

Age diversity, directors' personal values, and bank performance

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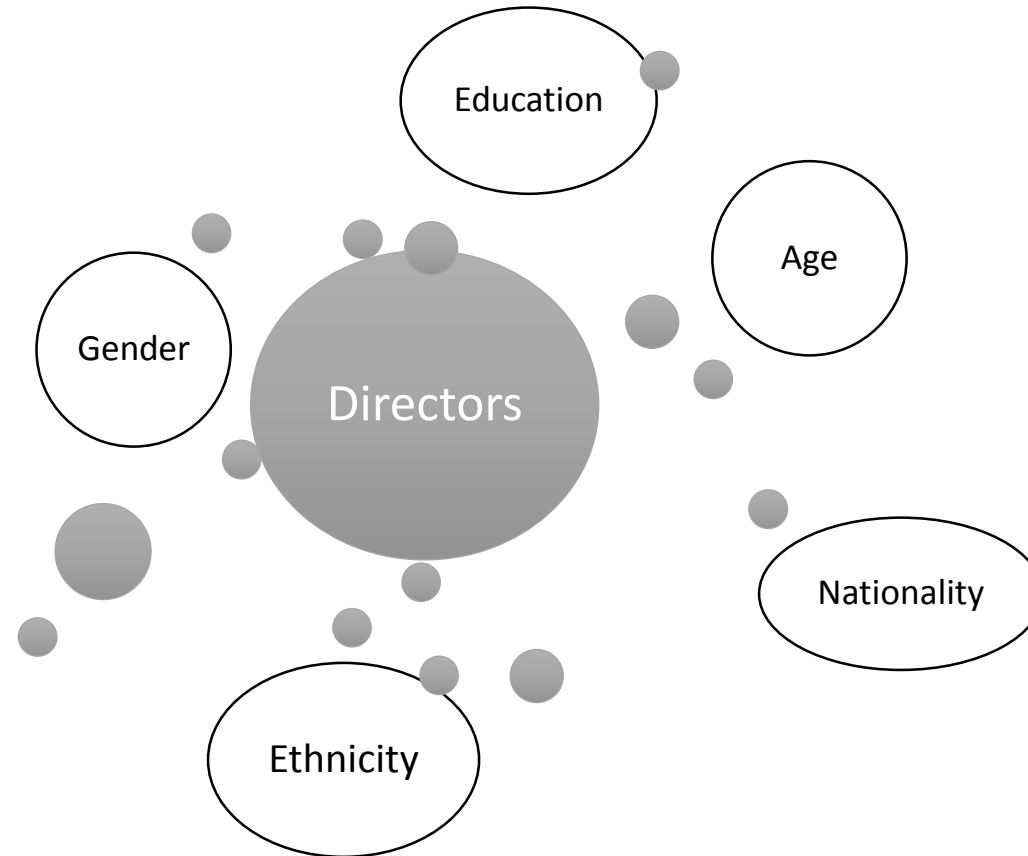
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Banking in general

What do banks optimize?

How are banks managed?

Board diversity



Board diversity literature

The impact of bank board diversity (gender and nationality)

- Financial risk (gender (+), Farag & Mallin, 2017),
- Bank performance (gender (?) ethnicity (+) García-Meca et al., 2015; gender (+?) Pathan & Faff, 2013)
- Bank growth strategies (De Cabo et al., 2012).

Why Age?

Individual Level

- Age is a dynamic proxy of an individual's life experience (Mannheim, 1949).
- Age encompasses a wide range of factors that influence the formation of personal values during our lifespan (Medawar, 1952; Rhodes, 1983).

Group Level

- Whether an age-diverse board provides comprehensive resources and expertise or leads to communication breakdown and conflicts remains as an open question.

Literature: Diversity and Performance

- **Positive:** Age diversity may improve the experiences, resources knowledge, networks of the board which in turn improves bank profitability (Ararat et al., 2010; Kim & Lim, 2010; Mahadeo et al., 2012).
- **Negative:** On the other hand, age diversity may suffer from less group cohesion even cognitive conflicts, age diversity harms firm social performance (Hafsi & Turgut, 2013), profitability (Ali et al., 2014), and strategic changes (Tarus & Aime, 2014).
- The board age diversity in the **banking sector** has received scant attention except one study by Hagedorff and Keasey (2012). They examine the US commercial banks and find that board age diversity is associated with wealth losses surrounding acquisition announcement.

Age and risk.

- Regarding the relationship between age and risk, **young** managers are found to have higher propensity to make risky decisions (Cheng et al., 2010) to signal the market that they possess superior abilities (Prendergast & Stole, 1996).
- **Older** managers prefer lower risk due to the threat to financial security and are associated with lower financial leverage, lower capital expenditures, and higher cash holdings (Berger et al., 2014; Bertrand & Schoar, 2003).

Diversity and career concerns

However, when career concerns dominate,

- **younger** managers may be more risk-averse as they face more uncertainty about their future career than their older counterparts (Holmstrom, 1999)
- **older** managers are not afraid of career concerns due to their cumulative human capital (Nguyen et al., 2015)

Age diversity and firm risk

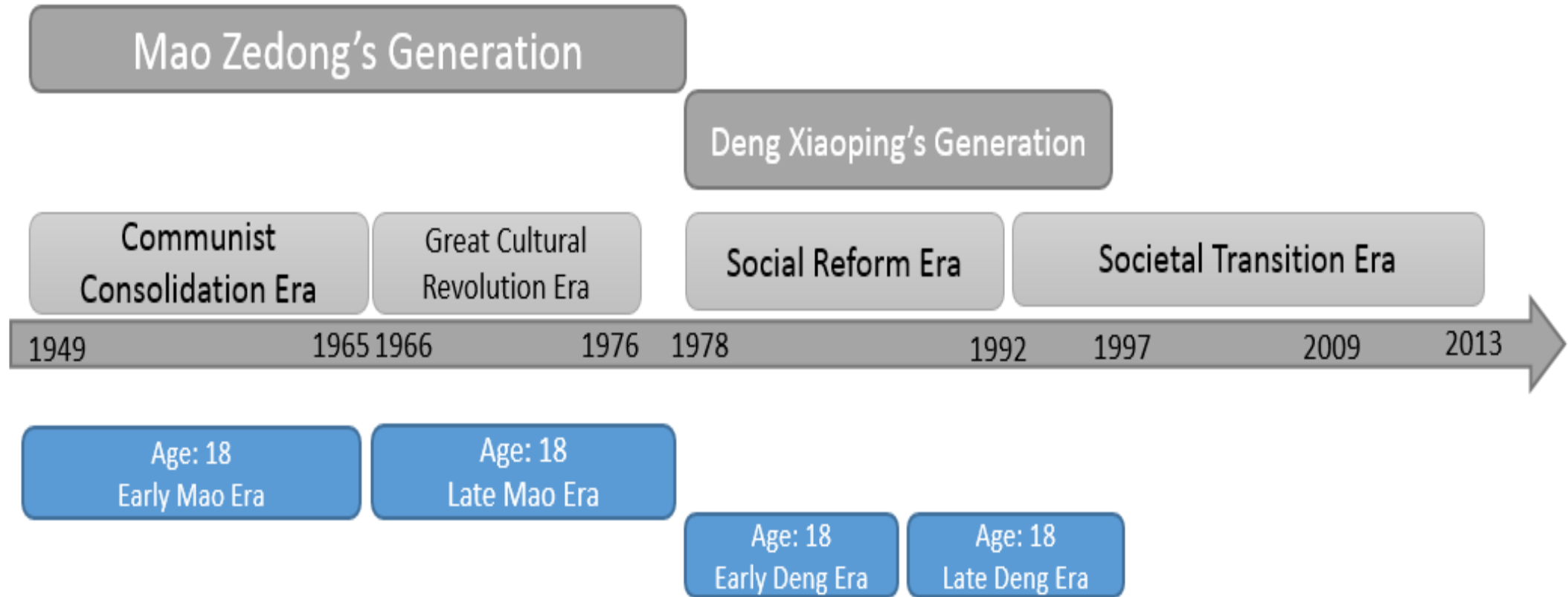
- no study has investigated the effect of board age diversity on firm risks.
- age diversity may impact the process and the quality of decision—making. It may result in more board scrutiny that leads to less extreme outcomes (i.e., **lower risk**).
- age diversity may cause conflicts and make it difficult to reach a consensus. The extended decision making process may expose banks to **higher risk** when it could not adjust their policy in time.

