

**Vertical pay disparity, cultural traditionality, and employee productivity:  
The China experience**

Yu Flora Kuang

[flora.kuang@unimelb.edu.au](mailto:flora.kuang@unimelb.edu.au)

Bo Qin

[b.qin@unimelb.edu.au](mailto:b.qin@unimelb.edu.au)

Xing Yang

[xingy4@student.unimelb.edu.au](mailto:xingy4@student.unimelb.edu.au)

*The University of Melbourne*

**Acknowledgments:** We thank Junchang Yang and Huan Yang from the Institute of Culture and Heritage of Northwestern Polytechnical University in China for their insightful comments on constructing our measure of China's culture traditionality.

# **Vertical pay disparity, cultural traditionality, and employee productivity: The China experience**

## **Abstract**

Using the 2015 reform on executive compensation in Chinese state-owned enterprises (SOEs) as an exogenous variation to vertical pay disparity (i.e., the pay difference between executives and employees within a firm), we demonstrate that, in a culture characterized by high levels of power distance and masculinity, a sudden reduction in the executive–employee pay ratio due to the regulatory change is accompanied by a notable decline in employee productivity. A cross-sectional analysis reveals that this fall in productivity is more potent when employees are oriented toward stronger cultural traditionality. Our findings suggest that restricting pay without considering the cultural context may, in fact, be detrimental to firm value.

**JEL codes:** D24; G34; J31; J33; M12; M14; M52

**Keywords:** vertical pay disparity; pay ratio; employee productivity; cultural traditionality

## **1. Introduction**

Vertical pay disparity (hereafter, pay disparity) within a firm reflects relative pay across the rungs in its hierarchy. Previous studies have shown that such pay disparity may influence individuals' perceptions of their firm's fairness (Akerlof and Yellen 1990; Rouen 2020), trigger resentment (Shaw 2015), create social conflicts, and negatively affect performance outcomes (Duffy et al. 2012; Lazear 1989). Others, however, argue that pay disparity arises due to differences in skills and efforts, and that large pay differences can motivate employees to work harder (Lawler 1971; Lazear and Rosen 1981; Rosen 1986). The evidence on how pay disparity affects firm performance is currently mixed (Gupta, Conroy, and Delery 2012); some studies indicate that it relates to higher performance (Mueller, Ouimet, and Simintzi 2017), whereas others document the opposite (Breza, Kaur, and Shamdasani 2018).

We view pay disparity as a set of contractual and formal institutions that are framed and quantified to motivate performance. We argue that the effects of pay disparity in affecting performance outcomes need to be analyzed in combination with informal institutions—such as values, norms, and cultural backgrounds to which employees are exposed (Hayes, Moon, and Swenson 2018; La Porta et al. 1997; Guiso, Sapienza, and Zingales 2004; Pevzner, Xie, and Xin 2015). Specifically, we expect that in societies where hierarchies and competitiveness are well-established norms, pay disparity represents part of a governance system that aims to maintain order and promote effective competition and talent selection. Such pay arrangements then should be supported, rather than resisted, by employees, thus yielding higher output and productivity levels. Conversely, in societies intolerant of power inequality, and those which champion collaboration over competition, employees will interpret pay disparity as an injustice

and thus protest. Employees' consequent resentment, acts of sabotage, and lack of cooperation are counter-productive, suggesting a negative relation between pay disparity and performance outcomes (Duffy et al. 2012; Lazear 1991; Shaw 2015).

We study the performance effect of pay disparity in China—a country characterized by high power distance and great respect for authority (Farh, Hackett, and Liang 2007; Hofstede 2001), and known for championing the highly masculine trait of pursuing achievement and material success through competition (Hofstede 2001; Merchant et al. 2011). We hypothesize that, in China, pay disparity will be positively associated with employee productivity, given the culture's unique combination of power distance and masculinity. With a population of over 1.4 billion, China is enormously culturally diverse (Farh et al. 2007; Yang, Yu, and Yeh 1989). We further explore how the degree of cultural traditionality in where a company is located moderates the association between pay disparity and employee productivity in the company. In particular, we predict that this association will be more pronounced in the presence of greater cultural traditionality.

In 2015, the Chinese government implanted a reform to regulate executive compensation for SOEs (hereafter, the Reform), which created exogenous variations in their pay disparity levels.<sup>1</sup> We include firms listed on China's Shanghai and Shenzhen stock exchanges from 2012 to 2017 in our sample, and employ a double difference-in-differences (DID) design to examine the association between pay disparity and employee productivity. We find that, after the Reform, SOEs experience a significant reduction in both pay disparity and employee productivity, compared to non-SOEs during the same period. This finding confirms

---

<sup>1</sup> See "Reform Scheme on Executive Compensation of the Central State-Owned Enterprises" (effective January 1, 2015).

our hypothesis on a positive association between pay disparity and employee productivity in China. We next perform cross-sectional analyses and investigate whether employees' exposure and adherence to traditional culture would moderate the performance effect of pay disparity. We construct a composite measure for cultural traditionality based on five individual items, including the region's number of history museums, whether it contains an ancient capital city, the number of Buddhist monasteries in the region, and its colonization history (i.e., the presence of forced concessions and foreign Christian colleges in history). Once more, our hypothesis is confirmed in that the results collectively show that the impact of pay disparity on employee productivity is more prominent when employees are exposed to stronger cultural traditionality. Furthermore, we find that the reduction in employee productivity is economically meaningful in that SOEs' performance, measured by industry-adjusted stock returns and Tobin's Q, significantly declines following the Reform relative to non-SOEs. We perform sensitivity tests and confirm our results as robust using alternative samples and estimation approaches. Our results also remain unchanged when we apply alternative measures for cultural traditionality and control for alternative explanations.

Our study makes several notable contributions to the literature. First, prior studies of pay differences have focused primarily on the executives' perspective (Bebchuk, Cremers, and Peyer 2011; Kale, Reis, and Venkateswaran 2009), while we incorporate employees into the analysis and offer an alternate lens from which to study pay disparity. Our findings indicate that, in a society where submission to authority and intensive competition is commonplace, employees may view large pay disparities as a governance order and a mechanism for selecting the superior and thus are incentivized to deliver high productivity.

Our findings on the moderating effects of employees' traditionality orientation also contribute to the literature on how culture, as an important informal institution, significantly affects the effectiveness of formal institutions function (Guiso et al. 2004; Pevzner et al. 2015). Our results suggest that ignorance of cultural factors when studying compensation design may cause biased and spurious inferences. As such, our study heeds a recent call in the literature to explore how cultural heterogeneity, especially along power distance and masculinity, affects organizational performance and employee outputs (see, e.g., Kirkman, Lowe, and Gibson 2017). Additionally, our method in constructing a composite measurement for employees' cultural traditionality orientation can be adopted in other studies to examine the economic effects of culture in China.

Pay ratio studies are often confronted with the difficulty in attributing the effects to the numerator (executive pay) or the denominator (average workers) in the pay ratio. Our setting of Chinese SOEs is particularly useful in mitigating this concern because executives in Chinese SOEs face a unique managerial labor market where they value political promotions and other intangible economic and social values over their monetary rewards (Chen, Guan, and Ke 2013).<sup>2</sup> Therefore, the effects of pay cut on SOEs executives are arguably minimal and, in turn, we are better able to attribute our results to average workers' effects. Furthermore, we are aware of the challenges in drawing causal inferences of two endogenous characteristics such as pay disparity and firm performance. (Un)observable firm characteristics might simultaneously determine pay disparity and employee productivity. For instance, hard-working employees

---

<sup>2</sup> Chen et al. (2013, p.1549) suggest that stock option compensation plans for SOEs listed on the Hong Kong Stock Exchange "were merely window dressing to please foreign investors and were never fully implemented due to the Chinese SOEs' unique managerial labor market." Kong, Kong, and Lu (2020) show that, in Chinese SOEs, CEO political promotion is negatively associated with the pay gap between executives and employees.

may choose to work for firms with higher pay disparities, and their diligence at work may result in higher performance outputs. Our application of a quasi-natural experiment enabled by the 2015 Reform is designed to mitigate the identification concern, as the Reform imposes a sudden pay cut to senior executives of SOEs, thereby generating exogenous variations in the executive–employee pay ratio. To the extent that the post-Reform pay reduction is unrelated to the confounding factors, this setting helps enhance our causal inferences.<sup>3</sup>

## **2. Literature review, institutional background, and hypothesis development**

### *2.1 Related literature on the economic effects of pay disparity*

Pay disparity, as a long-standing issue, has received considerable academic attention. Studies related to psychology, sociology, and labor economics have proposed that employees are concerned about their relative pay (Breza et al. 2018; Lazear 1989; Rouen 2020). Tournament theory (Lazear and Rosen 1981) argues that large pay disparities across organizational hierarchies help inspire greater employee efforts. Studies also suggest that top managers have a greater influence on creating synergies for reducing the marginal cost of effort for other employees, thus receiving higher pay compared to lower-level employees (Edmans, Goldstein, and Zhu 2013; Rosen 1981, 1982). Moreover, relative pay in firms also has labor market implications through effective employee sorting (Breza et al. 2018; Card, Heining, and Kline 2013). Accordingly, studies suggest that, within-firm pay disparity, among executives or

---

<sup>3</sup> Although Tosi and Greckhamer (2004), using cross-country analyses, find a positive relation between the ratio of CEO pay to employee compensation and the country-level power distance and masculinity, uncontrolled country-level confounds could introduce bias. In contrast, our within-country setting helps rule out country-level confounding factors. Our investigation further extends the prior research by examining the employee productivity effect of pay ratios based on cultural traditionality.

between executives and employees, is associated with higher performance levels (Kale et al. 2009; Mueller et al. 2017).

In contrast, studies that apply equity theory for analyzing the performance effect of pay disparity argue that sharp pay differentials will foster “resentment, lack of cooperation, sabotage, and lack of team potency” (Shaw 2015, p. 536), and that lower-paid employees may feel exploited by their more-highly paid counterparts (Akerlof and Yellen 1990). These forces are detrimental to a firm’s colligability and performance outcomes. Furthermore, studies applying agency theory assert that large C-suite pay disparities could represent agency problems in that CEOs possess unchecked power to extract rent and consume private benefits (Bebchuk et al. 2011; Cheng, Lee, and Shevlin 2016). Consequently, a negative association is expected between pay disparity and performance outcomes (Bebchuk et al. 2011; Duffy et al. 2012; Lazear 1989).

In this study, we argue that cultural backgrounds and institutional landscapes lay the foundations for individuals’ perceptions of pay disparity. Therefore, the performance effect must be analyzed against the backdrop of the cultural and institutional characteristics to which employees are exposed.

## *2.2 Related literature on cultural embeddedness in individuals’ decision making*

In essence, all individuals are embedded in institutional environments. Embeddedness represents an important term in economics which refers to the notion that interactions between economic and non-economic activities are regulated by society (Granovetter 1985; Polanyi 1968; Stuart 1998). The contextual factors spouted from culture explain homogeneity among individuals in their beliefs and behaviors (Dequech 2003; DiMaggio 1997, 2003; Scott 2001).

This leads to the notion that formal institutions (e.g., rules and terms) interact with informal ones (e.g., norms and values) in affecting individuals' behavior and performance outcomes (Hales et al. 2018; Guiso et al. 2004).

As an informal institution, culture depicts shared collective understandings and beliefs in a general environment under which economic activities operate. Lai, Li, and Yang (2020) show that people from the same regions, and thus exposed to the same set of cultural values, share similar mindsets. For Leventhal, Karuza, and Fry (1980, p. 175), culture is “built into the educational, family, political, and economic systems of a society” and defines what is right and wrong. Evidence suggests that culture is significant to economic outcomes and culture-related uncertainty influences capital market dynamics, such as investors' asset valuations (Chan, Covrig, and Ng 2005; Weber and Hsee 1998) and their trading behavior (Chui, Titman, and Wei 2010; Griffin, Ji, and Martin 2003). There is also evidence to suggest that top managers' bonding to local culture influences their decisions in firm operations (Ren et al. 2021) and financial reporting (Lai et al. 2020).

In his seminal work, Hofstede (1980) describes culture from the following four dimensions: power distance, uncertainty avoidance, individualism–collectivism, and masculinity–femininity.<sup>4</sup> Ample evidence supports the relevance of Hofstede's framework to employees' workplace behaviors and organizational performance (Kirkman, Lowe, and Gibson 2006; Oyserman, Coon, and Kimmelmeier 2002; Taras, Kirkman, and Steel 2010). Focusing

---

<sup>4</sup> In this framework, “power distance” refers to the extent to which a society and its individuals accept that power in institutions and organizations is distributed unequally; “uncertainty avoidance” captures the extent to which a society feels threatened by uncertainties or unstable situations; “individualism–collectivism” describes how people feel about their (in)dependence to others in society; and “masculinity–femininity” is defined as cultural values for material acquisition or caring and quality of life. Hofstede and Bond (1988) later added a fifth dimension, “Confucian dynamism,” into their original framework, which refers to an application of long-term orientation and future-oriented values in a society.

on cross-country comparisons, Merchant et al. (2011) find that, while the US and China are two highly masculine and competitive countries, Chinese firms are even more likely to provide pay incentives than US firms—possibly due to greater power distance in China. Chen (1995) compares rewards allocation preferences of employees in Chinese versus US firms and find Chinese employees to prefer unequal distribution of rewards, while US workers seem to prefer an equal allocation of performance-based pay. Follow-up studies show that a society’s general norms of power distance relate to high levels of obedience and compliance (Brockner et al. 2001; House et al. 2004; Kirkman et al. 2009; Lian, Ferris, and Brown 2012), facilitate trust-building of lower-level individuals in authoritative entities (Kim, Wang, and Ahn 2013), and are associated with higher CEO compensation (Burns, Minnick, and Starks 2017; Tosi and Greckhamer 2004) and improved performance (Yang, Mossholder, and Peng 2007).<sup>5</sup>

In light of the existing literature, we adopt Hofstede’s (1980, 2001) culture framework and argue that, among the four dimensions, power distance and masculinity are the most relevant to our investigation. That is because as an important form of material achievement, pay disparity constitutes a tournament-based promotional model very much aligned to the masculinity dimension of cultural values. Furthermore, power distance reflects a society’s tolerance for unequal power distribution, and thus shapes employees’ perceptions of pay fairness, a concept often used within the literature when discussing pay disparity (Akerlof and Yellen 1990).

### *2.3 How does vertical pay disparity affect employee productivity in China?*

---

<sup>5</sup> Hofstede’s (1980, 2001) power distance is conceptually akin to hierarchical differentiation (Tinsley, 2001) and egalitarianism-hierarchy (Schwartz 1994).

