The Impact of Sin Culture:

Evidence from Earning Management and Alcohol Consumption in China

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Abstract

We study whether culture plays an important role in affecting firm incentives when formal institutions fall short. We link earnings management to alcohol-related sin culture in China, and we find that firms in regions in which alcohol plays a more prominent role show more earnings management. Tests using the regional gender ratio and snow/temperature as instruments suggest a causal interpretation. Moreover, a high level of alcohol consumption in CEOs' home region significantly enhances earnings management, suggesting that corporate leaders can transmit and propagate sin culture in society. We also find that culture can generate a negative externality by further reducing the likelihood of fraud detection; however, improvements in formal institutions (e.g., the 2012 anticorruption regulation) can suppress the negative impact of sin culture. Furthermore, the negative impact of culture is more significant in regions with low social trust. Our results shed new light on the impact of culture on the real economy.

Key words: Culture, Earnings management, Alcohol, Geographic shocks

JEL Classification Codes: G30, M14, P48

Introduction

Vast evidence shows that culture, which can be broadly defined as pervasive values and beliefs passed on through generations,[1] plays an important role in shaping our modern economy and the financial markets. Take the two most widely studied components of culture, namely, religion and social trust, as an example. Since the seminal work of Weber (1930) and Landes (1998) showing the critical role of religion in the development of capitalism,[2] religion has been shown to affect, among other outcomes, government quality (La Porta et al., 1999), economic attitudes (Guiso, Sapienza, and Zingales, 2003), creditors' rights (Stulz and Williamson, 2003), and corporate decisions (Hilary and Hui, 2009). Moreover, social trust is no less fundamental a factor given that "virtually every commercial transaction has within itself an element of trust" (Arrow, 1972). In particular, since trust facilitates collective actions (e.g., Putnam1993; see also Coleman, 1990 and Fukuyama, 1995) and overcomes contracting incompleteness (Arrow, 1972, Williamson, 1993), it appears to enhance economic growth (Knack and Keefer, 1997), international trade (Guiso, Sapienza, and Zingales, 2009), and financial development (Guiso, Sapienza, and Zingales, 2004, 2008a) at the macro level and affect corporate transactions (Bottazzi, Rin, and Hellmann, 2011, Duarte, Siegel, and Young, 2012, Ahern, Daminelli, and Fracassi, 2012), firm size (La Porta et al., 1997, Bloom, Sadun and Van Reenen 2012), and information dissemination (Pevzner, Xie, and Xin, 2014) at the micro level.[3]

Although culture can positively influence many aspects of our economy, it may also engender negative externalities that, unfortunately, have previously received scarce attention in the literature.[4] Our

[1]Guiso, Sapienza, and Zingales (2006), for instance, define culture "as those customary beliefs and values that ethnic, religious, and social groups transmit fairly unchanged from generation to generation." In North (1990) and Stulz and Williamson (2003), culture is defined as "transmission from one generation to the next, via teaching and imitation, of knowledge, values, and other factors that influence behavior." La Porta et al. (1999) also note that "when … beliefs are highly pervasive and persistent, they get to be called 'culture'."

[2] Weber (1930) argues that religion (the Calvinist Reformation) has played a critical role in the development of capitalism, while Landes (1998) explains how Catholic and Muslim countries have acquired cultures that retarded their economic development when Protestant countries took off.

[3]See Guiso, Sapienza, and Zingales (2011) for a survey on civic capital and Algan and Cahuc (2014) for a survey on trust. The editorial comments of Zingales (2015) interpret the recent burgeoning of culture-related studies as a "cultural revolution" in finance.

[4]Fisman and Miguel (2007) and DeBacker, Heim, and Tran (2015) document that parking violations by diplomats in Manhattan and corporate tax evasion by foreign owners in the U.S. can be traced back to the corruption norm in

paper aims to fill this research gap by examining the impact of "sin culture"—i.e., social norms involving alcohol, sex, tobacco, and gaming—on earnings management. In particular, we investigate whether a more pronounced sin culture also incentivizes firms to be less honest—e.g., to engage in more earnings management that distorts information. If sin culture can also reduce the cost of information manipulation, a negative externality may arise in which even honest firms must lie.