Why China?

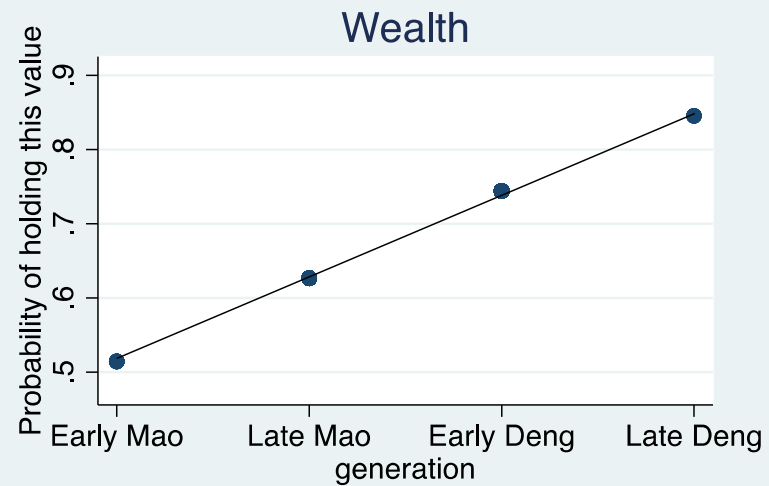
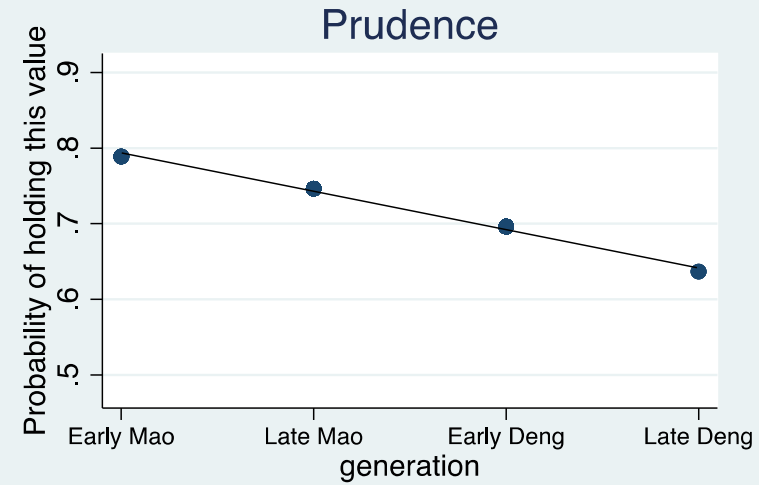
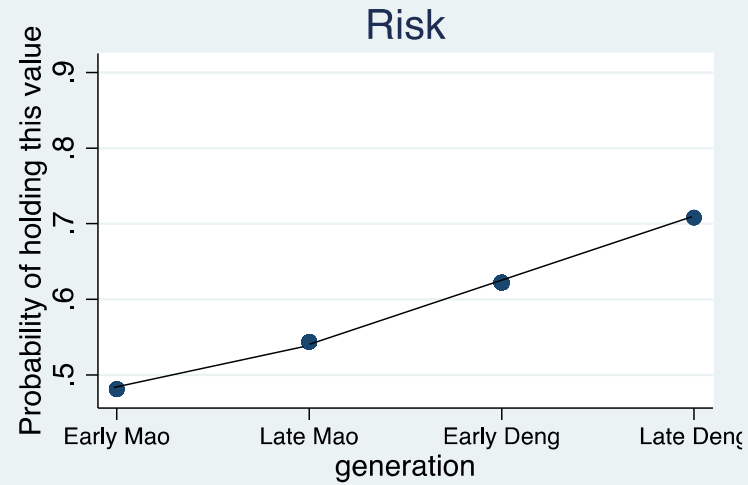
Age diversity is particularly important in countries that have experienced significant transformations.

China as an example

- Mao Zedong's generation (born during 1931-1958)
 - Less educated
 - Do things in a conventional way
- Deng Xiaoping's generation (born during 1959-1979)
 - Better educated
 - Confident and creative



