. The bootstrapped standard error of each coefficient is shown in parentheses. \*, \*\*, \*\*\* indicate statistical significance level at 10%, 5%, and 1%, respectively.