Chinese culture contains a high level of power distance at the national level where individuals tend to submit to authority (Farh et al. 2007). Such a cultural feature is deeply rooted in China's history, wherein endorsement of hierarchical relationships has always been prized as virtuous behavior (Farh, Earley, and Lin 1997; Yang et al. 1989). Another salient cultural feature is China's high level of masculinity and the widely-held belief that competition represents an effective channel for talent selection (Hofstede 2001).<sup>6</sup> Relating these features to the context of pay disparity, we argue that employees in China believe pay disparities to promote competition. Rank-and-file employees are willing to accept these differences due to the established norm that more capable employees deserve higher pay. Furthermore, employees may also believe that pay disparities are essential for maintaining power distance as an effective governance tool, while a sudden reduction in pay differences could disrupt the *status quo* and eliminate the positive outcomes of competition. In sum, high masculinity is well-suited to the positives of pay disparity (i.e., inducing high effort and financial remuneration), while high power distance helps mitigate its negative effects (i.e., employees' resentment to pay unfairness). Accordingly, we formulate our first hypothesis:

*HYPOTHESIS 1. There is a positive association between pay disparity and employee productivity in China.*

Another key characteristic of our research setting is that China contains great diversity in terms of cultural values. Indeed, at one end of the spectrum are traditionalists, whose behaviors and opinions are formed in close alignment with conservative custom. At the other

---

<sup>6</sup> For example, Imperial Examinations (*Keju*), began in the Sui dynasty (587 AD) as a way to select bureaucrats based on merit rather than by birth. In contemporary China, the national college entrance exams (*Gaokao*) follow the same spirit of talent selection and are widely considered the most important competition/exam in one's lifetime (Wang, Huang, and Schnell 2013).

end are those modernists whose views and behavior are largely influenced by foreign cultures (Farh et al. 2007; Westwood, Chan, and Linstead 2004). We expect cultural traditionalism to moderate the impact of pay disparity on employee productivity. That is, employees exposed to high cultural traditionalism are more likely to appreciate the value of pay disparity. Such employees may feel obliged to fulfil the expectations defined by cultural norms, such as accepting pay disparity (Gabrenya and Hwang 1996). In contrast, modernist employees who are influenced by foreign cultural values with lower power distance or masculinity levels may hold different views. Such employees may perceive pay disparity negatively and consider it unfair and exploitative. Based on this reasoning, we formulate our second hypothesis:

*HYPOTHESIS 2. The relation between pay disparity and employee productivity is moderated by cultural traditionalism in such a way that the association is stronger for those higher, rather than lower, in cultural traditionalism.*

### **3. Methodology**

#### *3.1 Using the 2015 Reform as a quasi-natural experiment*

For identification, we rely on China's 2015 pay-cut regulation to generate exogenous variations in pay disparity. Coming into force on January 1, 2015, the "Reform Plan for the Executive Compensation in Central State-Owned Enterprises" sought to implement "downward adjustments" to central-government controlled SOE executive compensation, resulting in a "a reasonable income distribution between managers and employees." The Reform was promulgated by the Central Politburo,<sup>7</sup> and established ceiling levels for pre-tax

---

<sup>7</sup> Formally known as the Central Political Bureau of the Communist Party of China. According to the Work Regulations of the CPC, the Politburo is the "brain" and "spine" of the Party's organizational system. It has exclusive powers to "make decisions for major policy issues that involve the entire party and the nation." See [http://www.gov.cn/zhengce/2020-10/12/content\\_5550656.htm](http://www.gov.cn/zhengce/2020-10/12/content_5550656.htm)

pay differences between SOE executives and employees (Kong et al. 2020).<sup>8</sup> We posit that the Reform offers a quasi-natural experiment for our research because of its key features. First, the Reform has been widely recognized as unprecedented, as it represents the first ruling in the history of Politburo that directly regulates executive compensation (Lin 2017b). The topics reviewed at the Politburo, including the Reform, are determined by the general secretary and remain highly confidential until the official media disclosure. Thus, the Reform was largely unexpected to the public. Second, the rules of the Reform were passed by the Central Politburo, meaning that SOE executives were less able to directly influence the rules.<sup>9</sup>

Although the Reform mainly targets SOEs controlled by the central-government, it would be reasonable to assume that it has had a spill-over effect on pay practices in local SOEs. First, starting in the second half of the 1990s, a series of SOE reforms resulted in a large number of local SOEs being owned by the lower-level government (Hsieh and Song 2015). These local SOEs were formerly controlled by the central government and tend to still follow the overarching guidelines offered by the central government (Huang et al. 2017). Second, local SOEs are often owned or controlled by central SOEs (Lin 2017a). Government rulings and legislations applied to central SOEs are *de facto* implemented in local SOEs. Third, both central and local SOEs are regulated by a central government agency, namely the State-Owned Assets Supervision and Administration Commission (SASAC) (Kong et al. 2020; Lin 2017a). Thus, through the influences of the central government, parent companies (central SOEs), and SASAC, the Reform would also influence local SOEs. Our assumption is further confirmed by

---

<sup>8</sup> For example, the Reform mandates that the base salary for central SOE executives should equal twice the average worker's salary. Performance pay is based on the annual assessment of firm performance, such as sales or net income, and should not exceed two times that of basic salary.

<sup>9</sup> The Politburo consists of 25 members who are country- or provincial-level Party, government, or military leaders. During their tenure, there are prohibited from occupying concurrent positions in enterprises.

the statement made by Ma Kai, Vice Premier of China, who emphasized that all regions must thoroughly implement the Politburo's policy on executive compensation, including local SOEs.<sup>10</sup> We thus consider all SOEs as the treatment, while non-SOEs as the control group.

### *3.2 Measurements, data, and models*

#### *Vertical pay disparity*

We construct multiple measures to capture pay disparity between top-tier management and average workers. Our first measure, *Pay Ratio\_CEO*, is the ratio of CEO compensation to average employee pay (Faleye, Reis, and Venkateswaran 2013; Rouen 2020). The second measure, *Pay Ratio\_TOP3*, refers to the average compensation for the top three highest-paid managers divided by the average employee pay. The third measure, *Pay Ratio\_ALL*, is the average compensation for all managers scaled by the average employee pay.

#### *Employee productivity*

We employ two measures to capture a firm's employee productivity. First, *Avg\_Rev* is the natural logarithm of revenue per employee, which captures an average employee's contribution to sales revenue (Cronqvist et al. 2009; Faleye et al. 2013). Second, we calculate total factor productivity (*TFP*) based on the Cobb–Douglas production function (Cobb and Douglas 1928). Specifically, we follow Faleye et al. (2006, 2013) and model a firm's output following a Cobb–Douglas production function of labor and capital input:

$$Y_{it} = AL_{it}^{\beta}K_{it}^{\alpha} \quad (1)$$

---

<sup>10</sup> The Opening of TV and Telephone Conference on Deepening the Reform of the Remuneration System for Responsible Persons in State-Owned Enterprises. Available at: [http://www.gov.cn/guowuyuan/2014-11/06/content\\_2775941.htm](http://www.gov.cn/guowuyuan/2014-11/06/content_2775941.htm) (in Chinese).

where  $Y_{it}$  stands for net sales of firm  $i$  during period  $t$ ;  $L_{it}$  is the number of employees employed by firm  $i$  by the end of period  $t$ ; and  $K_{it}$  is net value of property, plant, and equipment in firm  $i$  at the end of period  $t$ . Furthermore,  $A$ ,  $\alpha$ , and  $\beta$  are parameters subject to estimation. We estimate the natural logarithm transformation of Eq. (1) by industry using all firms with available data, where industries are defined by the China Security Regulatory Commission (CSRC) industry classification (single letter plus two digits coding for Type). We then construct  $TFP$  as the residual term from Eq. (1), as in:

$$TFP_{it} = \ln Y_{it} - \ln \hat{Y}_{it} \quad (2)$$

### *Cultural traditionality*

China's cultural traditionality is a multi-faceted concept closely associated with its history (Farh et al. 2007; Schwartz 1992). We use several items to capture cultural traditionality. Our first is the number of history museums (per million capita), *#Museums*. History museums display and interpret material evidence, thus constructing and transmitting history and its meanings to the public (Crane 1997; Davison 1998; Flath 2002). We argue that cultural traditionality is more accurately preserved and transmitted in communities with a larger number of history museums. Our second item is *Ancient Capital*, which indicates whether a region contains at least one city that was a highly influential capital of a Chinese historical dynasty. Across all dynasties, capital cities represented China's national, political, and cultural center (Flath 2002). Antique buildings, scenic landscapes, and local attractions can all imbue a sense of meaningful historical narratives that affect the thought and behavior of local people

(Graham 2002). Specifically, we consider the top nine influential ancient capital cities (plus a further two for the Yuan and Qing Dynasties) as highly influential ancient capitals.<sup>11</sup>

Our third item is the number of national Buddhist monasteries (per million capita), *#Temples*, in a region. Chinese (Han) Buddhism originally spread in China's feudal society and remains a popular religion in the country. According to a 2010 Pew report, approximately 18% of China's population are Buddhists, and another 21% adhere to folk religions that incorporate certain Buddhist beliefs.<sup>12</sup> Buddhism views the world as full of inequalities (Harvey 2000; Wichmann 1965). It also emphasizes the interdependence and impermanence of all things, and argues that inequalities arise as a product (to some extent, at least) of the environment, that "everything is caused by everything else, and as a result, is also one of causes of everything else" (Du 2014, p. 302).<sup>13</sup> The core tenets of Buddhism—tolerance and acceptance over rebellion and struggle—are in full alignment with the essential virtues of Chinese cultural traditionality, as both advocate compliance and respect for authority. The number of key Buddhist monasteries in a region reflects the religion's regional popularity (Du 2014), and thus captures the intensity of Buddhism's effects on local people's traditionality orientation.

---

<sup>11</sup> The top nine Chinese ancient capitals are: Xi'an, Nanjing, Beijing, Luoyang, Kaifeng, Hangzhou, Anyang, Zhengzhou, and Datong. The original capital cities of the Yuan and Qing Dynasties are Shenyang and Duolun, respectively.

<sup>12</sup> Pew Research Center, April 2, 2015, "The Future of World Religions: Population Growth Projections, 2010-2050." Available at: [https://assets.pewresearch.org/wp-content/uploads/sites/11/2015/03/PF\\_15.04.02\\_ProjectionsFullReport.pdf](https://assets.pewresearch.org/wp-content/uploads/sites/11/2015/03/PF_15.04.02_ProjectionsFullReport.pdf).

<sup>13</sup> That is karma, "which are in the present, the immediate past, and the remote past. Man himself is responsible for his own happiness and misery. Thus karma is not fate nor destiny nor blind determinism. Man has a certain amount of free will; he can modify his actions and affect his future. Each act, whether mental or physical, tends to produce its like. If a man does a good deed or thinks a good thought, the effect upon him is to increase the tendencies to goodness in him." "The Meaning of Buddhism: Fundamental principles of the Theravada doctrine" by Bhikkhu Thittila. Available at: <https://www.theatlantic.com/magazine/archive/1958/02/the-meaning-of-buddhism/306832/>.

Our last two items speak to potential forces that may dilute or countervail the effect of cultural traditionality in affecting local norms and values, including *Concession*—indicating that at least one city in the region used to host forced concessions after the First Opium War—and *Christian Edu* for the establishment of at least one foreign Christian college in a region. Both items relate to colonization within China’s half-colonic, half-feudal period from 1840 until 1949. As colonialism has cultural effects than can be blended with local traditional culture in affecting people’s values and behaviors (Dirks 1992; Luk 1991; Okazaki, David, and Abelmann 2008), we expect a region’s history of colonialization to weaken the effect of Chinese cultural traditionality.

Following prior research (e.g., Erkens and Bonner 2013; Rogers, Van Buskirk, and Zechman 2011), we further create a composite construct, *Culture*, based on equally weighted standardized values of five individual items, measured at the provincial-level administrative divisions (Lai et al. 2020).<sup>14</sup> A higher value of *Culture* would indicate a region’s greater intensity of cultural traditionality. Appendix 1 summarizes our data on the five items. Shaanxi, Shanxi, and Beijing are the top three provinces/cities in terms of cultural traditionality, whereas Hubei, Sichuan, and Guangdong are the lowest.

#### *Data sources and sample selection*

We obtain data on compensation and financials from the China Securities Market and Accounting Research (CSMAR) database (Bradshaw, Liao, and Ma 2019; Chen, Hung, and

---

<sup>14</sup> That is,  $Culture = \text{Standardized \#Museums} + \text{Standardized Ancient Capital} + \text{Standardized \#Temples} - \text{Standardized Concession} - \text{Standardized Christian Edu}$ . For robustness, we also use principal component analysis and create a factor score to account for the relative importance of each item. The results are reported in Section 5.4.

Wang 2018; Giannetti, Liao, and Yu 2015). We manually collect information on cultural items from multiple sources.<sup>15</sup>

We adopt a DID approach and set our sample period as three years prior to, and three post, the implementation of the Reform (i.e., from 2012 until 2017).<sup>16</sup> We begin with a sample of all listed companies in the Shanghai and Shenzhen stock exchanges. We then exclude B-share companies due to their unique regulatory status and market mechanism.<sup>17</sup> We further exclude firm-years of zero CEO annual compensation, as CEOs in such cases may have been compensated in a system different from their counterparts (Lin 2017a). After removing observations with missing values, our final sample consists of 12,777 firm-years, including 3,470 SOE firm-years (treatment group) and 9,307 non-SOE firm-years (control group). Panel A in Table 1 summarizes the sample selection procedure. Panel B demonstrates our sample distribution across years in a breakdown between the treatment and control groups, which shows that the number of observations in both remains reasonably stable over time.

### *Empirical models*

We follow Bakke et al. (2016) and test our hypotheses using a double DID design. Specifically, our first DID validates the exogenous shock (Donelson et al. 2021)—that is, we

---

<sup>15</sup> Including [www.gov.cn](http://www.gov.cn), [www.chinadaily.com.cn](http://www.chinadaily.com.cn), [www.china-culture.com.cn](http://www.china-culture.com.cn), [www.chinachristianedu.com](http://www.chinachristianedu.com), Weibo, Baidu, and Wikipedia.

<sup>16</sup> Our empirical choice to include three post-Reform years has been made so as to allow sufficient time for firms to adjust compensation practices in response to the regulation. However, a disproportionately long post-event period may have weakened the Reform's effect, as other unrelated contemporaneous events may have occurred. We further exclude firms that became listed after 2014 to ensure that our sample firms all have pre-treatment observations to facilitate our DID design.