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



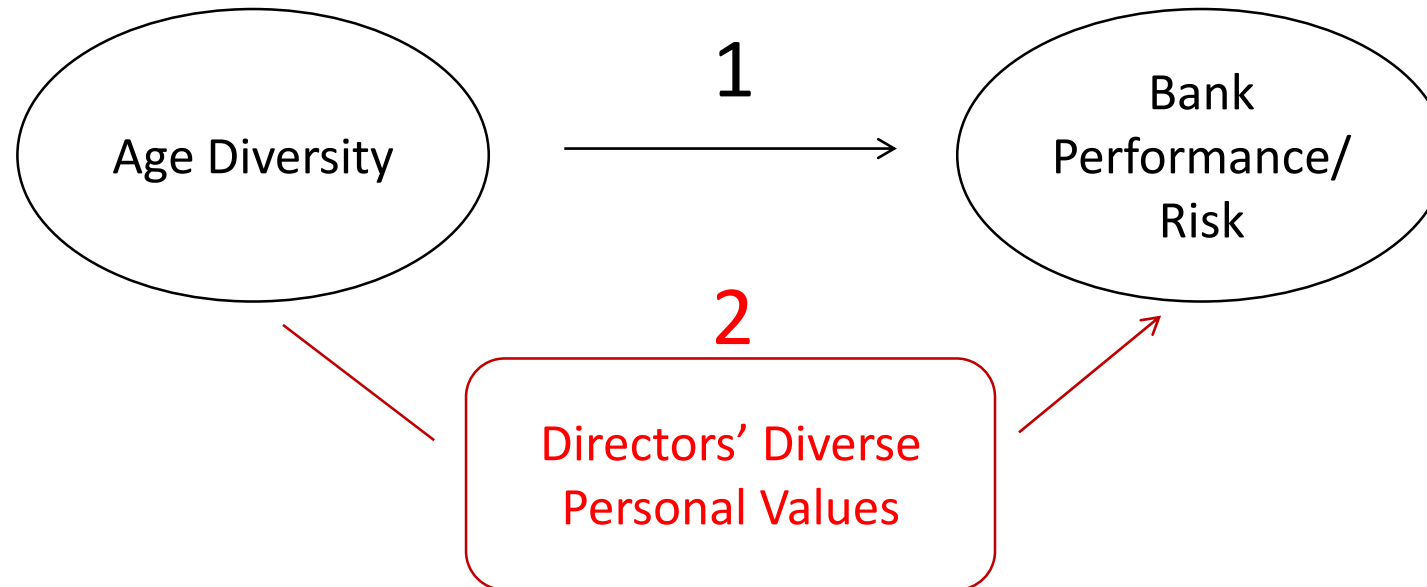
Early Mao (Communist Consolidation):
born during 1931-1947

Late Mao (Great Cultural Revolution):
born during 1948-1958

Early Deng (Social Economic Reform):
born during 1959-1974

Late Deng (Societal Transition):
born during 1975-1990

Research Questions



How does board age diversity affect bank performance?

Contributions

- We provide a new perspective on the impacts of age heterogeneity on firm performance by **decomposing age dispersion into value dispersion** and investigate whether directors' age diversity can affect bank performance via their different values.
- We compute directors' personal values and provide empirical evidence that directors' values change across generations.
- We extend the literature on board age (value) diversity and bank performance in China.

Preview of results

- Negative link between diversity and performance
- It can be explained by the heterogeneity among directors' views on risk, prudence, and wealth
- This prevents the board from functioning effectively and ultimately weakens bank profitability.
- Our results are robust with respect to alternative measures of diversity and bank performance.

Sample & Data

- 97 Chinese banks(listed/unlisted) from 2009 to 2013
- Bank financial characteristics
Bankscope, Annual Reports
- Board and ownership structure characteristics
Annual Report, World Values Survey (China)
- Regional economic effect
China City Statistical Yearbook

Research Question I

Fixed Effect Model: age diversity and bank performance

$$\text{Bank performance}_{i,t} = \alpha + \beta \text{Board age diversity}_{i,t-1} + \gamma \text{Control}_{i,t-1} + \theta_t + \mu_i + \varepsilon_{i,t} \quad (1)$$

- *Bank Performance*: **profitability** (ROA, ROE) and **risk** (Z-SCORE and NPLRATIO)
- *Board Age Diversity*: coefficient of variation of board age (**CV**), log of standard deviation of board age (**LnSD**) and Blau Index (**Blau = 1- SUM(p_i^2)**)

Board Characteristics	
Independent Director	Percentage of independent directors
Board Size	The natural log of board size
Duality	Dummy variable equals 1 if bank governor is also chairman of the board and 0 otherwise
Foreign Director	Percentage of foreign directors
Female Director	Percentage of female directors
Ownership characteristics	
State	Percentage of shares held by the largest shareholders if the Largest shareholder is government or state-owned enterprise
Foreign	Percentage of shares held by the largest shareholders if the Largest shareholder is a foreign investor
Private	Percentage of shares held by the largest shareholders if the Largest shareholder is a private investor