To avoid the omitted variable problem typically associated with cross-country studies (i.e., informal culture may correlate with other country characteristics, such as formal institutions), we follow Guiso, Sapienza, and Zingales (2004, 2008b) and Putnam (1993) and focus on one country—Italy in their studies and China in our paper—to identify the impact of culture based on its regional variations. This identification approach has three advantages. First, formal institutions and country characteristics are automatically controlled for because all listed firms in China, regardless of their locations, are subject to the same regulations and institutions established by China's strong government. Second, since religion has never played as important a role in China's history as it did in Western countries (e.g., Weber, 1958), social norms in China appear more secular, with alcohol consumption being one of the most important elements of traditional Chinese culture.[5] Accordingly, we focus on *alcohol*-related (sin) culture, which is also often referred to as *the drinking culture* in the public media, although we also briefly examine other elements of sin culture in later sections. Third, since geographic conditions differ drastically across China, consequently creating vast differences in alcohol-related social norms, such regional variations induce exogenous cultural shifts that help us identify the influence of alcohol-related sin culture on firms.

Our main proxy for alcohol-related sin culture is the fraction of household income spent on alcohol consumption in a region (hereafter, "*Alcohol Consumption*" or simply "*Alcohol*"). A higher degree of

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the country of origin. Liu (2015) uses immigrants' country of origin to construct measures on corporate culture. However, negative cultural influence does not necessarily lead to a negative externality. Further, country of origin may also capture both cultural and institutional influences. Mironov (2015) show that Russia CEOs with worse driving records divert more money from their companies and pay more money under the table. To the extent that their companies are also more profitable, a negative externality may arise in which a corrupt environment may reward criminal values.

[5]As Weber (1958) has noted, *Confucianism*, the long-term official doctrine of ancient China and the core ethical foundation of Chinese culture, is more secular than transcendental. Consistent with this view, alcohol and its associated social norms are mentioned several times in Confucius's *Analects*. Alcohol also appears in numerous masterpieces in China's traditional literature. McGovern (2009) shows that starting from ancient China, the consumption of alcoholic beverages has been an integral part of many cultures in human history.

alcohol consumption serves as a proxy for a more prevailing role of alcohol in local life. As a robustness check for this demand-side variable, we also provide an alternative supply-side proxy, namely, the number of famous brands of distilled liquor (most of which are luxury brands, such as "Maotai") close to the location of a firm (hereafter, "*#Famous Brand*"). In addition, a third proxy, more related to the social cost of sin culture, is based on the intensity of alcohol intoxication—i.e., the number of cases of alcohol intoxication scaled by the size of the adult population (hereafter, "*Intoxication*").

We focus on earnings management to understand the impact of sin culture because the former represents one of the "most tangible signs" of distorted information in global markets (e.g., Leuz, Nanda, and Wysocki, 2003). Earnings management also attracts regulatory scrutiny in many countries, particularly in the wake of Regulation Fair Disclosure and the Sarbanes-Oxley Act in the US (Dechow, Ge, and Schrand, 2010). In line with the literature (e.g., Jones, 1991, Dechow, Sloan and Sweeney, 1995, Dechow, Ge, and Schrand, 2010, Hirshleifer, Teoh, and Yu, 2011), we use discretionary accruals as the main proxy for earnings management. More explicitly, we follow Dechow and Dichev (2002) to construct discretionary accruals for our main tests, and we use a list of other earnings management measures in our robustness checks.