<sup>17</sup> Chinese firms listed on the Shanghai and Shenzhen stock exchanges may issue A- or B-shares. The former are mainly traded by domestic investors, while the latter are targeted for foreign investors and traded in foreign currencies (US dollars in Shanghai and HK dollars in Shenzhen).

examine whether the Reform exogenously reduced the executive–employee pay ratio in SOEs.

Specifically, we fit the following OLS model:

$$\begin{aligned} Pay\ Ratio_{i,t} = & \beta_0 + \beta_1 Post_{it} + \beta_2 Firm\ Size_{it} + \beta_3 BTM_{it} + \beta_4 Stock\ Return_{it} \\ & + \beta_5 ROA_{it} + \beta_6 Firm\ Risk_{it} + \beta_7 CEO\ Duality_{it} + \beta_8 Physical\ Cap_{it} \\ & + \beta_9 HHI_{it} + \beta_{10} Political\ Connection_{it} + \beta_{11} Foreign\ Ownership_{it} \\ & + \beta_{12} Employee\ Education_{it} + \alpha_i + \gamma_t + \varepsilon_{it} \end{aligned} \quad (3)$$

where  $i$  is firm index and  $t$  is year index;  $\alpha_i$  and  $\gamma_t$  denote firm and year fixed effects, respectively, which we control for in all our regressions. The dependent variable, *Pay Ratio*, is a measure for vertical pay disparity. Our variable of interest is *Post*, which equals one for SOEs in the post-event period (2015–2017), and zero for both SOEs before the event (2012–2014) and all non-SOEs throughout the sample period (2012–2017). Since the Reform was designed to reduce pay disparity in SOEs, we expect the coefficient on *Post* (i.e.,  $\beta_1$ ) to be significantly negative.

The inclusion of control variables follows the recommendations of prior studies (Bebchuk et al. 2011; Faleye et al. 2013; Rouen 2020). We control for firm fundamentals, including size, growth, performance, risk, and ownership. Since CEO power and ability could have represented confounding factors affecting our results—as the Reform may have led to a productivity-damaging talent drain—we account for these confounds using two measures for CEO power and ability. Our first measurement is a CEO’s political ties to the government and constructed as an indicator (*Political Connection*), equal to one if a CEO currently or formerly works or worked in the government or the military, and zero otherwise (Fan, Wong, and Zhang 2007). We further control for CEO tenure, which is a multi-faceted construct intended to record

several CEO characteristics (Darouichi et al. 2021), including power (Abernethy, Kuang, and Qin 2015) and ability (Dikolli, Mayew, and Nanda 2014).

In the second DID model, we examine how the exogenous changes in pay ratio affect employee productivity, and whether the relation is moderated by the degree of cultural traditionality to which employees are exposed. We employ the following OLS regressions:

$$\begin{aligned}
 Productivity_{i,t} = & \beta_0 + \beta_1 Post_{it} + \beta_2 Firm\ Size_{it} + \beta_3 Leverage_{it} + \beta_4 CFO_{it} \\
 & + \beta_5 SGA_{it} + \beta_6 Employee\ Pay_{it} + \beta_7 Physical\ Cap_{it} + \beta_8 HHI_{it} \\
 & + \beta_9 CEO\ Tenure_{it} + \beta_{10} CEO\ Share\%_{it} + \beta_{11} CEO\ Age_{it} \\
 & + \beta_{12} Political\ Connection_{it} + \beta_{13} Foreign\ Ownership_{it} \\
 & + \beta_{14} Employee\ Education_{it} + \alpha_i + \gamma_t + \varepsilon_{it}
 \end{aligned} \tag{4}$$

In Eq. (4), the dependent variable *Productivity* is either *Avg\_Rev* or *TFP*. The coefficient on *Post* speaks to the impact of the Reform (pay disparity) on employee productivity. In H1, we predict a positive relation between pay disparity and employee productivity. Since the regulation was designed to exogenously reduce SOEs' pay disparity, we expect  $\beta_1$  in Eq. (4) to be significantly negative.

$$\begin{aligned}
 Productivity_{i,t} = & \beta_0 + \beta_1 Post_{it} * Culture_{it} + \beta_2 Post_{it} + \beta_3 Culture_{it} + \beta_4 Firm\ Size_{it} \\
 & + \beta_5 Leverage_{it} + \beta_6 CFO_{it} + \beta_7 SGA_{it} + \beta_8 Employee\ Pay_{it} \\
 & + \beta_9 Physical\ Cap_{it} + \beta_{10} HHI_{it} + \beta_{11} CEO\ Tenure_{it} \\
 & + \beta_{12} CEO\ Share\%_{it} + \beta_{13} CEO\ Age_{it} + \beta_{14} Political\ Connection_{it} \\
 & + \beta_{15} Foreign\ Ownership_{it} + \beta_{16} Employee\ Education_{it} \\
 & + \alpha_i + \gamma_t + \varepsilon_{it}
 \end{aligned} \tag{5}$$

The moderator *Culture* in Eq. (5) measures the intensity of cultural traditionality. We predict in H2 that the relation between pay disparity and employee productivity will be accentuated by the degree of cultural traditionality. Since the main effect of *Post* on employee productivity is predicted to be negative, we expect that the coefficient on the interaction between *Culture* and *Post* (i.e.,  $\beta_1$ ) will also be significantly negative. Furthermore, all

continuous variables are winsorised at the 1<sup>st</sup> and 99<sup>th</sup> percentiles to mitigate the influence of extreme observations (see Appendix 2 for the variable definitions).

Table 2 reports the variables' descriptive statistics. Panel A shows that the average CEO–employee pay ratio is 7.387, lower than that of the US as reported in prior research (Faleye et al. 2013; Rouen 2020). Panel B presents the comparison of pay disparity between SOEs and non-SOEs. We notice that, across all measures, SOEs (but not non-SOEs) exhibit a significant decline in pay ratio following the Reform. Furthermore, although both the treatment and control groups show significant productivity improvements post-Reform, the magnitude of such is more pronounced in the control group ( $p < 0.01$ ). In other words, adjusted for non-SOEs' increase in productivity, the relative change for SOEs is rather negative.

## 4. Main results

### 4.1 Pay disparity and employee productivity

In H1, we predict a positive association between pay disparity and employee productivity. We first run Eq. (3) to examine the changes to pay disparity post-Reform (see Panel A of Table 3). The dependent variables are *Pay Ratio\_CEO*, *Pay Ratio\_TOP3*, and *Pay Ratio\_ALL*, respectively. The coefficient of *Post*, referring to the DID effect of the Reform, is significantly negative in columns 1 to 3, suggesting that the Reform effectively reduces the pay dispersion between SOE executives and average workers (the treatment group) relative to that of non-SOEs (the control).<sup>18</sup> Specifically, the coefficient of *Post* is  $-0.505$  in column 1,

---

<sup>18</sup> Our results continue to hold when using only local SOEs in the treatment group, which supports our expectation that, although the Reform targets SOEs controlled by the central government, it also applies to local SOEs.

indicating that the post-Reform SOE pay ratio has declined by 7.8% of one standard deviation of *Pay Ratio\_CEO* [= 0.505/6.513\*100%].<sup>19</sup>

In the second DID, we explore whether the implementation of the Reform lowers employee productivity. We estimate Eq. (4), the results of which can be found in Panel B of Table 3. We find consistent results for both measures of employee productivity, *Avg\_Rev* and *TFP*, as shown in columns 1 and 2, respectively. The coefficients of *Post* are significantly negative in both columns, suggesting that, compared to non-SOE firms, employee productivity has significantly declined in SOEs post-Reform. In terms of economic significance, *Avg\_Rev* (*TFP*) for SOEs declines by 4.6% (10.4%) of one standard deviation after the Reform.<sup>20</sup>

We argue that it is important to validate the Reform as an exogenous shock to SOEs' pay disparity and to mitigate the potential influences of other regulatory changes arising from the Reform on SOEs' performance.<sup>21</sup> We use the pre-Reform pay ratio as a sorting variable and examine how the Reform affects the cross-section of firms. Arguably, if our hypothesis holds, firms with higher pre-Reform pay ratios should experience greater reductions in their pay ratios post-Reform. To probe into this, we construct an indicator variable *High Disparity* equal to one if a firm's pay disparity is above the sample median in 2014, and zero otherwise. In columns 4 to 6, the interaction term *Post\*High Disparity* is significantly negative, suggesting that the Reform has a greater impact on SOEs with higher pay disparity prior to the

---

<sup>19</sup> Furthermore, we test the impact of the Reform on the pay disparity of local SOEs and find a significant reduction of local SOEs' pay disparity after the Reform (not tabulated), which validates the inclusion of local SOEs in the treated group.

<sup>20</sup> That is, 4.6% = 0.042/0.908\*100%, and 10.4% = 0.112/1.080\*100%.

<sup>21</sup> The 2015 reform comes with a basket of policy proposals, which inevitably leads to potential confounding effects. Besides the policy on executive pay, this reform also includes policies that focus on improving the corporate governance of SOEs, and policies that aim to facilitate the private sector to invest in SOEs, among other regulatory changes. The policies that do not focus on SOE executive compensations can also have important consequences on SOE performance.

Reform. Likewise, in our second DID, we include an indicator variable *High Change* equal to one if a firm's average pay ratio change between post-Reform and pre-Reform is lower than the sample median, and zero otherwise. In columns 4 and 5, the interaction term *Post\* High Change* is significantly negative. It appears that the Reform has a greater impact on SOEs' employee productivity for SOEs with greater reduction in pay ratio post the Reform.<sup>22</sup> Combined, our results validate the exogenous variation to SOEs' pay disparity and help mitigate the concern that our results are attributable to the effects of other regulatory changes arising from the Reform on employee productivity.

In sum, our results support H1 in that higher pay disparity seems to promote employee productivity in institutions where power distance is respected and competitiveness is advocated. Therefore, we conclude that the Reform-driven sudden decline in pay ratios in SOEs has significantly reduces employee productivity.

#### 4.2 Moderating effect of cultural traditionality

H2 relates to the moderating effect of cultural traditionality. We expect employees more strongly influenced by cultural traditionality to experience a more severe decline in post-Reform productivity. We estimate Eq. (5) and report the results in Table 4, where the dependent variable is employee productivity, measured by *Avg\_Rev* and *TFP* in Panel A and Panel B, respectively.

Combined, we find inferentially consistent results across two measures of employee productivity. The coefficients on the interaction terms between *Post* and proxies for high cultural traditionality (i.e., *#Museums*, *Ancient Capital*, and *#Temples*) are generally

---

<sup>22</sup> Since both *High Disparity* and *High Change* are time invariant and fixed at the firm level, the coefficients on their single term are subsumed as we control for firm fixed effects.

significantly negative (see columns 1 to 3 of both panels). As mentioned above, *Post* has a predominantly negative effect on employee productivity. Therefore, our results suggest that treatment firms with employees exposed to higher levels of cultural heritage and traditions experience a more pronounced post-Reform productivity decline. In contrast, the coefficients on the interactions between *Post* and proxies for low cultural traditionality, including *Concession* and *Christian Edu*, are generally significantly positive (as in columns 4 and 5 of both panels), suggesting an attenuated effect of *Post* for SOEs with employees less oriented toward cultural traditionality. Moreover, column 6 shows that *Culture*, our composite measure, yields consistent results with greater statistical significance.

Taken together, our findings support H2 that employee cultural traditionality strengthens the relation between pay disparity and employee productivity. Simply put, the post-Reform employee productivity decline is particularly pronounced for those exposed to greater cultural traditionality.

## **5. Robustness checks and additional analyses**

### *5.1 Alternative explanations*

This section explores whether our findings can be attributed to alternative explanations. It is possible that senior executives at SOEs extract greater rent to compensate for their post-Reform pay reductions, thereby resulting in lower productivity. We follow the literature and proxy SOE executives' rent extraction by on-duty consumption and tunneling (Jiang, Lee, and Yue 2010; Lin 2017a). We estimate Eq. (3) using the rent extraction measures as the dependent variable. The un-tabulated results show no significant changes in CEOs' tunneling activities surrounding the Reform. Furthermore, SOE executives appear to receive reduced perks post-

Reform.<sup>23</sup> Therefore, it seems unlikely that our results could be solely explained by managerial rent extraction.

Another alternative explanation for reduced productivity relates to the departures of talented SOE executives following the Reform. To probe, we re-run Eq. (3) and replace the dependent variable with a binary indicator for CEO turnover when firm performance, measured by *ROA*, *Stock Return*, or *Tobin's Q*, is above the annual industry median. If our findings were the result of talent drain, we would expect the coefficient of *Post* to be significantly positive. The un-tabulated results show this not to be the case, indicating that our findings are unlikely to be explained by talent drain.

### 5.2 Traditional DID design using an entropy balanced sample

As mentioned above, we use SOEs and non-SOEs as the treatment and control groups, respectively, in our DID regressions. One major concern is that possible systematic differences between these groups could have potentially driven our results. As a further robustness check, we perform a traditional DID analysis using an entropy balanced sample. First, we construct an entropy balanced sample on all three moments between SOEs and non-SOEs. The covariates include all the control variables in Eqs. (3) and (4), and the one-year lagged *Pay Ratio\_CEO* and *Avg\_Rev*.<sup>24</sup> Panel A in Table 5 reports the balancing tests. We find that the significantly different covariates between the control and treatment groups become insignificant after entropy balancing, suggesting that the covariates between SOEs and non-SOEs are well balanced. We then run the following traditional DID models in Eqs. (6) and (7) using the

---

<sup>23</sup> Our findings are consistent with the Central Politburo passing an 'Opinion' in 2014 to limit perk consumption of SOE executives. See more detail of the Opinion at: [http://www.gov.cn/xinwen/2014-09/02/content\\_2743960.htm](http://www.gov.cn/xinwen/2014-09/02/content_2743960.htm).