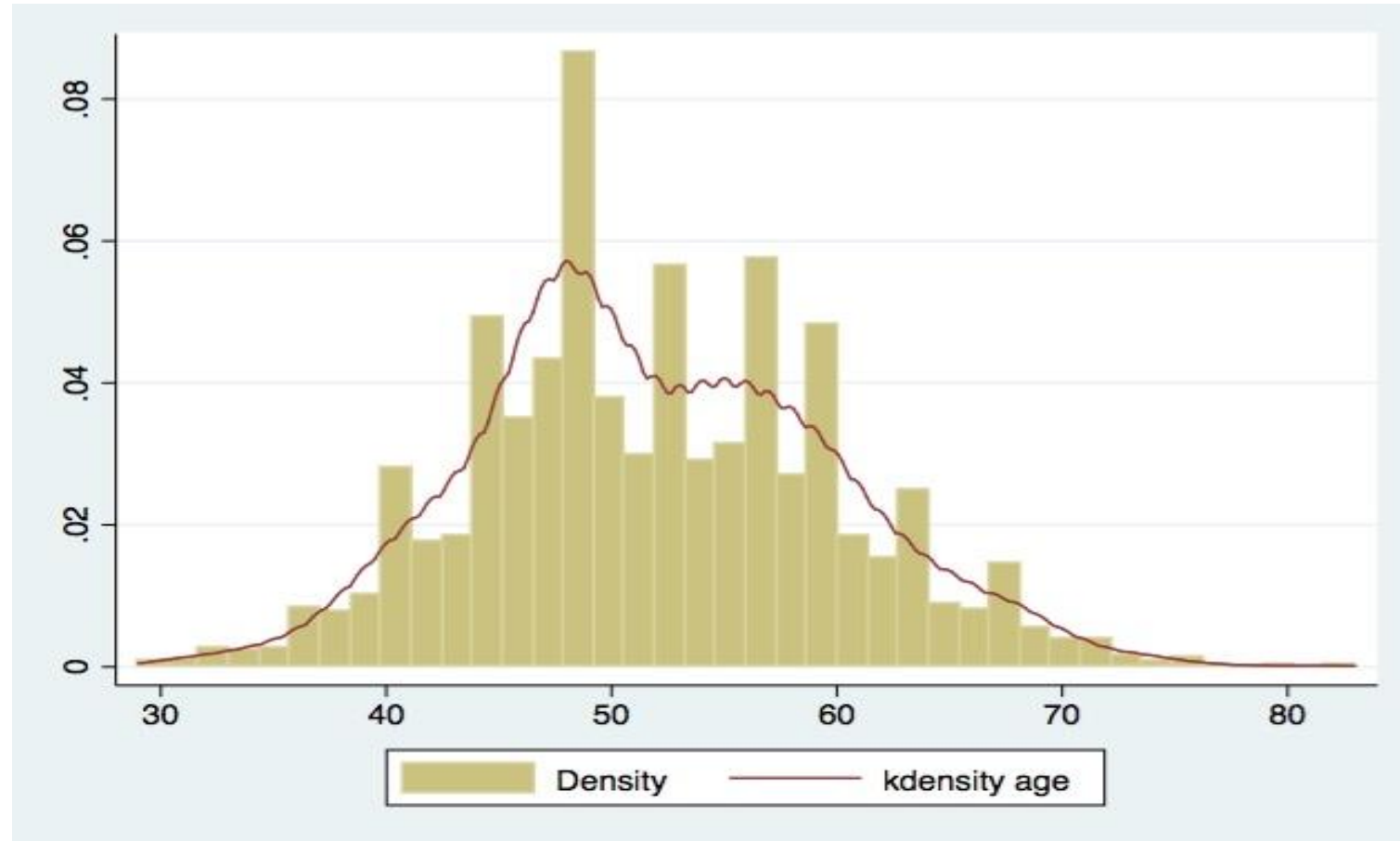
Control Variables

Bank-Specific measures	
Capital Ratio	Equity/total assets
Loan Ratio	Total loans/ total assets
Size	The natural log of total assets
Bank Age	The natural log of bank age
Listed	Dummy variable equals 1 if the bank has been listed at the end of the year and 0 otherwise
Location effects	
City GDP	The natural log of GDP per capita of city that the bank's headquarter is located

Variables	Mean	Std	P25	P50	P75	Obs
Panel A: Bank Performance						
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
Panel B: Bank Board Age Diversity						
Age diversity (CV)	0.14	0.04	0.11	0.14	0.17	450
Age diversity (LnSD)	1.94	0.29	1.80	1.94	2.15	450
Age diversity (Blau)	0.58	0.11	0.52	0.60	0.65	450

Variables	Mean	Std	P25	P50	P75	Obs
Board Characteristics						
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
Foreign Director	0.02	0.05	0.00	0.00	0.00	450
Female Director	0.11	0.10	0.00	0.09	0.17	450
Bank-Specific Measures						
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
Location Effects						
City GDP	10.98	0.49	10.63	11.07	11.38	454

Figure 1 Age Distribution of Board Directors in Chinese Banks: 2009 - 2013



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

Relation between board age diversity and bank performance

	Profitability		Risk	
	ROA	ROE	Z-score	NPLratio
	(1)	(2)	(3)	(4)
Age Diversity	-0.015** (0.007)	-0.290** (0.126)	0.171 (0.492)	0.033 (0.037)
Board Size	0.000 (0.000)	0.001 (0.001)	-0.002 (0.003)	-0.000 (0.000)
Duality	-0.002* (0.001)	-0.024 (0.019)	0.084 (0.090)	0.005*** (0.002)
Independent Director	0.005 (0.003)	0.065 (0.054)	0.204 (0.167)	-0.026** (0.011)
Foreign Director	-0.008* (0.005)	-0.186** (0.075)	0.614** (0.302)	0.031 (0.019)
Female Director	-0.001 (0.002)	0.014 (0.057)	-0.137 (0.143)	0.001 (0.007)
Year Controls	Yes	Yes	Yes	Yes
Obs	325	325	325	322
R²	0.233	0.211	0.171	0.213

Fixed effect instrument variable approach

	Profitability		Risk	
	ROA	ROE	Z-score	NPLratio
	(1)	(2)	(3)	(4)
Age diversity (CV)	-0.036*	-0.653**	1.304	0.137
	(0.022)	(0.317)	(1.147)	(0.119)
Year Controls	Yes	Yes	Yes	Yes
Bank-Year	335	335	333	330
LR	0.994	0.131	0.785	0.495
Hansen	0.361	0.458	0.783	0.965

IV: Lewbel (2012):

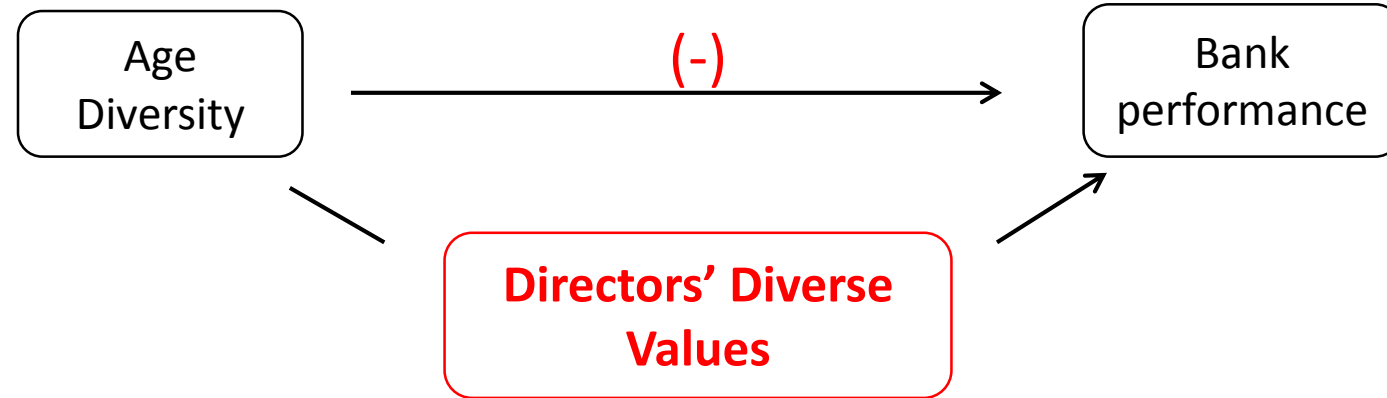
External: median value of board age diversity for the banks in the same size quartile (*Age Diversity Size*) and the age diversity of the local population at the province level (*Age Diversity Province*).

Internal: heteroscedasticity based - ivreg2h/xtivreg2h

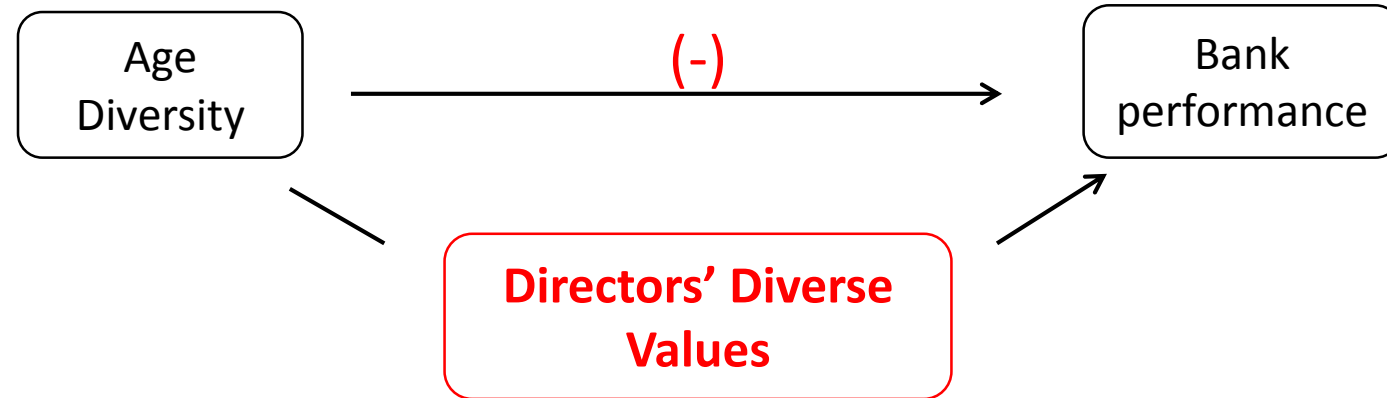
System GMM estimations: relation between board age diversity and bank performance.