We test the relationship between sin culture and earnings management by using the sample of all the listed firms in China for the period from 2002 to 2014. We begin by documenting a strong positive relationship between alcohol consumption and earnings management. This effect is both statistically significant and economically relevant. Specifically, a one-standard-deviation increase in *Alcohol* is associated with a 7% increase in the standard deviation of earnings management. Our results are robust to the use of the two alternative proxies for alcohol. In particular, a one-standard-deviation increase in the number of nearby famous brands of luxury alcohol beverages leads to as high as 11.1% standard deviation more of earnings management. This finding highlights an important role of expensive liquor in political and business life in China. The impact of *Intoxication* is similar. Moreover, our results are robust to alternative measures of earnings management, including not only other discretionary accruals—e.g., Dechow, Sloan, and Sweeney's (1995) modification of Jones's (1991) residual accruals and Kothari, Leone and Wasley's (2005) measure—but also the target-beating measures of Degeorge, Patel, and Zeckhauser (1999) and Burgstahler and Dichev (1997). These findings offer the first evidence that the potential link between sin culture and earnings management is both highly robust and of sizable economic

magnitude.

To address issues of potential endogeneity and spurious correlation, we adopt an instrumental variable (IV) approach based on geographic "shocks." The idea that geographic variations affect culture can be dated back to as early as Aristotle.[6] More recent studies show that social capital is heavily influenced by both geographic/climate conditions (e.g., Ostrom, 1990 and Durante, 2009) and natural catastrophes (e.g., Castillo and Carter, 2011 and Zylberberg, 2011). Likewise, alcohol-related social norms in China have been heavily influenced by geographic variations, including the population composition (e.g., males typically consume more alcohol than females;[7] hence, a persistently higher ratio of males in the population contributes to the establishment of a drinking culture)[8] and climate conditions (e.g., people tend to consume more and stronger alcohol in regions with more snow coverage and lower temperature). Accordingly, we use the gender ratio of long-term residents in the region (hereafter, "*Gender ratio*") and the fraction of areas suffering from snow storms and other natural disasters related to low temperature, wind, and hail (hereafter, "*Snow*" when there is no confusion) as our main instruments to capture the geographic origin of the drinking culture. All these variables should heavily affect the regional culture (inclusion restriction); however, they are unlikely to directly affect earnings manipulation, particularly considering the presence of strong government rules in China (exclusion restriction).

Indeed, we find that both *Gender ratio* and *Snow* significantly enhance alcohol consumption and that instrumented alcohol consumption significantly enhances earnings manipulation, suggesting that the relationship between alcohol consumption and earnings manipulation is causal. Two alternative specifications of instrumentation yield the same result: the first alternative specification replaces *Snow*

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[6] According to Aristotle, "The nations that live in cold regions and those of Europe are full of spirit, but somewhat lacking in skill and intellect; for this reason, while remaining relatively free, they lack political cohesion and the ability to rule over their neighbors. On the other hand the Asiatic nations have in their souls both intellect and skill, but are lacking in spirit; so they remain enslaved and subject." (Politics 7.7, 1327b18-1328a21, trans. Sinclair and Saunders).

[7] See, e.g., the "*Global status report on alcohol and health*" of World Health Organization. The 2014 WHO report is available at http://www.who.int/substance_abuse/publications/global_alcohol_report/en/.

[8] Unlike variables related to the total population, the gender ratio is more related to geographic/genetic factors than to regional economic development. Moreover, we focus on the gender ratio of long-term residents in a region for our empirical analysis. In contrast to the mobile population, the population of long-term residents is strictly controlled by local governments in China. This particular government control is unrelated to firm incentives for earnings management.

with the average *Temperature* in a region, and the second alternative specification exploits as instruments both a time-series shock—the reduction in tariffs on imported alcohol—and the gender ratio. Consistent results are achieved when these alternative specifications are used. Finally, as a robustness check, when we apply our main instruments of *Gender ratio* and *Snow* to the aforementioned alternative proxies for sin culture and the alternative proxies for earnings management, our conclusion remains the same. These findings support a general and causal interpretation for the relationship between alcohol and earnings manipulation.