<sup>24</sup> We include lagged outcome variables to balance pre-existing trends.

entropy balanced sample. The binary variable *SOE* equals one for SOEs, and zero for non-SOEs. *Post* equals one for the observations after 2014, and zero otherwise. Our focus is on the interaction term between *SOE* and *Post*.

$$\begin{aligned}
Pay\ Ratio_{i,t} = & \beta_0 + \beta_1 SOE_{it} * Post_{it} + \beta_2 SOE_{it} + \beta_3 Post_{it} + \beta_4 Firm\ Size_{it} \\
& + \beta_5 BTM_{it} + \beta_6 Stock\ Return_{it} + \beta_7 ROA_{it} + \beta_8 Firm\ Risk_{it} \\
& + \beta_9 CEO\ Duality_{it} + \beta_{10} Physical\ Cap_{it} + \beta_{11} HHI_{it} \\
& + \beta_{12} Political\ Connection_{it} + \beta_{13} Foreign\ Ownership_{it} \\
& + \beta_{14} Employee\ Education_{it} + Industry\ FE + \varepsilon_{it}
\end{aligned} \tag{6}$$

$$\begin{aligned}
Productivity_{i,t} = & \beta_0 + \beta_1 SOE_{it} * Post_{it} + \beta_2 SOE_{it} + \beta_3 Post_{it} + \beta_4 Firm\ Size_{it} \\
& + \beta_5 Leverage_{it} + \beta_6 CFO_{it} + \beta_7 SGA_{it} + \beta_8 Employee\ Pay_{it} \\
& + \beta_9 Physical\ Cap_{it} + \beta_{10} HHI_{it} + \beta_{11} CEO\ Tenure_{it} \\
& + \beta_{12} CEO\ Share\%_{it} + \beta_{13} CEO\ Age_{it} + \beta_{14} Political\ Connection_{it} \\
& + \beta_{15} Foreign\ Ownership_{it} + \beta_{16} Employee\ Education_{it} \\
& + Industry\ FE + \varepsilon_{it}
\end{aligned} \tag{7}$$

The results of Eq. (6) are reported in Panel B of Table 5. Consistent with our main findings, the significantly negative coefficient on *SOE\*Post* indicates the Reform's relation to reduced pay disparity. Panel C of Table 5 reports the results of Eq. (7). The significantly negative coefficient on *SOE\*Post* in column 1 suggests a decline in employee productivity. The results of the moderating effect of cultural traditionality are presented in columns 3 and 4. The coefficient of *SOE\*Post\*Culture* is significantly negative, which, again, is consistent with our prior findings.<sup>25</sup>

To further alleviate the concern about the possible systematic differences between the treatment and control groups, we perform a dynamic DID analysis to check the parallel trend assumption. Specifically, we replace *Post* in Eqs. (6) and (7) with four binary indicator variables: *Pre1*, *Post1*, *Post2*, and *Post3*, corresponding to a set of year indicators that lead or

---

<sup>25</sup> We obtain consistent results when replicating the analysis with a propensity score matched (PSM) sample. We match each SOE with a non-SOE based on their propensity scores of being an SOE in 2014 using a one-on-one nearest neighbor method with replacement. As with entropy balancing, the covariates include all the control variables in Eqs. (3) and (4), and the one-year lagged *Pay Ratio\_CEO* and *Avg\_Rev*.

lag around the Reform year (2015).<sup>26</sup> We subsequently construct interaction terms between *SOE* and the four time-trend indicators, respectively (see Panel D of Table 5 for the results). In all five columns, *SOE\*Pre1* is not statistically significant, suggesting no pre-existing trend in either pay disparity or employee productivity of SOEs compared with non-SOEs. Therefore, it is unlikely that SOEs differ systematically from non-SOEs in either pay ratios or employee productivity before the treatment.<sup>27</sup>

We further conduct a placebo test using 2016 as the regulation year. Specifically, we replace *Post* in Eqs. (6) and (7) with the placebo variable. If there were indeed systematic differences between both groups, we would have found that the interaction between *SOE* and the placebo variable loaded significantly. However, the un-tabulated results do not show this, thereby lending further credence to our primary findings.

### 5.3 Instrumental variable approach

To further mitigate the endogeneity concern arising from correlated omitted variables, we perform an instrumental variable (IV) analysis using the Reform as the IV for pay disparity. We argue that our IV satisfies both the exclusion and relevance criteria (Larcker and Rusticus 2010). On the one hand, the Reform has directly influenced SOE pay disparity due to its aim to reduce the ratio of executive–employee pay. On the other hand, there is no immediately apparent reason to expect the Reform to directly influence employee productivity other than through its effect on pay disparity. To implement the analysis, we first estimate Eq. (3) and

---

<sup>26</sup> Following Beck, Levine, and Levkov (2010), we exclude the year of the Reform itself, thus estimating the dynamic effect of the Reform (pay disparity) on pay disparity (employee productivity) relative to the event year of 2015.

<sup>27</sup> In columns 4 and 5, the coefficients on *SOE\*Post1* are significantly negative, while neither *SOE\*Post2* nor *SOE\*Post3* loads consistently significant across both columns, indicating that the effect of pay disparity on employee productivity dissipates over time—that is, firms may seek alternative ways to ameliorate the productivity decline.

calculate the fitted value of *Pay Ratio\_CEO* (i.e., *Fitted Pay Ratio*) based on the estimation. Once done, we replace *Post* in Eq. (4) with *Fitted Pay Ratio* and run the second-stage regressions.<sup>28</sup>

The results are reported in Table 6. We find the coefficient on *Fitted Pay Ratio* to be significantly positive columns 1 and 2. This finding is consistent with our prediction that, in a culture characterized by high levels of power distance and masculinity, meaningful pay differences incentivize employees to work harder which, in turn, enhances productivity. Further, we explore the moderating effect of cultural traditionality. The results of Eq. (5) are reported in columns 3 and 4. We create the indicator *High Culture* for high levels of cultural traditionality (i.e., top decile of *Culture*). The coefficient on the interaction between *Fitted Pay Ratio* and *High Culture* is significantly positive, thereby confirming the inferences drawn from our main analysis that the performance effect of pay disparity is more prominent in regions more heavily influenced by cultural traditionality.

#### 5.4 Other robustness checks

We perform further robustness tests. Kong et al. (2020) propose that local politicians with strong promotion incentives may proactively initiate practices to reduce pay disparity in SOEs under the assumption that such a move would enhance their own reputation. We thus check our findings after controlling for local politicians' promotion incentives. We manually collect information on city-level politicians (the secretaries of the municipal party committees)

---

<sup>28</sup> Note that, in contrast to our DID research design that relies on the variations in pay ratios of SOE versus non-SOE firms, our IV approach utilizes the pay ratio variations among all sample firms, and thus is less subject to the systematic differences between SOE and non-SOE firms. Therefore, consistent results based on these two methods provide more assurance to our inferences.

from public sources.<sup>29</sup> We define a politician with high promotion incentives as someone younger than 57 who experiences a turnover in the following year.<sup>30</sup> The indicator *Promotion Incentive* equals one for local politicians with high promotion incentives, and is included in Eqs. (3) and (4). The results are reported in Table 7 Panel A. Within this robustness check, the sample size has reduced to 9,657. The *Post* coefficient remains significantly negative in both DID models, in line with our prior results.

We further check the robustness of our findings by constructing alternative composite measures for cultural traditionality. We apply a principal component factor analysis and consider the relative importance of each component in the composite measurement (Abernethy et al. 2015). A summary of the procedure can be found in Appendix 3. We obtain two common factors with eigenvalues greater than one (see Table A1), where *#Museums*, *Ancient Capital*, and *#Temples* load on the first factor (i.e., *Pro Culture*), while *Concession* and *Christian Edu* comprise the second factor (i.e., *Anti Culture*) (see Table A2). We use both factors for replicating Eq. (5). The results are reported in Panel B of Table 7. In both columns, the coefficients on *Post\* Pro Culture* are significantly negative, whereas the interactions between *Post* and *Anti Culture* load significantly positive, suggesting that traditional and foreign cultures play opposing roles in moderating the effect of pay disparity, which is consistent with our predictions.<sup>31</sup>

### 5.5 Impact of the 2015 Reform on firm performance

---

<sup>29</sup> Including [www.gov.cn](http://www.gov.cn), [www.chinadaily.com.cn](http://www.chinadaily.com.cn), and Baidu.

<sup>30</sup> The retirement age for city-level politicians is 57. Therefore, politicians above this age would have little promotion incentive (Kong et al. 2020). Our *ex post* turnover measurement further confirms local politicians' promotion incentives.

<sup>31</sup> It is not unlikely that some historical museums are unrelated to traditional culture. For instance, some museums were built to commemorate battles during WWII and against the KMT. To mitigate this potential bias, we in a robustness test exclude *\$Museums* from the factor analysis and obtain consistent results (not tabulated).

Reduced employee productivity is detrimental to firm value. Accordingly, we consider it pertinent to examine whether SOE performance does indeed decline post-Reform. We construct two measures for firm performance, including industry-adjusted stock returns (*Adj Stock Return*) and industry-adjusted Tobin's Q (*Adj Tobin's Q*) (Bebchuk et al. 2011). We replace the dependent variable of Eq. (4) with these two variables, respectively. The results in Table 8 show that *Post* is significantly negative in the two columns, suggesting that SOEs have experienced a reduced post-Reform performance compared to non-SOEs. This is consistent with the notion that a sudden reduction in pay differences will disrupt a well-accepted order, thereby reducing firm value.

## **6. Conclusions**

Motivated by the competing evidence documented in the literature on the relationship between pay disparity and firm performance, we examine the performance effect of pay disparity in a setting highly tolerant and supportive of authority and competition. Using the 2015 Reform on executive compensation in Chinese SOEs as an exogenous variation to pay disparity in our double DID design, we find declines in pay disparity to be coupled with significantly reduced employee productivity in SOEs relative to non-SOEs after the Reform. These findings are consistent with our expectation that pay disparity is positively associated with productivity in China, as employees tend to consider meaningful organizational pay differences indispensable for maintaining order and promoting competition. We further show that the positive influence of pay disparity on employee productivity is disproportionately stronger for more culturally traditional employees.

Our findings thus suggest that informal institutions, such as culture and values, play an important role in determining the effectiveness of formal institutions, such as pay arrangements. When implementing policies aimed at decreasing pay inequality, policymakers should consider the potential unintended consequences, such as reduced employee productivity, as restricting pay without considering the cultural context may, in fact, be detrimental to firm value. Although China's unique cultural background may prevent us from generalizing our findings to other institutions, our research question is generalizable, and is thus poised to stimulate future research exploring pay disparity in diverse cultural backgrounds and generating more interesting inferences.

## References

- Abernethy, M. A., Kuang, Y. F., and Qin, B., 2015. The influence of CEO power on compensation contract design. *The Accounting Review*, 90(4), pp.1265-1306.
- Akerlof, G.A. and Yellen, J.L., 1990. The fair wage-effort hypothesis and unemployment. *The Quarterly Journal of Economics*, 105(2), pp.255-283.
- Bakke, T.E., Mahmudi, H., Fernando, C.S., and Salas, J.M., 2016. The causal effect of option pay on corporate risk management. *Journal of Financial Economics*, 120(3), pp.623-643.
- Bartlett, M.S., 1950. Tests of significance in factor analysis. *British Journal of Statistical Psychology*, 3(2), pp.77-85.
- Bebchuk, L.A., Cremers, K.M., and Peyer, U.C., 2011. The CEO pay slice. *Journal of Financial Economics*, 102(1), pp.199-221.
- Beck, T., Levine, R., and Levkov, A., 2010. Big bad banks? The winners and losers from bank deregulation in the United States. *The Journal of Finance*, 65(5), pp.1637-1667.
- Bradshaw, M., Liao, G., and Ma, M.S., 2019. Agency costs and tax planning when the government is a major shareholder. *Journal of Accounting and Economics*, 67(2-3), pp.255-277.
- Breza, E., Kaur, S., and Shamdasani, Y., 2018. The morale effects of pay inequality. *The Quarterly Journal of Economics*, 133(2), pp.611-663.
- Brockner, J., Ackerman, G., Greenberg, J., Gelfand, M.J., Francesco, A.M., Chen, Z.X., Leung, K., Bierbrauer, G., Gomez, C., Kirkman, B.L., and Shapiro, D., 2001. Culture and procedural justice: The influence of power distance on reactions to voice. *Journal of Experimental Social Psychology*, 37(4), pp.300-315.
- Burns, N., Minnick, K., and Starks, L., 2017. CEO tournaments: A cross-country analysis of causes, cultural influences, and consequences. *Journal of Financial and Quantitative Analysis*, 52(2), pp.519-551.
- Card, D., Heining, J., and Kline, P., 2013. Workplace heterogeneity and the rise of West German wage inequality. *The Quarterly Journal of Economics*, 128(3), pp.967-1015.
- Chan, K., Covrig, V., and Ng, L., 2005. What determines the domestic bias and foreign bias? Evidence from mutual fund equity allocations worldwide. *The Journal of Finance*, 60(3), pp.1495-1534.

- Chen, C.C., 1995. New trends in rewards allocation preferences: A Sino-US comparison. *Academy of Management Journal*, 38(2), pp.408-428.
- Chen, Z., Guan, Y., and Ke, B., 2013. Are stock option grants to directors of state-controlled Chinese firms listed in Hong Kong genuine compensation? *The Accounting Review*, 88(5), pp.1547-1574.
- Chen, Y.C., Hung, M., and Wang, Y., 2018. The effect of mandatory CSR disclosure on firm profitability and social externalities: Evidence from China. *Journal of Accounting and Economics*, 65(1), pp.169-190.
- Cheng, Q., Lee, J., and Shevlin, T., 2016. Internal governance and real earnings management. *The Accounting Review*, 91(4), pp.1051-1085.
- Chui, A. C. W., Titman, S., and Wei, K. C. J., 2010. Individualism and momentum around the world. *The Journal of Finance*, 65(1), pp.361-392.
- Cobb, C.W. and Douglas, P.H., 1928. A theory of production. *The American Economic Review*, 18(1), pp.139-165.
- Crane, S.A., 1997. Memory, distortion, and history in the museum. *History and Theory*, 36(4), pp.44-63.
- Cronqvist, H., Heyman, F., Nilsson, M., Svaleryd, H., and Vlachos, J., 2009. Do entrenched managers pay their workers more? *The Journal of Finance*, 64(1), pp.309-339.
- Davison, P., 1998. Museums and the reshaping of memory. In *Negotiating the Past: The Making of Memory in South Africa*, edited by S. Nuttall and C. Coetzee. Cape Town: Oxford University Press, pp.143-160.
- Darouichi, A., Kunisch, S., Menz, M., and Cannella Jr, A. A., 2021. CEO tenure: An integrative review and pathways for future research. *Corporate Governance: An International Review*, forthcoming.
- Dikolli, S. S., Mayew, W. J., and Nanda, D., 2014. CEO tenure and the performance-turnover relation. *Review of Accounting Studies*, 19(1), pp.281-327.
- DiMaggio, P., 1997. Culture and cognition. *Annual Review of Sociology*, 23(1), pp.263-287.
- , 2003. Chapter 4. The myth of culture war: The disparity between private opinion and public politics. In *The Fractious Nation?* edited by R. Jonathan and S. Stephen: University of California Press, pp. 79-97.
- Dequech, D., 2003. Cognitive and cultural embeddedness: combining institutional economics and economic sociology. *Journal of Economic Issues*, 37(2), pp.461-470.
- Dirks, N.B., 1992. *Colonialism and Culture*. University of Michigan Press.
- Donelson, D. C., Kettell, L., McInnis, J., and Toynbee, S., 2021. The need to validate exogenous shocks: Shareholder derivative litigation, universal demand laws and firm behavior. *Journal of Accounting and Economics*, forthcoming.
- Du, X., 2014. Does religion mitigate tunneling? Evidence from Chinese Buddhism. *Journal of Business Ethics*, 125(2), pp.299-327.
- Duffy, M.K., Scott, K.L., Shaw, J.D., Tepper, B.J., and Aquino, K., 2012. A social context model of envy and social undermining. *Academy of Management Journal*, 55(3), pp.643-666.
- Dziuban, C.D. and Shirkey, E.C., 1974. When is a correlation matrix appropriate for factor analysis? Some decision rules. *Psychological Bulletin*, 81(6), pp.358-361.
- Edmans, A., Goldstein, I. and Zhu, J., 2013. Contracting with synergies. Working paper: London Business School and The Wharton School. Available at SSRN: <https://ssrn.com/abstract=1958708>.
- Erkens, D.H. and Bonner, S.E., 2013. The role of firm status in appointments of accounting financial experts to audit committees. *The Accounting Review*, 88(1), pp.107-136.
- Fan, J.P., Wong, T.J., and Zhang, T., 2007. Politically connected CEOs, corporate governance, and Post-IPO performance of China's newly partially privatized firms. *Journal of Financial Economics*, 84(2), pp.330-357.
- Faleye, O., Mehrotra, V., and Morck, R., 2006. When labor has a voice in corporate governance. *Journal of Financial and Quantitative Analysis*, 41(3), pp.489-510.
- Faleye, O., Reis, E., and Venkateswaran, A., 2013. The determinants and effects of CEO-employee pay ratios. *Journal of Banking & Finance*, 37(8), pp.3258-3272.
- Farh, J.L., Earley, P.C., and Lin, S.C., 1997. Impetus for action: A cultural analysis of justice and organizational citizenship behavior in Chinese society. *Administrative Science Quarterly*, 42(3), pp.421-444.