	Profitability		Risk	
	ROA	ROE	Z-score	NPLratio
	(1)	(2)	(3)	(4)
Lagged ROA	0.620***	0.636	0.893***	0.509***
	(0.173)	(0.618)	(0.057)	(0.184)
Age diversity (CV)	-0.018**	-0.291	0.414	0.043
	(0.008)	(1.887)	(0.844)	(0.039)
Board Size	0.000	0.001	-0.001	0.000
	(0.000)	(0.008)	(0.009)	(0.000)
Duality	-0.001	0.006	0.037	0.003
	(0.002)	(0.139)	(0.151)	(0.002)
Independent Director	-0.001	-0.040	0.285	-0.009
	(0.003)	(0.349)	(0.291)	(0.012)
Foreign Director	-0.000	-0.002	0.043	-0.006
	(0.002)	(0.313)	(0.238)	(0.006)
Female Director	0.000	-0.080	1.732**	0.006
	(0.010)	(0.971)	(0.844)	(0.022)
Year Controls	Yes	Yes	Yes	Yes
Bank-Year	335	335	333	330
AR2 p-value	0.994	0.131	0.785	0.495
Hansen p-value	0.361	0.458	0.783	0.965

Research Question II



Research Question II



Value indicators (World Values Survey (China))

Risk Happiness Outgoing Work Pressure Being active Prudence
Life satisfaction Slackness Wealth Finding faults Success Thoroughness
Creativity Reserved Helping others

Questions from World Values Survey used to identify value indicators

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.

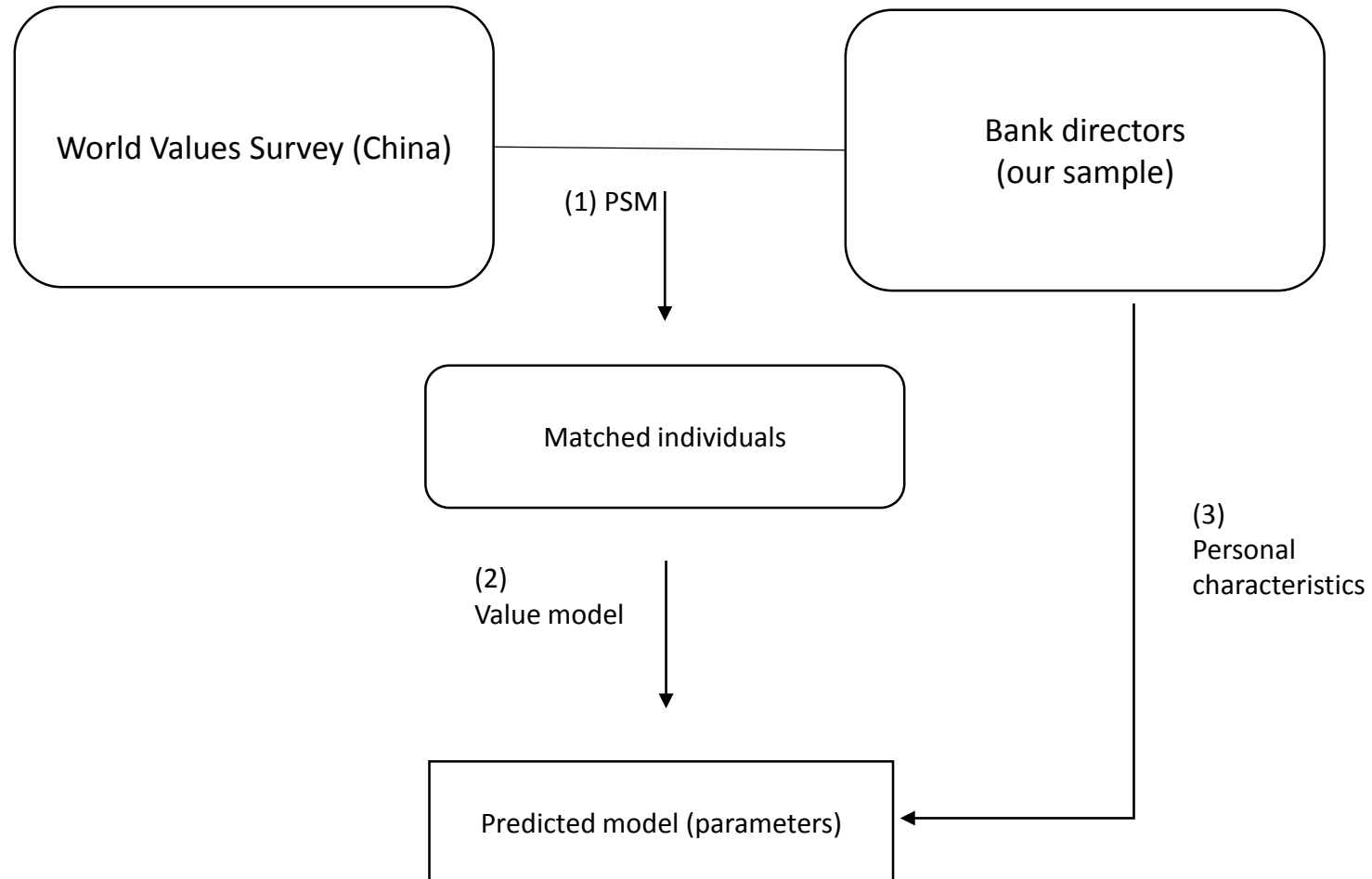
V75. Being very successful is important to this person; to have people recognize one's achievements.

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

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

V160C I see myself as someone who tends to be lazy

Prediction of directors' values



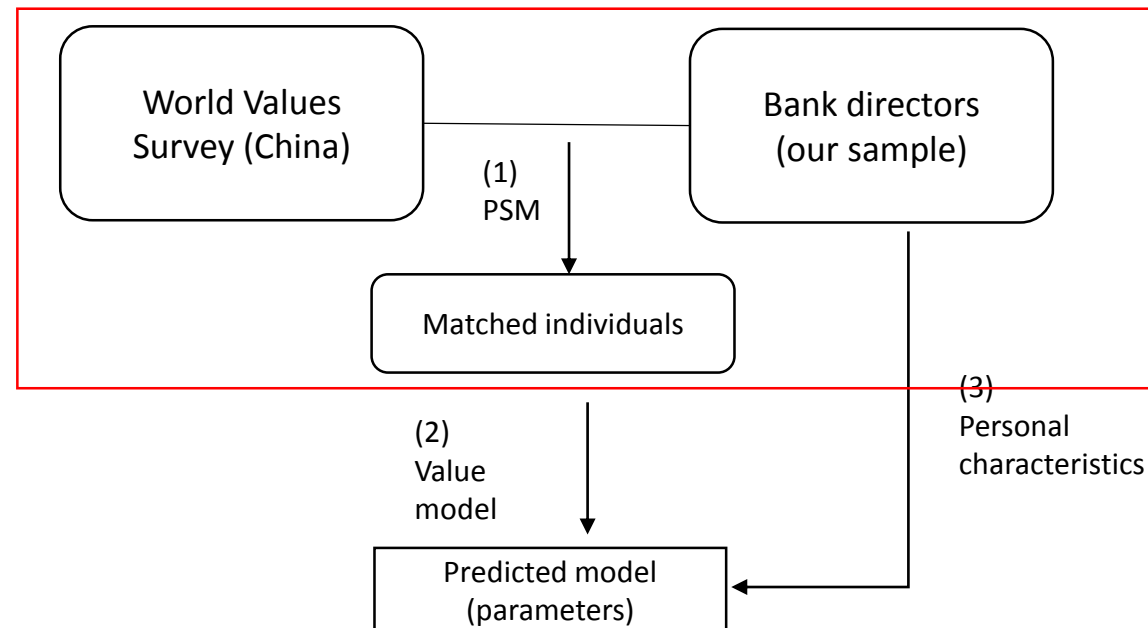
Prediction of directors' values

Step 1. Propensity score matching

Treated group: Bank directors in our sample

Control group: Restricted group from World Values Survey (China) (employed and high-income)

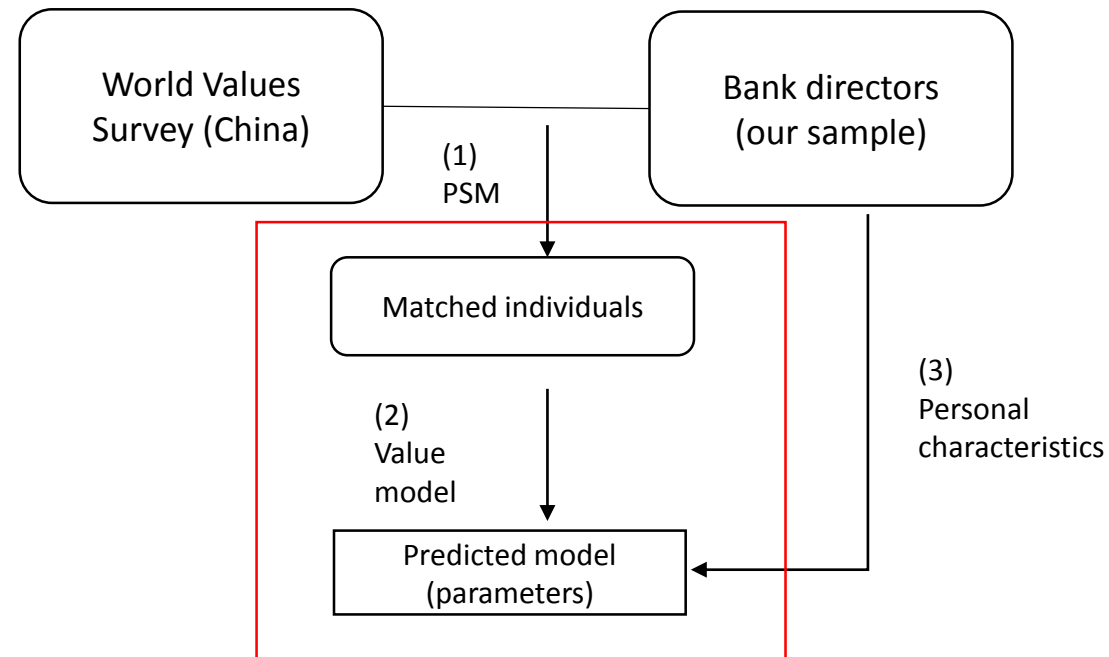
Age, Gender, Education, Income, Social Class



Prediction of directors' values

Step 2. Run a logit model based on the matched control sample in World Values Survey (China)

$$\Pr(\text{value}_{ij} = 1) = F(\beta_0 + \beta_1 \text{age}_j + \beta_2 \text{education}_j + \beta_3 \text{gender}_j + \varepsilon) \quad (2)$$

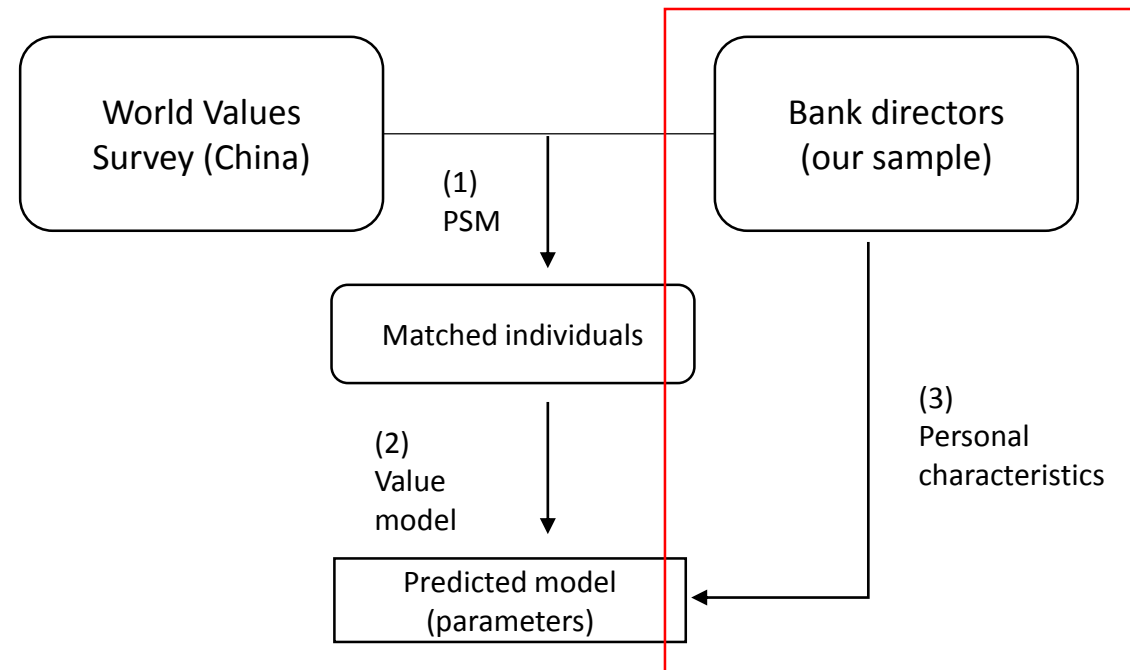


Prediction of directors' values

Step 3. Input bank directors' information into model (3) with predicted parameters and get the probability of holding each value indicator for each director