- Farh, J.L., Hackett, R.D., and Liang, J., 2007. Individual-level cultural values as moderators of perceived organizational support–employee outcome relationships in China: Comparing the effects of power distance and traditionality. *Academy of Management Journal*, 50(3), pp.715-729.
- Flath, J.A., 2002. Managing historical capital in Shandong: museum, monument, and memory in provincial China. *The Public Historian*, 24(2), pp.41-59.
- Gabrenya Jr, W. K., and Hwang., K.-K., 1996. Chinese social interaction: Harmony and hierarchy on the good earth. In *The Handbook of Chinese Psychology*, edited by M. H. Bond. Hong Kong: Oxford University Press, 309-321.
- Giannetti, M., Liao, G., and Yu, X., 2015. The brain gain of corporate boards: Evidence from China. *The Journal of Finance*, 70(4), pp.1629-1682.
- Graham, B., 2002. Heritage as knowledge: capital or culture? *Urban studies*, 39(5-6), pp.1003-1017.
- Granovetter, M., 1985. Economic Action and Social Structure: The Problem of Embeddedness1. *AJS*, 91(3), pp.481-510.
- Griffin, J.M., Ji, X., and Martin, J.S., 2003. Momentum investing and business cycle risk: Evidence from pole to pole. *The Journal of Finance*, 58(6), pp.2515-2547.
- Guiso, L., Sapienza, P. and Zingales, L., 2004. The role of social capital in financial development. *American economic review*, 94(3), pp.526-556.
- Gupta, N., Conroy, S.A., and Delery, J.E., 2012. The many faces of pay variation. *Human Resource Management Review*, 22(2), pp.100-115.
- Hales, J., Moon Jr, J.R. and Swenson, L.A., 2018. A new era of voluntary disclosure? Empirical evidence on how employee postings on social media relate to future corporate disclosures. *Accounting, Organizations and Society*, 68, pp.88-108.
- Harvey, P., 2000. *An Introduction to Buddhist Ethics: Foundations, Values and Issues*. Cambridge University Press.
- Hofstede, G., 1980. Culture and organizations. *International Studies of Management & Organization*, 10(4), pp.15-41.
- , 2001. *Culture's Consequences: Comparing Values, Behaviors, Institutions and Organizations across Nations*. Sage publications.
- Hofstede, G. and Bond, M.H., 1988. The Confucius connection: From cultural roots to economic growth. *Organizational Dynamics*, 16(4), pp.5-21.
- House, R.J., Hanges, P.J., Javidan, M., Dorfman, P.W., and Gupta, V., 2004. *Culture, Leadership, and Organizations: The GLOBE Study of 62 Societies*. Sage publications.
- Hsieh, C.-T., and Song, Z. M., 2015. Grasp the large, let go of the small: The transformation of the state sector in China. *Brookings Papers on Economic Activity*, pp.295-346.
- Huang, Z., Li, L., Ma, G., and Xu, L.C., 2017. Hayek, local information, and commanding heights: Decentralizing state-owned enterprises in China. *American Economic Review*, 107(8), pp.2455-78.
- Jiang, G., Lee, C.M., and Yue, H., 2010. Tunneling through intercorporate loans: The China experience. *Journal of Financial Economics*, 98(1), pp.1-20.
- Kale, J.R., Reis, E., and Venkateswaran, A., 2009. Rank-order tournaments and incentive alignment: The effect on firm performance. *The Journal of Finance*, 64(3), pp.1479-1512.
- Kim, S.S., Wang, K.C., and Ahn, T.H., 2013. Which endorser and content are most influential in Korean restaurant promotions? *International Journal of Hospitality Management*, 33, pp.208-218.
- Kirkman, B.L., Chen, G., Farh, J.L., Chen, Z.X., and Lowe, K.B., 2009. Individual power distance orientation and follower reactions to transformational leaders: A cross-level, cross-cultural examination. *Academy of Management Journal*, 52(4), pp.744-764.
- Kirkman, B.L., Lowe, K.B., and Gibson, C.B., 2006. A quarter century of culture's consequences: A review of empirical research incorporating Hofstede's cultural values framework. *Journal of International Business Studies*, 37(3), pp.285-320.
- , 2017. A retrospective on culture's consequences: The 35-year journey. *Journal of International Business Studies*, 48(1), pp.12-29.
- Kong, G., Kong, T.D., and Lu, R., 2020. Political promotion incentives and within-firm pay gap: Evidence from China. *Journal of Accounting and Public Policy*, 39(2), pp.106715.
- La Porta, R., Lopez-de-Silanes, F., Shleifer, A. and Vishny, R.W., 1996. Trust in large organizations.

- Lai, S., Li, Z., and Yang, Y.G., 2020. East, west, home's best: do local CEOs behave less myopically? *The Accounting Review*, 95(2), pp.227-255.
- Larcker, D. F. and Rusticus., T. O., 2010. On the use of instrumental variables in accounting research. *Journal of Accounting and Economics*, 49(3), pp.186-205.
- Lawler, E.L., 1971. *Pay and Organization Effectiveness: A Psychological View*. NY: McGraw Hill.
- Lazear, E.P., 1989. Pay equality and industrial politics. *Journal of Political Economy*, 97(3), pp.561-580.
- , 1991. Labor economics and the psychology of organizations. *Journal of Economic Perspectives*, 5(2), pp.89-110.
- Lazear, E.P. and Rosen, S., 1981. Rank-order tournaments as optimum labor contracts. *Journal of Political Economy*, 89(5), pp.841-864.
- Leventhal, G.S., Karuza, J., and Fry, W.R., 1980. Beyond fairness: A theory of allocation preferences. *Justice and Social Interaction*, 3(1), pp.167-218.
- Lian, H., Ferris, D.L., and Brown, D.J., 2012. Does power distance exacerbate or mitigate the effects of abusive supervision? It depends on the outcome. *Journal of Applied Psychology*, 97(1), p.107.
- Lin, L.W., 2017a. Behind the numbers: State capitalism and executive compensation in China. *University of Pennsylvania Asian Law Review*, 12, pp.140-185.
- , 2017b. Reforming China's state-owned enterprises: from structure to people. *The China Quarterly*, 229, pp.107-129.
- Luk, B.H.K., 1991. Chinese culture in the Hong Kong curriculum: heritage and colonialism. *Comparative Education Review*, 35(4), pp.650-668.
- Merchant, K.A., Van der Stede, W.A., Lin, T.W., and Yu, Z., 2011. Performance measurement and incentive compensation: an empirical analysis and comparison of Chinese and Western firms' practices. *European Accounting Review*, 20(4), pp.639-667.
- Mueller, H.M., Ouimet, P.P., and Simintzi, E., 2017. Within-firm pay inequality. *The Review of Financial Studies*, 30(10), pp.3605-3635.
- Okazaki, S., David, E.J.R., and Abelmann, N., 2008. Colonialism and psychology of culture. *Social and Personality Psychology Compass*, 2(1), pp.90-106.
- Oyserman, D., Coon, H.M., and Kemmelmeier, M., 2002. Rethinking individualism and collectivism: Evaluation of theoretical assumptions and meta-analyses. *Psychological Bulletin*, 128(1), pp.3-72.
- Pevzner, M., Xie, F. and Xin, X., 2015. When firms talk, do investors listen? The role of trust in stock market reactions to corporate earnings announcements. *Journal of Financial Economics*, 117(1), pp.190-223.
- Polanyi, K., 1968. *Primitive, Archaic, and Modern Economies: Essays of Karl Polanyi*, edited by G. Dalton. Garden City, NY: Anchor Books.
- Ren, S., Cheng, Y., Hu, Y., and Yin, C., 2021. Feeling right at home: Hometown CEOs and firm innovation. *Journal of Corporate Finance*, 66, pp.101815.
- Rogers, J. L., Van Buskirk, A., and Zechman, S. L. C., 2011. Disclosure tone and shareholder litigation. *The Accounting Review*, 86(6), pp.2155-2183.
- Rosen, S., 1981. The economics of superstars. *The American Economic Review*, 71(5), pp.845-858.
- , 1982. Authority, control, and the distribution of earnings. *The Bell Journal of Economics*, pp.311-323.
- Rosen, S. 1986. Prizes and incentives in elimination tournaments. *The American Economic Review*, 76(4), pp.701-715.
- Rouen, E., 2020. Rethinking measurement of pay disparity and its relation to firm performance. *The Accounting Review*, 95(1), pp.343-378.
- Schwartz, S. H., 1992. Universals in the content and structure of values: Theoretical advances and empirical tests in 20 countries. In *Advances in Experimental Social Psychology*, edited by M. P. Zanna: Academic Press, pp.1-65.
- , 1994. Beyond individualism/collectivism: New cultural dimensions of values. In *Individualism and Collectivism: Theory, Method, and Applications*, edited by U. Kim, H. C. Triandis, Ç. Kâğıtçıbaşı, S.-C. Choi, and G. Yoon. Thousand Oaks, CA, US: Sage Publications, Inc, pp.85-119.
- Scott, W.R., 2001. *Institutions and Organizations* (2<sup>nd</sup>). Thousand Oaks, CA: Sage.

- Shaw, J.D., 2015. Pay dispersion, sorting, and organizational performance. *Academy of Management Discoveries*, 1(2), pp.165-179.
- Stuart, T.E., 1998. Network positions and propensities to collaborate: An investigation of strategic alliance formation in a high-technology industry. *Administrative Science Quarterly*, 43(3), pp.668-698.
- Taras, V., Kirkman, B.L., and Steel, P., 2010. Examining the impact of Culture's consequences: A three-decade, multilevel, meta-analytic review of Hofstede's cultural value dimensions. *Journal of Applied Psychology*, 95(3), pp.405-439.
- Tinsley, C.H., 2001. How negotiators get to yes: Predicting the constellation of strategies used across cultures to negotiate conflict. *Journal of Applied Psychology*, 86(4), p.583.
- Tosi, H. L., and Greckhamer., T., 2004. Culture and CEO compensation. *Organization Science*, 15(6), pp.657-670.
- Wang, L., Huang, X., and Schnell, J., 2013. Using Burke's dramatic pentad to interpret Chinese "Gao-Kao" high stakes testing and stressing-paralleled testing in the US as cross-cultural Context. *Kome*, 1(2), pp.55-63.
- Weber, E.U. and Hsee, C., 1998. Cross-cultural differences in risk perception, but cross-cultural similarities in attitudes towards perceived risk. *Management science*, 44(9), pp.1205-1217.
- Westwood, R., Chan, A., and Linstead, S., 2004. Theorizing Chinese employment relations comparatively: Exchange, reciprocity and the moral economy. *Asia Pacific Journal of Management*, 21(3), pp.365-389.
- Wichmann, A.A., 1965. Buddhism, economic development, and neutralism in Burma. *The Southwestern Social Science Quarterly*, pp.20-27.
- Yang, J., Mossholder, K.W., and Peng, T.K., 2007. Procedural justice climate and group power distance: An examination of cross-level interaction effects. *Journal of Applied Psychology*, 92(3), p.681.
- Yang, K-S, Yu, A-B, and Yeh, M. H., 1989. Chinese individual modernity and traditionality: Construct definition and measurement (in Chinese). Proceedings of the Interdisciplinary Conference on Chinese Psychology and Behavior, pp.287-354.

## Appendix 1: Summary of cultural traditionality by Chinese province

Province	<i>History Museums</i>	<i>Ancient Capital</i>	<i>Buddhist Monasteries</i>	<i>Concession</i>	<i>Christian Edu</i>	<i>Culture</i>
Anhui	241	0	14	0	0	2.671
Beijing	161	1	7	0	1	5.507
Chongqing	98	0	3	1	0	-0.784
Fujian	131	0	15	1	1	-0.605
Gansu	223	0	0	0	0	3.179
Guangdong	281	0	0	1	1	-4.229
Guangxi	101	0	1	0	0	0.058
Guizhou	94	0	2	0	0	0.597
Hainan	32	0	0	0	0	0.642
Hebei	134	0	2	0	0	-0.060
Heilongjiang	202	0	1	0	0	1.645
Henan	339	1	2	0	0	2.823
Hubei	215	0	4	1	1	-3.144
Hunan	149	0	6	0	1	-1.632
Inn. Mongolia	173	1	0	0	0	4.369
Jiangsu	295	1	13	0	1	-0.342
Jiangxi	146	0	4	1	0	-0.957
Jilin	99	0	3	0	0	1.458
Liaoning	105	1	2	0	0	2.407
Ningxia	58	0	1	0	0	4.670
Qinghai	36	0	0	0	0	2.001
Shaanxi	297	1	8	0	0	6.533
Shandong	541	0	2	1	1	-2.575
Shanghai	129	0	5	1	1	-1.055
Shanxi	150	1	14	0	0	6.033
Sichuan	242	0	9	1	1	-3.191
Tianjin	63	0	0	1	1	-3.131
Tibet	1	0	0	0	0	-1.052
Xinjiang	98	0	0	0	0	1.047
Yunnan	138	0	5	0	0	1.149
Zhejiang	382	1	13	1	1	1.885

*Notes:* Hong Kong SAR, Macau SAR, and Taiwan are not included in the table. *History museums* and *Buddhist Monasteries* are the raw numbers of history museums and Buddhist monasteries at the province level. In our regression analysis, we use *#Museums* and *#Temples* instead, which are the numbers of history museums and Buddhist monasteries per million capita.

## Appendix 2: Variable definitions

Variables	Definitions
<u>Variables of interest</u>	
<i>Pay Ratio_CEO</i>	CEO compensation divided by average employee (excluding top management) pay
<i>Pay Ratio_TOP3</i>	Average compensation for the top three paid managers divided by average employee (excluding top management) pay
<i>Pay Ratio_ALL</i>	Average compensation for all managers divided by average employee (excluding top management) pay
<i>Avg_Rev</i>	The natural logarithm of revenue per employee, a measure of employee productivity
<i>TFP</i>	An alternative measure of productivity following Falaye et al. (2006, 2013), measured as the residual of industry-specific Cobb-Douglas production functions using all CSMAR firms
<i>Adj Stock Return</i>	Annual stock returns adjusted for industry average stock returns
<i>Adj Tobin's Q</i>	Tobin's Q, measured as (total assets – book value of equity + market value of equity) / book value of assets, adjusted for industry average Tobin's Q
<i>Post</i>	Equals one for SOEs in the post-Reform period, and equals zero for SOEs before the Reform and all non-SOEs during the sample period
<i>High Disparity</i>	The indicator of high pay disparity prior to the Reform, equals 1 for firms with a pay disparity above the sample median in 2014, and 0 otherwise
<i>High Change</i>	An indicator variable that equals 1 if a firm's average pay ratio change between post-Reform and pre-Reform is lower than the sample median, and 0 otherwise
<u>Control variables</u>	
<i>Firm Size</i>	The natural logarithm of total assets
<i>BTM</i>	Book value of equity divided by market value of equity
<i>Stock Return</i>	Annual stock returns, adjusted for both dividends and splits
<i>ROA</i>	Operating income divided by total assets in the previous year
<i>Leverage</i>	Total liabilities divided by total assets
<i>Firm Risk</i>	The standard deviation of monthly stock returns during the reporting year
<i>CEO Duality</i>	The indicator of CEO-Chair duality, equals 1 for duality, and 0 otherwise
<i>CFO</i>	Net cash flow from operating activities divided by sales
<i>SGA</i>	Selling, general, and administrative expenses divided by sales

Variables	Definitions
<i>SOE</i>	Equals 1 for state-owned firms, and 0 otherwise
<i>Employee Pay</i>	The natural logarithm of average employee (excluding top management) pay
<i>Physical Cap</i>	The natural logarithm of net property, plant, and equipment per employee
<i>HHI</i>	Herfindahl-Hirschman Index, calculated by squaring the market share of each competing firm in industry and then summing the resulting numbers
<i>CEO Tenure</i>	The number of years of CEO tenure
<i>CEO Share%</i>	The percentage of firm shares held by the CEO
<i>CEO Age</i>	CEO age in years
<i>Political Connection</i>	Equals 1 if CEO has political connection, and 0 otherwise. Following Fan et al. (2007), a CEO is politically connected if s/he has working experience in government, army, or other government related organizations
<i>Foreign Ownership</i>	The proportion of firm shares held by foreign investors
<i>Employee Education</i>	The proportion of employees holding a bachelor's degree or above at the industry level
<i>Tunnelling</i>	Net other receivables scaled by total assets
<i>Perk Consumption</i>	The sum of expenses for business travel, business entertainment, overseas training, company cars, and board meetings
<i>Perk1</i>	Perk consumption scaled by total assets
<i>Perk2</i>	The natural logarithm of perk consumption per executive
<u><i>Individual items of culture</i></u>	
<i>#Museums</i>	The number of history museums per million capita at the province level
<i>Ancient Capital</i>	Equals 1 if the province has at least one city that was a highly influential capital city in China's history, and 0 otherwise
<i>#Temples</i>	The number of national key Buddhist monasteries per million capita at the province level
<i>Concession</i>	Equals 1 if the province has at least one city that was a forced concession after the First Opium War, and 0 otherwise
<i>Christian Edu</i>	Equals 1 if the province has at least one well-known Christian college after the First Opium War, and 0 otherwise
<i>Culture</i>	The aggregated standardized value of the five culture measures above

### Appendix 3: Principal component analysis

We conduct factor analysis to construct factors based on the five individual items of culture (*#Museums*, *Ancient Capital*, *#Temples*, *Concession*, and *Christian Edu*). Firstly, we perform a Bartlett test of sphericity and obtain a  $p$ -value below 0.001, suggesting that the correlation matrix of the five measures is significantly different from an identity matrix. Therefore, factor analysis is applied to combine these variables (Bartlett 1950; Dziuban and Shirkey 1974). We then perform a principal component analysis and generate five factors, two of which are retained as their Eigenvalues are larger than 1 (see Table A1). The first three cultural traditionality items, namely *#Museums*, *Ancient Capital*, and *#Temples*, significantly load on Factor1 (*Pro Culture*), while the last two items, *Concession* and *Christian Edu*, mainly load on Factor2 (*Anti Culture*) (see Table A2).

Table A1 Components derived from the PCA

Factor	Eigenvalue	Proportion of Explained Variance
Factor1	2.0985	0.4197
Factor2	1.6968	0.3394
Factor3	0.5316	0.1063
Factor4	0.4349	0.0870
Factor5	0.2382	0.0476

Table A2 Variable loadings after rotation

Variable	Factor1 ( <i>Pro Culture</i> )	Factor2 ( <i>Anti Culture</i> )
<i>#Museums</i>	0.837	0.074
<i>Ancient Capital</i>	0.835	0.006
<i>#Temples</i>	0.790	-0.085
<i>Concession</i>	-0.185	0.921
<i>Christian Edu</i>	0.198	0.916

**TABLE 1**  
*Sample selection and distribution*

<b>Panel A: Sample selection</b>				
	Firm-years (N)			
All listed companies from CSMAR database during 2012-2017	17,689			
Exclude B-share companies	(624)			
Exclude firms listed after 2014	(1,552)			
Exclude observations with zero CEO compensation	(591)			
Exclude observations with missing value in regressions	(2,145)			
Final sample	12,777			
<b>Panel B: Sample distribution by firm-year</b>				
Year	Non-SOE	SOE	Total	Non-SOE%
2012	1,443	599	2,042	29.33%
2013	1,538	590	2,128	27.73%
2014	1,494	559	2,053	27.23%
2015	1,615	570	2,185	26.09%
2016	1,613	575	2,188	26.28%
2017	1,604	577	2,181	26.46%
Total	9,307	3,470	12,777	27.16%

**TABLE 2**  
*Descriptive statistics*

**Panel A:** Full sample

Variable	N	Mean	SD	Q1	Median	Q3
<i>Pay Ratio_CEO</i>	12,777	7.387	6.513	3.569	5.572	8.924
<i>Pay Ratio_TOP3</i>	12,777	6.902	5.407	3.603	5.342	8.332
<i>Pay Ratio_ALL</i>	12,777	3.333	2.398	1.852	2.693	4.026
<i>Avg_Rev</i>	12,777	13.740	0.908	13.130	13.630	14.230
<i>TFP</i>	12,777	0.189	1.080	-0.423	0.261	0.883
<i>Firm Size</i>	12,777	22.110	1.261	21.250	21.970	22.830
<i>BTM</i>	12,777	0.396	0.267	0.209	0.340	0.514
<i>Stock Return</i>	12,777	0.219	0.564	-0.161	0.0763	0.443
<i>ROA</i>	12,777	0.036	0.065	0.010	0.034	0.067
<i>Leverage</i>	12,777	0.435	0.218	0.260	0.423	0.596
<i>Firm Risk</i>	12,777	0.137	0.066	0.093	0.123	0.163
<i>CEO Duality</i>	12,777	0.254	0.435	0.000	0.000	1.000
<i>CFO</i>	12,777	0.072	0.232	0.004	0.073	0.164
<i>SGA</i>	12,777	0.723	0.283	0.630	0.752	0.844
<i>Employee Pay</i>	12,777	11.430	0.516	11.090	11.380	11.720
<i>Physical Cap</i>	12,777	12.540	1.112	11.890	12.530	13.200
<i>HHI</i>	12,777	0.147	0.152	0.053	0.085	0.192
<i>CEO Tenure</i>	12,777	4.076	3.458	1.000	3.000	6.000
<i>CEO Share%</i>	12,777	4.542	11.000	0.000	0.000	1.059
<i>CEO Age</i>	12,777	49.060	6.447	45.000	49.000	53.000
<i>Political Connection</i>	12,777	0.162	0.368	0.000	0.000	0.000
<i>Foreign Ownership</i>	12,777	0.515	3.505	0.000	0.000	0.000
<i>Employee Education</i>	12,777	0.281	0.116	0.222	0.240	0.331
<i>History Museums</i>	12,777	239.900	121.400	134.000	241.000	295.000
<i>Ancient Capital</i>	12,777	0.379	0.485	0.000	0.000	1.000
<i>Buddhist Monasteries</i>	12,777	6.060	5.253	2.000	5.000	13.000
<i>Concession</i>	12,777	0.638	0.481	0.000	1.000	1.000
<i>Christian Edu</i>	12,777	0.728	0.445	0.000	1.000	1.000
<i>Culture</i>	12,777	-0.001	3.051	-2.559	-0.312	1.922

**Panel B:** Pre- and post the 2015 pay-cut regulation

SOEs	Pre-regulation (2012-2014)		Post-regulation (2015-2017)		Difference (Post minus Pre)
	N	Mean	N	Mean	
<i>Pay Ratio_CEO</i>	1,748	6.728	1,722	5.923	-0.805***
<i>Pay Ratio_TOP3</i>	1,748	6.309	1,722	5.878	-0.431***
<i>Pay Ratio_ALL</i>	1,748	3.265	1,722	3.059	-0.206***
<i>Avg_Rev</i>	1,748	13.933	1,722	14.004	0.071**
<i>TFP</i>	1,748	0.481	1,722	0.554	0.073**

  

Non-SOEs	Pre-regulation (2012-2014)		Post-regulation (2015-2017)		Difference (Post minus Pre)
	N	Mean	N	Mean	
<i>Pay Ratio_CEO</i>	4,475	7.830	4,832	7.736	-0.094
<i>Pay Ratio_TOP3</i>	4,475	7.140	4,832	7.262	0.122
<i>Pay Ratio_ALL</i>	4,475	3.376	4,832	3.415	0.039
<i>Avg_Rev</i>	4,475	13.565	4,832	13.727	0.162***
<i>TFP</i>	4,475	-0.081	4,832	0.205	0.286***

**TABLE 3**

*Main results: Pay disparity and employee productivity*

**Panel A: The 2015 Reform and pay disparity (First DID)**

Variable	Dependent variable					
	<i>Pay Ratio_CEO</i>	<i>Pay Ratio_TOP3</i>	<i>Pay Ratio_ALL</i>	<i>Pay Ratio_CEO</i>	<i>Pay Ratio_TOP3</i>	<i>Pay Ratio_ALL</i>
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Post</i>	-0.505*** (-2.664)	-0.348** (-2.194)	-0.164** (-2.237)	0.147 (0.754)	0.189 (1.276)	0.173** (2.328)
<i>Post*High Disparity</i>				-1.623*** (-5.035)	-1.308*** (-4.794)	-0.720*** (-6.087)
<i>Firm Size</i>	1.131*** (6.183)	1.247*** (7.527)	0.576*** (7.606)	1.184*** (6.356)	1.304*** (7.730)	0.595*** (7.714)
<i>BTM</i>	-1.217*** (-3.114)	-1.123*** (-3.449)	-0.460*** (-3.116)	-1.285*** (-3.075)	-1.127*** (-3.272)	-0.433*** (-2.826)
<i>Stock Return</i>	-0.001 (-0.006)	0.005 (0.066)	0.003 (0.085)	-0.012 (-0.118)	0.008 (0.096)	0.009 (0.256)
<i>ROA</i>	5.703*** (6.661)	4.150*** (5.755)	1.329*** (4.203)	5.564*** (6.227)	4.029*** (5.350)	1.283*** (3.894)
<i>Firm Risk</i>	1.118 (1.285)	0.453 (0.690)	0.251 (0.859)	1.157 (1.279)	0.458 (0.670)	0.225 (0.747)
<i>CEO Duality</i>	0.623*** (2.929)	0.493*** (3.217)	-0.049 (-0.749)	0.638*** (2.950)	0.494*** (3.185)	-0.051 (-0.770)
<i>Physical Cap</i>	-0.971*** (-8.244)	-0.885*** (-8.837)	-0.424*** (-9.369)	-0.982*** (-8.119)	-0.895*** (-8.697)	-0.432*** (-9.288)
<i>HHI</i>	0.608 (0.887)	0.849 (1.299)	0.398 (1.474)	0.605 (0.875)	0.895 (1.362)	0.410 (1.506)
<i>Political Connection</i>	0.526** (2.116)	0.401** (2.477)	0.188** (2.570)	0.502* (1.948)	0.398** (2.369)	0.182** (2.412)

<i>Foreign Ownership</i>	0.010 (0.483)	0.014 (1.021)	0.008 (1.441)	0.010 (0.467)	0.013 (0.989)	0.008 (1.433)
<i>Employee Education</i>	-4.729*** (-3.536)	-3.877*** (-3.574)	-1.777*** (-3.868)	-4.596*** (-3.384)	-3.753*** (-3.415)	-1.720*** (-3.705)
N	12,777	12,777	12,777	12,777	12,777	12,777
Adj R-squared	0.715	0.753	0.749	0.716	0.754	0.750
Prob > F	0.000	0.000	0.000	0.000	0.000	0.000
Fixed effects	Firm and Year	Firm and Year	Firm and Year	Firm and Year	Firm and Year	Firm and Year
Clustering	Firm	Firm	Firm	Firm	Firm	Firm