$$\Pr(\text{value}_{ij} = 1) = F(\widehat{\beta}_0 + \widehat{\beta}_1 \text{age}_j + \widehat{\beta}_2 \text{education}_j + \widehat{\beta}_3 \text{gender}_j) \quad (3)$$

value_i : risk, prudence, wealth, success, creativity, and slackness

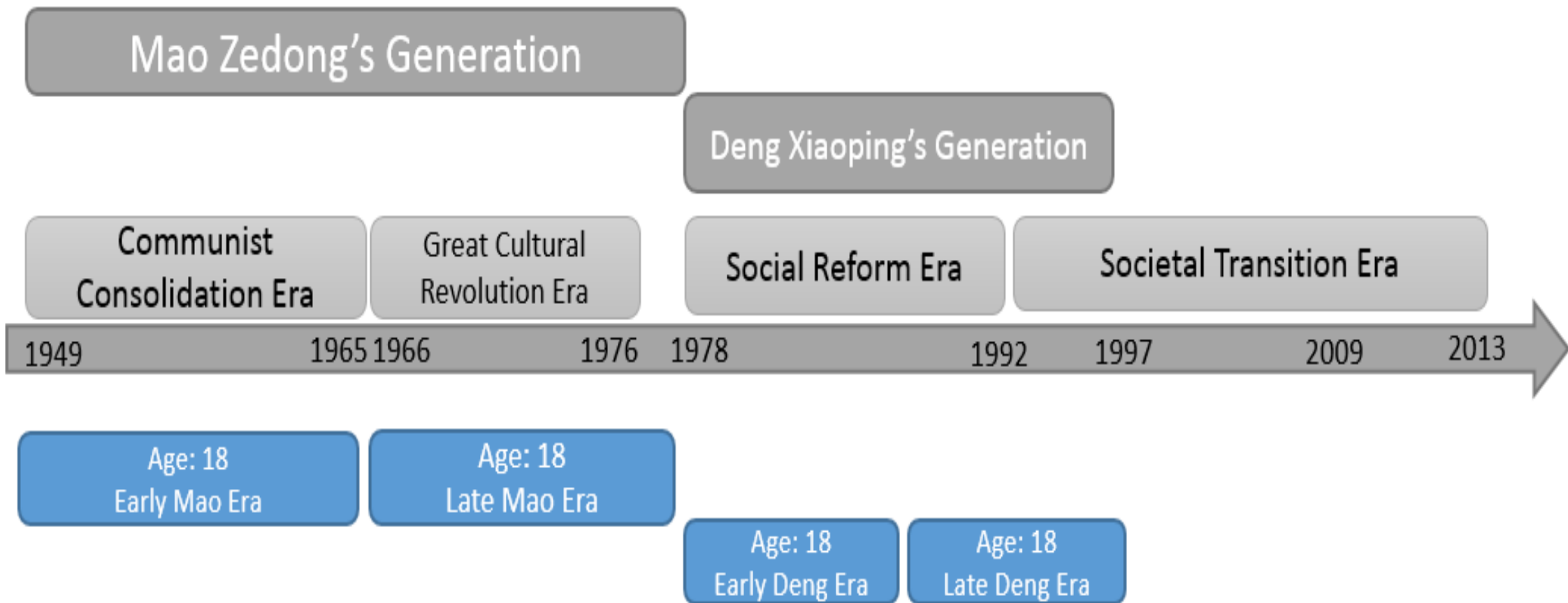


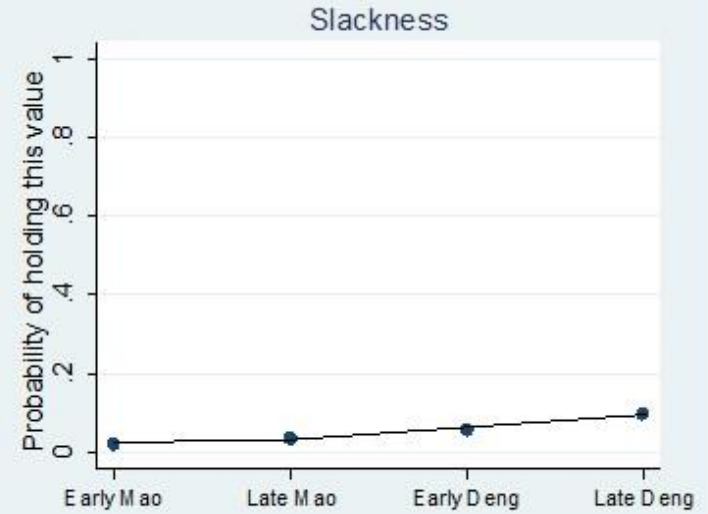
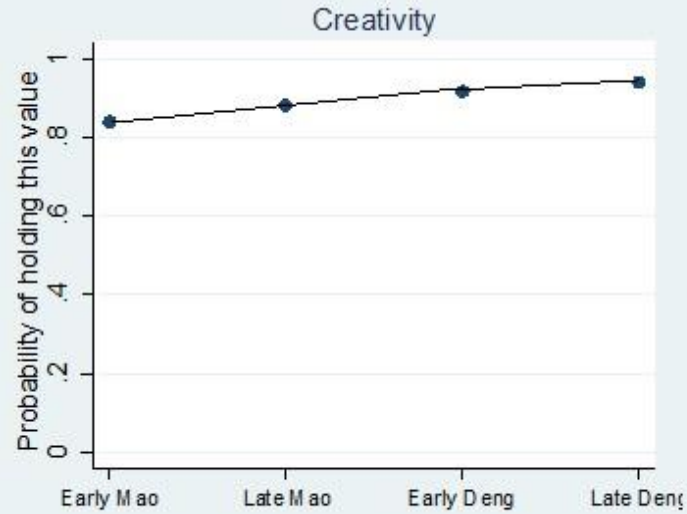
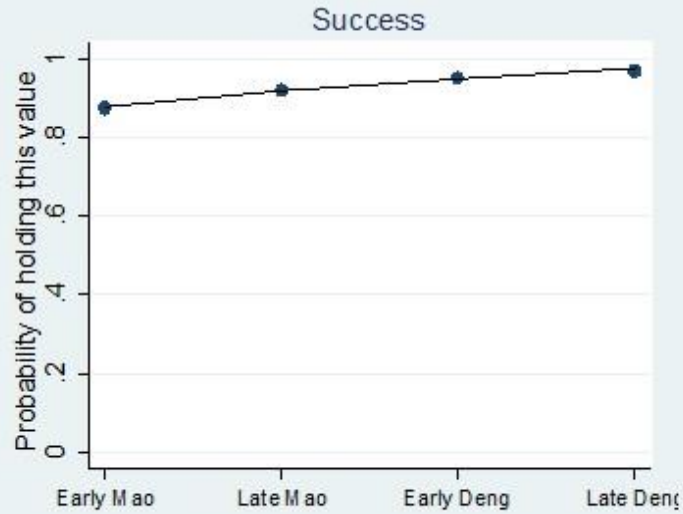
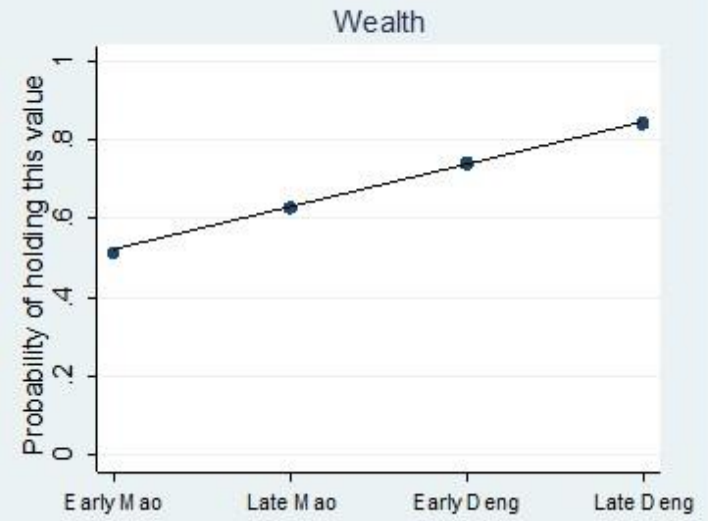
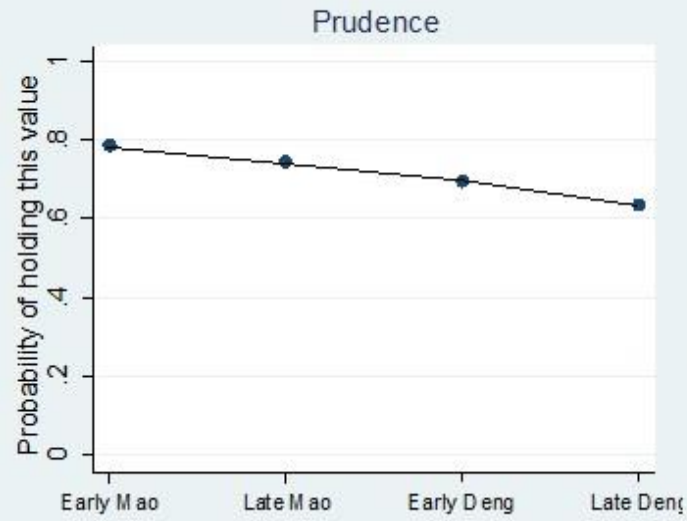
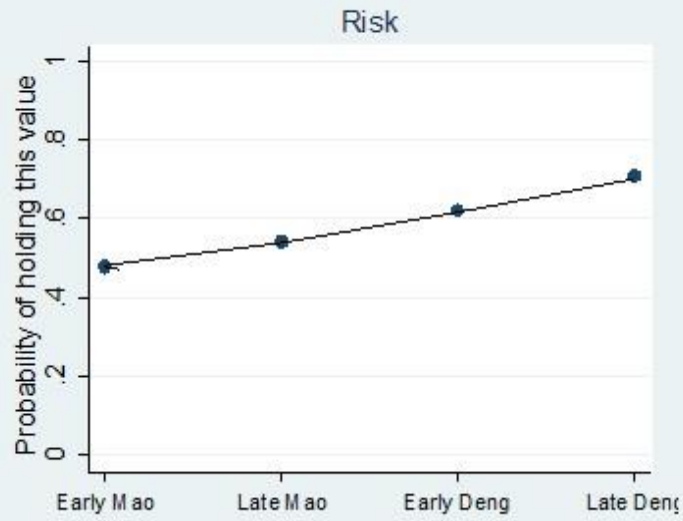
Research Question II

Fixed Effect Model: value diversity and bank performance

$$\text{Bank performance}_{i,t} = \alpha + \beta \text{Board value diversity}_{i,t-1} + \gamma \text{Control}_{i,t-1} + \theta_t + \mu_i + \varepsilon_{i,t} \quad (3)$$

- *Board Value Diversity*: coefficient of variation of the probability for each of the six value indicators
- *Control Variables* is the same set of control variables in Model (1).





Main Results

- The heterogeneity of directors' values on **risk**, **prudence** and **wealth** weakens bank profitability.
- We fail to find any significant effect of value diversity on bank risk.

Effects of Value Diversity (CV) on Bank Performance

	Value diversity (risk)	Value diversity (prudence)	Value diversity (wealth)	Value diversity (success)	Value diversity (creativity)	Value diversity (slackness)
<i>Panel A: Dependent variable is ROA</i>						
ROA	-0.023* (0.014)	-0.042* (0.025)	-0.015* (0.009)	-0.038 (0.035)	-0.016 (0.023)	-0.003 (0.003)
Obs	228	228	228	228	228	228