**Panel B: The 2015 Reform and employee productivity (Second DID)**

Variable	Dependent variable			
	<i>Avg_Rev</i> (1)	<i>TFP</i> (2)	<i>Avg_Rev</i> (3)	<i>TFP</i> (4)
<i>Post</i>	-0.042* (-1.914)	-0.112*** (-3.987)	0.020 (0.667)	-0.022 (-0.585)
<i>Post*High Change</i>			-0.112*** (-3.164)	-0.162*** (-3.519)
<i>Firm Size</i>	0.135*** (4.921)	0.536*** (16.948)	0.132*** (4.821)	0.532*** (16.830)
<i>Leverage</i>	-0.052 (-0.655)	0.189** (2.157)	-0.049 (-0.623)	0.193** (2.203)
<i>CFO</i>	0.220*** (5.366)	0.232*** (5.713)	0.219*** (5.370)	0.231*** (5.731)
<i>SGA</i>	0.039 (0.813)	-0.052 (-0.948)	0.040 (0.826)	-0.051 (-0.919)
<i>Employee Pay</i>	0.762*** (23.016)	0.282*** (7.385)	0.768*** (23.271)	0.290*** (7.639)
<i>Physical Cap</i>	0.063*** (3.340)	-0.077*** (-3.923)	0.064*** (3.355)	-0.076*** (-3.899)
<i>HHI</i>	-0.054 (-0.523)	0.026 (0.229)	-0.052 (-0.501)	0.029 (0.256)
<i>CEO Tenure</i>	-0.002 (-0.880)	0.002 (0.888)	-0.002 (-0.946)	0.002 (0.821)
<i>CEO Share%</i>	0.000 (0.220)	-0.000 (-0.027)	0.000 (0.237)	-0.000 (-0.003)
<i>CEO Age</i>	-0.000 (-0.367)	0.000 (0.256)	-0.001 (-0.386)	0.000 (0.232)
<i>Political Connection</i>	-0.032 (-1.478)	0.004 (0.184)	-0.032 (-1.502)	0.003 (0.145)
<i>Foreign Ownership</i>	0.003** (2.150)	0.001 (0.711)	0.003** (2.169)	0.001 (0.754)
<i>Employee Education</i>	-0.216 (-0.903)	-0.044 (-0.185)	-0.217 (-0.909)	-0.046 (-0.193)
N	12,777	12,777	12,777	12,777
Adj R-squared	0.867	0.876	0.867	0.877
Prob > F	0.000	0.000	0.000	0.000
Fixed effects	Firm and Year	Firm and Year	Firm and Year	Firm and Year
Clustering	Firm	Firm	Firm	Firm

*Notes:* This table presents the main results of the two-step DID analysis. Panel A reports the DID estimate of the impact of the 2015 Reform on pay disparity. Panel B presents the DID estimate of the impact of the 2015 Reform on employee productivity. Variables are defined in Appendix 2. Firm clustered standard errors are in parentheses. \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% level, respectively.

**TABLE 4***Cross-sectional analysis: The moderating effect of cultural traditionality on the relation between pay disparity and employee productivity***Panel A: Measuring employee productivity by *Avg\_Rev***

Variable	Dependent variable = <i>Avg_Rev</i>					
	<i>#Museums</i>	<i>Ancient Capital</i>	<i>#Temples</i>	<i>Concession</i>	<i>Christian Edu</i>	<i>Culture</i>
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Post* Culture Variable</i>	-0.009 (-1.111)	-0.071* (-1.897)	-0.220* (-1.804)	0.060* (1.709)	0.060* (1.657)	-0.015*** (-3.258)
<i>Post</i>	-0.000 (-0.005)	-0.020 (-0.795)	-0.012 (-0.458)	-0.074*** (-2.814)	-0.079** (-2.491)	-0.038* (-1.747)
<i>Culture Variable</i>	0.072 (1.392)	0.168 (0.696)	1.069 (1.333)	-0.195 (-1.028)	0.043 (0.312)	0.041 (1.319)
<i>Firm Size</i>	0.135*** (4.902)	0.136*** (4.961)	0.136*** (5.000)	0.133*** (4.880)	0.134*** (4.914)	0.136*** (4.961)
<i>Leverage</i>	-0.055 (-0.706)	-0.053 (-0.676)	-0.056 (-0.730)	-0.064 (-0.817)	-0.051 (-0.650)	-0.055 (-0.707)
<i>CFO</i>	0.221*** (5.382)	0.219*** (5.355)	0.220*** (5.362)	0.221*** (5.399)	0.220*** (5.380)	0.220*** (5.375)
<i>SGA</i>	0.039 (0.816)	0.039 (0.812)	0.039 (0.815)	0.039 (0.815)	0.039 (0.812)	0.039 (0.813)
<i>Employee Pay</i>	0.760*** (23.033)	0.761*** (23.002)	0.761*** (23.058)	0.760*** (23.173)	0.762*** (23.016)	0.761*** (23.024)
<i>Physical Cap</i>	0.064*** (3.382)	0.064*** (3.356)	0.064*** (3.375)	0.066*** (3.587)	0.064*** (3.366)	0.064*** (3.408)
<i>HHI</i>	-0.057 (-0.558)	-0.052 (-0.507)	-0.055 (-0.531)	-0.050 (-0.487)	-0.053 (-0.515)	-0.054 (-0.523)
<i>CEO Tenure</i>	-0.002 (-0.812)	-0.002 (-0.873)	-0.002 (-0.882)	-0.002 (-0.872)	-0.002 (-0.896)	-0.002 (-0.858)
<i>CEO Share%</i>	0.000 (0.242)	0.000 (0.214)	0.000 (0.219)	0.000 (0.253)	0.000 (0.227)	0.000 (0.242)
<i>CEO Age</i>	-0.000	-0.001	-0.000	-0.000	-0.000	-0.000

Variable	Dependent variable = <i>Avg_Rev</i>					
	<i>#Museums</i> (1)	<i>Ancient Capital</i> (2)	<i>#Temples</i> (3)	<i>Concession</i> (4)	<i>Christian Edu</i> (5)	<i>Culture</i> (6)
	(-0.331)	(-0.382)	(-0.315)	(-0.337)	(-0.356)	(-0.348)
<i>Political Connection</i>	-0.032	-0.031	-0.031	-0.033	-0.032	-0.032
	(-1.469)	(-1.433)	(-1.445)	(-1.536)	(-1.496)	(-1.481)
<i>Foreign Ownership</i>	0.003**	0.003**	0.003**	0.003**	0.003**	0.003**
	(2.141)	(2.157)	(2.117)	(2.135)	(2.152)	(2.123)
<i>Employee Education</i>	-0.213	-0.216	-0.216	-0.219	-0.220	-0.222
	(-0.893)	(-0.904)	(-0.905)	(-0.914)	(-0.917)	(-0.926)
N	12,777	12,777	12,777	12,777	12,777	12,777
Adj R-squared	0.867	0.867	0.867	0.867	0.867	0.867
Prob > F	0.000	0.000	0.000	0.000	0.000	0.000
Fixed effects	Firm and Year	Firm and Year	Firm and Year	Firm and Year	Firm and Year	Firm and Year
Clustering	Firm	Firm	Firm	Firm	Firm	Firm

**Panel B:** Measuring employee productivity by *TFP*

Variable	Dependent variable = <i>TFP</i>					
	<i>#Museums</i>	<i>Ancient Capital</i>	<i>#Temples</i>	<i>Concession</i>	<i>Christian Edu</i>	<i>Culture</i>
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Post* Culture Variable</i>	-0.032*** (-2.660)	-0.088* (-1.710)	-0.470** (-2.525)	0.090** (1.987)	0.061 (1.336)	-0.026*** (-3.510)
<i>Post</i>	0.036 (0.670)	-0.085*** (-2.716)	-0.047 (-1.376)	-0.158*** (-4.231)	-0.150*** (-3.830)	-0.104*** (-3.801)
<i>Culture Variable</i>	0.032 (0.672)	0.012 (0.067)	-0.154 (-0.194)	0.120 (0.599)	-0.077 (-0.316)	0.003 (0.100)
<i>Firm Size</i>	0.536*** (17.070)	0.537*** (16.945)	0.537*** (17.021)	0.535*** (16.975)	0.535*** (16.914)	0.537*** (16.972)
<i>Leverage</i>	0.189** (2.178)	0.189** (2.157)	0.192** (2.220)	0.191** (2.206)	0.190** (2.158)	0.192** (2.214)
<i>CFO</i>	0.232*** (5.686)	0.232*** (5.701)	0.233*** (5.739)	0.232*** (5.696)	0.232*** (5.727)	0.232*** (5.714)
<i>SGA</i>	-0.052 (-0.943)	-0.052 (-0.954)	-0.052 (-0.957)	-0.053 (-0.989)	-0.052 (-0.955)	-0.053 (-0.972)
<i>Employee Pay</i>	0.282*** (7.385)	0.281*** (7.378)	0.283*** (7.458)	0.280*** (7.427)	0.282*** (7.371)	0.282*** (7.421)
<i>Physical Cap</i>	-0.076*** (-3.918)	-0.076*** (-3.900)	-0.076*** (-3.881)	-0.074*** (-3.804)	-0.076*** (-3.905)	-0.075*** (-3.844)
<i>HHI</i>	0.023 (0.201)	0.029 (0.251)	0.023 (0.201)	0.031 (0.269)	0.028 (0.239)	0.028 (0.242)
<i>CEO Tenure</i>	0.002 (0.945)	0.002 (0.901)	0.002 (0.865)	0.002 (0.854)	0.002 (0.871)	0.002 (0.888)
<i>CEO Share%</i>	-0.000 (-0.025)	-0.000 (-0.034)	-0.000 (-0.031)	-0.000 (-0.019)	-0.000 (-0.017)	-0.000 (-0.022)
<i>CEO Age</i>	0.000 (0.218)	0.000 (0.210)	0.000 (0.207)	0.000 (0.250)	0.000 (0.268)	0.000 (0.203)
<i>Political Connection</i>	0.005	0.005	0.006	0.004	0.003	0.005

Variable	Dependent variable = <i>TFP</i>					
	<i>#Museums</i>	<i>Ancient Capital</i>	<i>#Temples</i>	<i>Concession</i>	<i>Christian Edu</i>	<i>Culture</i>
	(1)	(2)	(3)	(4)	(5)	(6)
	(0.243)	(0.234)	(0.256)	(0.185)	(0.146)	(0.225)
<i>Foreign Ownership</i>	0.001	0.001	0.001	0.001	0.001	0.001
	(0.701)	(0.726)	(0.701)	(0.770)	(0.714)	(0.729)
<i>Employee Education</i>	-0.040	-0.046	-0.045	-0.045	-0.048	-0.053
	(-0.168)	(-0.192)	(-0.190)	(-0.190)	(-0.202)	(-0.223)
N	12,777	12,777	12,777	12,777	12,777	12,777
Adj R-squared	0.877	0.877	0.877	0.877	0.877	0.877
Prob > F	0.000	0.000	0.000	0.000	0.000	0.000
Fixed effects	Firm and Year	Firm and Year	Firm and Year	Firm and Year	Firm and Year	Firm and Year
Clustering	Firm	Firm	Firm	Firm	Firm	Firm

*Notes:* This table presents the DID estimate of the moderating effect of cultural traditionality on the relation between pay disparity and employee productivity. In Panel A, the dependent variable is *Ave\_Rev*, the natural logarithm of revenue per employee. In Panel B, the dependent variable is *TFP*, which is the residual of industry-specific Cobb-Douglas production function. *Culture Variable* denotes one of the proxies for cultural traditionality, including *#Museums*, *Ancient Capital*, *#Temples*, *Concession*, *Christian Edu*, and *Culture*. Other variables are defined in Appendix 2. Firm clustered standard errors are in parentheses. \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% level, respectively.

**TABLE 5***Robustness test: Traditional DID design using an entropy balanced sample***Panel A: Balancing tests**

Variable	SOE	Non-SOE (Before balancing)	Difference (Before balancing)	Non-SOE (After balancing)	Difference (After balancing)
<i>Lag(Pay Ratio_CEO)</i>	6.494	7.857	-1.363***	6.494	0.000
<i>Lag(Avg_Rev)</i>	13.940	13.600	0.340***	13.940	0.000
<i>Firm Size</i>	22.760	21.900	0.860***	22.760	0.000
<i>Leverage</i>	0.526	0.408	0.118***	0.526	0.000
<i>CFO</i>	0.081	0.068	0.013***	0.081	0.000
<i>SGA</i>	0.771	0.707	0.064***	0.771	0.000
<i>Employee Pay</i>	11.580	11.380	0.200***	11.580	0.000
<i>Physical Cap</i>	12.840	12.440	0.400***	12.840	0.000
<i>HHI</i>	0.152	0.145	0.007**	0.152	0.000
<i>CEO Tenure</i>	3.442	4.391	-0.949***	3.442	0.000
<i>CEO Share%</i>	0.084	5.852	-5.768***	0.085	-0.001
<i>CEO Age</i>	50.130	48.710	1.420***	50.130	0.000
<i>Political Connection</i>	0.093	0.186	-0.093***	0.093	0.000
<i>Foreign Ownership</i>	0.149	0.561	-0.412***	0.149	0.000
<i>Employee Education</i>	0.277	0.283	-0.006***	0.277	0.000
<i>BTM</i>	0.513	0.352	0.161***	0.513	0.000
<i>Stock Return</i>	0.149	0.244	-0.095***	0.149	0.000
<i>ROA</i>	0.028	0.038	-0.010***	0.028	0.000
<i>Firm Risk</i>	0.126	0.141	-0.015***	0.126	0.000
<i>CEO Duality</i>	0.102	0.304	-0.202***	0.102	0.000

**Panel B: The 2015 Reform and pay disparity (First DID)**

Variable	Dependent variable		
	<i>Pay Ratio_CEO</i>	<i>Pay Ratio_TOP3</i>	<i>Pay Ratio_ALL</i>
	(1)	(2)	(3)
<i>SOE*Post</i>	-0.774*** (-3.371)	-0.580*** (-2.926)	-0.240*** (-2.648)
<i>SOE</i>	-0.079 (-0.284)	-0.083 (-0.338)	0.056 (0.496)
<i>Post</i>	0.069 (0.300)	0.121 (0.597)	-0.005 (-0.059)
<i>Firm Size</i>	1.003*** (7.038)	1.074*** (7.979)	0.550*** (8.899)
<i>BTM</i>	-0.077 (-0.112)	-0.382 (-0.635)	-0.122 (-0.507)
<i>Stock Return</i>	0.487** (2.353)	0.317* (1.699)	0.140* (1.815)
<i>ROA</i>	11.438*** (7.830)	9.430*** (7.205)	3.678*** (6.076)
<i>Firm Risk</i>	-2.645* (-1.835)	-1.258 (-0.925)	-0.231 (-0.371)
<i>CEO Duality</i>	0.890** (2.184)	0.428 (1.313)	-0.100 (-0.738)
<i>Physical Cap</i>	-1.027*** (-7.393)	-0.975*** (-7.915)	-0.514*** (-8.573)
<i>HHI</i>	-0.902 (-0.888)	-1.367 (-1.462)	-0.743* (-1.648)
<i>Political Connection</i>	0.910** (2.465)	1.087*** (3.421)	0.475*** (3.269)
<i>Foreign Ownership</i>	0.181** (2.434)	0.167* (1.951)	0.051* (1.672)
<i>Employee Education</i>	-0.105 (-0.055)	-0.054 (-0.033)	0.137 (0.190)
N	12,379	12,379	12,379
Adj R-squared	0.117	0.148	0.155
Prob > F	0.000	0.000	0.000
Fixed effects	Industry	Industry	Industry
Clustering	Firm	Firm	Firm

**Panel C: The 2015 Reform and employee productivity (Second DID)**

Variable	Dependent variable			
	<i>Avg_Rev</i>	<i>TFP</i>	<i>Avg_Rev</i>	<i>TFP</i>
	(1)	(2)	(3)	(4)
<i>SOE*Post*Culture</i>			-0.035*** (-3.256)	-0.035** (-1.966)
<i>SOE*Post</i>	-0.065** (-2.156)	-0.037 (-0.823)	-0.055* (-1.822)	-0.026 (-0.613)
<i>SOE*Culture</i>			0.023* (1.704)	0.021 (1.132)
<i>Post*Culture</i>			0.018* (1.893)	0.014 (0.930)
<i>Culture</i>			-0.015 (-1.300)	-0.030** (-2.176)
<i>SOE</i>	-0.025 (-0.668)	-0.010 (-0.190)	-0.031 (-0.846)	-0.016 (-0.330)
<i>Post</i>	-0.038 (-1.293)	-0.040 (-0.962)	-0.043 (-1.492)	-0.044 (-1.103)
<i>Firm Size</i>	0.116*** (6.822)	0.344*** (8.503)	0.116*** (6.825)	0.351*** (8.976)
<i>Leverage</i>	0.184* (1.717)	0.446*** (2.781)	0.189* (1.759)	0.445*** (2.800)
<i>CFO</i>	0.190* (1.713)	0.351*** (2.729)	0.189* (1.718)	0.348*** (2.721)
<i>SGA</i>	0.933*** (3.973)	1.117*** (4.058)	0.928*** (3.939)	1.104*** (3.979)
<i>Employee Pay</i>	0.827*** (18.923)	0.398*** (6.842)	0.827*** (19.008)	0.389*** (6.814)
<i>Physical Cap</i>	0.144*** (7.508)	-0.149*** (-6.119)	0.144*** (7.526)	-0.145*** (-5.976)
<i>HHI</i>	-0.042 (-0.244)	-0.385 (-1.385)	-0.043 (-0.248)	-0.378 (-1.411)
<i>CEO Tenure</i>	-0.000 (-0.078)	0.011** (2.094)	-0.001 (-0.163)	0.009* (1.796)
<i>CEO Share%</i>	0.043* (1.703)	0.034* (1.750)	0.043* (1.703)	0.033* (1.736)
<i>CEO Age</i>	-0.006** (-2.470)	-0.002 (-0.706)	-0.006** (-2.499)	-0.002 (-0.637)
<i>Political Connection</i>	-0.041 (-1.033)	0.014 (0.234)	-0.042 (-1.063)	0.008 (0.129)
<i>Foreign Ownership</i>	0.012* (1.890)	0.016* (1.818)	0.012* (1.878)	0.015* (1.707)
<i>Employee Education</i>	-0.592** (-2.560)	0.032 (0.102)	-0.596*** (-2.581)	0.013 (0.040)
N	12,379	12,379	12,379	12,379
Adj R-squared	0.551	0.301	0.551	0.305
Prob > F	0.000	0.000	0.000	0.000
Fixed effects	Industry	Industry	Industry	Industry
Clustering	Firm	Firm	Firm	Firm

**Panel D: Dynamic DID analysis**

Variable	Dependent variable				
	<i>Pay Ratio_CEO</i>	<i>Pay Ratio_TOP3</i>	<i>Pay Ratio_ALL</i>	<i>Avg_Rev</i>	<i>TFP</i>
	(1)	(2)	(3)	(4)	(5)
<i>SOE*Pre1</i>	-0.006 (-0.024)	-0.052 (-0.257)	-0.052 (-0.535)	0.038 (1.327)	-0.002 (-0.046)
<i>SOE*Post1</i>	-0.913*** (-2.931)	-0.607** (-2.378)	-0.293** (-2.310)	-0.100*** (-2.636)	-0.094* (-1.940)
<i>SOE*Post2</i>	-1.156*** (-3.447)	-0.914*** (-3.072)	-0.413*** (-3.041)	-0.058 (-1.306)	-0.029 (-0.463)
<i>SOE*Post3</i>	-0.868** (-2.386)	-0.640** (-2.162)	-0.272* (-1.956)	-0.081* (-1.922)	-0.048 (-0.791)
<i>SOE</i>	0.136 (0.428)	0.069 (0.254)	0.141 (1.099)	-0.011 (-0.265)	0.009 (0.164)
<i>Pre1</i>	-0.321* (-1.759)	-0.159 (-1.070)	-0.047 (-0.652)	-0.068*** (-2.706)	-0.009 (-0.264)
<i>Post1</i>	-0.045 (-0.136)	-0.019 (-0.065)	0.019 (0.141)	-0.087** (-2.325)	-0.076* (-1.794)
<i>Post2</i>	0.008 (0.025)	0.161 (0.582)	-0.005 (-0.040)	-0.114*** (-2.778)	-0.115** (-2.172)
<i>Post3</i>	-0.151 (-0.489)	-0.022 (-0.083)	-0.074 (-0.621)	-0.033 (-0.834)	-0.002 (-0.031)
Controls	Included	Included	Included	Included	Included
N	10,331	10,331	10,331	10,331	10,331
Adj R-squared	0.116	0.150	0.156	0.561	0.304
Prob > F	0.000	0.000	0.000	0.000	0.000
Fixed effects	Industry	Industry	Industry	Industry	Industry
Clustering	Firm	Firm	Firm	Firm	Firm

*Notes:* This table presents the results of entropy balancing-DID analysis. Panel A reports the balancing tests before and after entropy balancing. In Panel B, we test the impact of the pay-cut regulation on vertical pay disparity. The variable *Post* equals one for firm-years after 2014, and zero otherwise. Panel C reports the impact of the Reform on productivity as well as the moderating effects of culture traditionality. In Panel D, we test the parallel trend assumption and the dynamic DID effects of the Reform (pay disparity). The variables *Pre1*, *Post1*, *Post2*, and *Post3* are a set of year indicators that lead or lag around the year of the Reform (2015). Other variables are defined in Appendix 2. Firm clustered standard errors are in parentheses. \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% level, respectively.

**TABLE 6**  
*Robustness test: Instrumental variable (IV) approach*

Variable	Dependent variable			
	<i>Avg_Rev</i> (1)	<i>TFP</i> (2)	<i>Avg_Rev</i> (3)	<i>TFP</i> (4)
<i>Fitted Pay Ratio</i>			0.079*	0.100*
<i>*High Culture</i>			(1.923)	(1.646)
<i>Fitted Pay Ratio</i>	0.206*** (13.432)	0.179*** (10.328)	0.204*** (13.246)	0.175*** (10.103)
<i>High Culture</i>			-0.647** (-2.069)	-1.199** (-2.000)
<i>Firm Size</i>	-0.097*** (-3.031)	0.340*** (9.315)	-0.098*** (-3.043)	0.340*** (9.303)
<i>Leverage</i>	0.042 (0.537)	0.277*** (3.223)	0.042 (0.551)	0.278*** (3.248)
<i>CFO</i>	0.181*** (4.558)	0.197*** (5.035)	0.182*** (4.606)	0.199*** (5.078)
<i>SGA</i>	0.078 (0.971)	-0.019 (-0.234)	0.078 (0.975)	-0.019 (-0.232)
<i>Employee Pay</i>	0.750*** (23.433)	0.274*** (7.306)	0.750*** (23.456)	0.274*** (7.321)
<i>Physical Cap</i>	0.282*** (10.651)	0.112*** (4.061)	0.280*** (10.631)	0.110*** (4.004)
<i>HHI</i>	-0.213** (-2.075)	-0.116 (-0.991)	-0.215** (-2.099)	-0.117 (-1.007)
<i>CEO Tenure</i>	-0.002 (-0.884)	0.003 (1.269)	-0.002 (-0.903)	0.003 (1.253)
<i>CEO Share%</i>	-0.002** (-2.126)	-0.003** (-2.359)	-0.002** (-2.166)	-0.003** (-2.390)
<i>CEO Age</i>	-0.002 (-1.308)	-0.001 (-0.584)	-0.002 (-1.314)	-0.001 (-0.617)
<i>Political Connection</i>	-0.151*** (-6.591)	-0.100*** (-4.193)	-0.150*** (-6.534)	-0.097*** (-4.110)
<i>Foreign Ownership</i>	0.002 (1.048)	-0.001 (-0.767)	0.002 (1.066)	-0.001 (-0.731)
<i>Employee Education</i>	0.796*** (3.275)	0.833*** (3.426)	0.791*** (3.254)	0.825*** (3.392)
N	12,777	12,777	12,777	12,777
Adj R-squared	0.874	0.880	0.874	0.880
Prob > F	0.000	0.000	0.000	0.000
Fixed effects	Firm and Year	Firm and Year	Firm and Year	Firm and Year
Clustering	Firm	Firm	Firm	Firm

*Notes:* This table presents the 2SLS estimate of the impact of vertical pay disparity on employee productivity as well as the moderating effect of cultural traditionality. *Fitted Pay Ratio* is the estimated value of *Pay Ratio\_CEO* based on Eq. (4). *High Culture* is an indicator for high levels of cultural traditionality (i.e., top 10% values of *Culture*). Other variables are defined in Appendix 2. Firm clustered standard errors are in parentheses. \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% level, respectively.

**TABLE 7**  
*Other robustness checks*

**Panel A: Control for the impact of local government leader turnover**

First DID	Dependent variable		
	<i>Pay Ratio_CEO</i> (1)	<i>Pay Ratio_TOP3</i> (2)	<i>Pay Ratio_ALL</i> (3)
<i>Post</i>	-0.528** (-2.488)	-0.396** (-2.251)	-0.177** (-2.232)
<i>Promotion Incentive</i>	-0.005 (-0.053)	0.035 (0.531)	0.014 (0.487)
Controls	Included	Included	Included
N	9,657	9,657	9,657
Adj R-squared	0.706	0.754	0.756
Prob > F	0.000	0.000	0.000
Fixed effects	Firm and Year	Firm and Year	Firm and Year
Clustering	Firm	Firm	Firm

  

Second DID	Dependent variable	
	<i>Avg_Rev</i> (1)	<i>TFP</i> (2)
<i>Post</i>	-0.046** (-2.008)	-0.078*** (-2.775)
<i>Promotion Incentive</i>	0.000 (0.023)	-0.004 (-0.434)
Controls	Included	Included
N	9,657	9,657
Adj R-squared	0.862	0.883
Prob > F	0.000	0.000
Fixed effects	Firm and Year	Firm and Year
Clustering	Firm	Firm

**Panel B: Principal component analysis**

Variable	Dependent variable	
	<i>Avg_Rev</i> (1)	<i>TFP</i> (2)
<i>Post* Pro Culture</i>	-0.033** (-2.134)	-0.071*** (-2.710)
<i>Post*Anti Culture</i>	0.030* (1.803)	0.038* (1.850)
<i>Post</i>	-0.037 (-1.642)	-0.107*** (-3.729)
<i>Pro Culture</i>	0.131 (1.303)	0.024 (0.282)
<i>Anti Culture</i>	-0.013 (-0.169)	0.032 (0.296)
Controls	Included	Included
N	12,777	12,777
Adj R-squared	0.867	0.877
Prob > F	0.000	0.000
Fixed effects	Firm and Year	Firm and Year
Clustering	Firm	Firm

*Notes:* This table presents the results of other robustness tests. Panel A reports the DID estimate of the impact of vertical pay disparity on employee productivity, while controlling for the impact of local government leader turnover. *Promotion Incentive* is a binary indicator equal to 1 if a local politician has high promotion incentives (i.e., s/he is younger than 57 years old and has a turnover in the following year), and 0 otherwise. Panel B presents the DID estimate of the moderating effect of cultural traditionality on the relation between vertical pay disparity and employee productivity, where cultural traditionality is constructed using principal component analysis. Specifically, *#Museums*, *Ancient Capital*, and *#Temples* load on *Pro Culture*, while *Concession* and *Christian Edu* comprise *Anti Culture*. Variables are defined in Appendix 2. Firm clustered standard errors are in parentheses. \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% level, respectively.

**TABLE 8**  
*Additional analysis: Pay disparity and firm value*

Variable	Dependent variable	
	<i>Adj Stock Return</i>	<i>Adj Tobin's Q</i>
	(1)	(2)
<i>Post</i>	-0.096*** (-6.076)	-0.431*** (-9.855)
<i>Firm Size</i>	-0.051*** (-3.633)	-1.016*** (-21.042)
<i>Leverage</i>	0.070 (1.455)	0.807*** (5.769)
<i>CFO</i>	0.102*** (3.833)	0.076 (1.310)
<i>SGA</i>	-0.029 (-0.548)	-0.031 (-0.629)
<i>Employee Pay</i>	-0.027 (-1.281)	0.172*** (3.701)
<i>Physical Cap</i>	-0.008 (-0.776)	-0.064** (-2.135)
<i>HHI</i>	-0.020 (-0.270)	-0.148 (-0.791)
<i>CEO Tenure</i>	-0.004** (-2.003)	0.003 (0.577)
<i>CEO Share%</i>	0.001 (0.692)	-0.006*** (-2.827)
<i>CEO Age</i>	-0.000 (-0.197)	0.000 (0.060)
<i>Political Connection</i>	-0.007 (-0.349)	-0.053 (-1.238)
<i>Foreign Ownership</i>	-0.001 (-0.527)	-0.028*** (-5.177)
<i>Employee Education</i>	-0.416*** (-3.044)	-0.113 (-0.418)
N	12,777	12,248
Adj R-squared	0.140	0.744
Prob > F	0.000	0.000
Fixed effects	Firm and Year	Firm and Year
Clustering	Firm	Firm

*Notes:* This table presents the results of the impact of the 2015 Reform on firm value. Variables are defined in Appendix 2. Firm clustered standard errors are in parentheses. \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% level, respectively.