R^2	0.294	0.290	0.288	0.280	0.273	0.276
<i>Panel B: Dependent variable is ROE</i>						
ROE	-0.477* (0.254)	-0.925* (0.466)	-0.312* (0.181)	-1.017* (0.586)	-0.502 (0.560)	-0.096 (0.072)
Obs	228	228	228	228	228	228
R^2	0.324	0.324	0.319	0.315	0.304	0.311

Effects of Value Diversity (CV) on Bank Risk

	Value diversity (risk)	Value diversity (prudence)	Value diversity (wealth)	Value diversity (success)	Value diversity (creativity)	Value diversity (slackness)
<i>Panel C: Dependent variable is Z-score</i>						
Z-score	0.258 (0.890)	0.785 (1.724)	0.105 (0.681)	1.863 (1.662)	0.706 (2.215)	0.158 (0.301)
Obs	228	228	228	228	228	228
R^2	0.180	0.181	0.180	0.184	0.180	0.182
<i>Panel D: Dependent variable is NPLratio</i>						
NPLratio	0.078 (0.050)	0.028 (0.090)	0.058 (0.036)	0.030 (0.111)	0.044 (0.110)	0.017 (0.013)
Obs	228	228	228	228	228	228
R^2	0.275	0.262	0.275	0.262	0.263	0.269

Extra robustness

- Different measures of performance (Net Interest Margin/Pre-provision profit ratio)
- Different measures of diversity ($\log(\text{SD})$, Blau)
- Bootstrapped SE

Conclusion

- A negative and significant relation between board age diversity and bank performance
- Variety of directors' views with respect to risk, prudence and wealth harm bank performance, indicating that directors' age diversity can affect bank performance via directors' value.
- Provide useful guidance concerning board diversity and shed lights on the direction of further banking governance reform.
- Findings from this study are not only relevant for China, but also for other emerging market countries.