After the IV analysis based on geographic shocks, we further examine how culture transmits in a society. This question is important because it can not only enrich our intuitions regarding the formation and transformation of culture in a society but also further address the issue of endogeneity. A few recent studies (Guiso, Sapienza, and Zingales, 2006, Fisman and Miguel, 2007, DeBacker, Heim, and Tran, 2015, and Liu, 2015) show that immigrants can bring social beliefs from their country of origin to new countries. Building on this intuition, we hypothesize that corporate leaders can transmit the value of their home-region culture and spread it in a society through their corporate leadership. We conduct two steps of analysis to verify this mechanism. In the first step, we find that although firms in regions with high alcohol consumption engage in more earnings management, the effect is stronger for, if not concentrated in, firms with CEOs who come from home regions (i.e., region of birth or region of the college they attended) with a more prominent alcohol culture than the region of the firm. In other words, CEOs who have been more exposed to alcohol in the past significantly enhance the effect of *Alcohol* on earnings management, suggesting that CEOs may play an active role in propagating the influence of alcohol. To further identify the role of CEOs, in the second step, we use region fixed effects to control for the average incentives for earnings manipulation for firms located in the same region and focus on the relationship between earnings manipulation and *Alcohol* in CEOs' home regions. We find a significant positive relationship between the two variables.

Collectively, the two steps of analysis confirm that in addition to the general impact of alcohol-related sin culture on incentives for earnings manipulation, the culture of corporate leaders' home region has its own influence. This finding not only extends the intuition of the aforementioned literature on sin culture but also further addresses the issue of endogeneity. Indeed, the focus on the culture of the region rather than that of the country of origin allows us to rule out the influence of country-level institutions, a benefit

that has been explored in Guiso, Sapienza, and Zingales (2004, 2008b) and Putnam (1993). Moreover, in the second step of analysis, we controlled for all the characteristics of the region where firms are located, leaving the cultural impact engendered by CEOs as the only channel that affects earnings management. Similar identification strategies have been employed in Guiso, Sapienza, and Zingales (2006), Fisman and Miguel (2007), DeBacker, Heim, and Tran (2015), and Liu (2015). Building on the strength of both streams of literature, our tests clearly identify an important mechanism—corporate elites—through which the impact of alcohol-related sin culture is propagated across the whole economy.

We then implement a series of additional tests to further enrich our economic intuition. In the first additional test, we examine the relationship between informal culture and formal institutions, and we document two important findings in this regard. Our first finding is that culture can generate a negative externality when formal institutions are weak. More explicitly, we show that *Alcohol* reduces the sensitivity of fraud detection with respect to earnings management. In general, the likelihood of fraud detection increases with more earnings management because firms that heavily distort information are likely to conduct corporate fraud, which regulators pay attention to, other things being equal. The observation that *Alcohol* reduces this sensitivity, however, implies that such a culture may also reduce the cost of earnings management, for instance, when firms can somehow become connected to local regulators via lubrication with expensive alcohol beverages. In this case, a negative externality could arise in which dishonest firms benefit from sin culture and otherwise honest firms are also forced to hide their information. This negative externality may help explain why sin culture has such a prevailing impact.

However, sin culture should have a strong (negative) impact only when formal institutions fall short. Consistent with this notion, our second finding demonstrates that improvements in formal institutions following the 2012 anticorruption regulation of the central government (the most severe anticorruption regulation in the last three decades) can largely suppress the impact of informal culture, particularly for state-owned firms (SOEs).

In our second additional test, we link the impact of sin culture to other important elements of culture. Given that religions are less important in China than in Western countries (e.g., Weber 1958), we focus on trust to explore the potential interaction between different elements of culture. Since trust represents the collaborative value of a culture, we expect that sin culture could be more influential—in terms of enhancing the incentives for earnings manipulation—in regions with relatively low social trust. Our

empirical tests confirm this conjecture. When we interact *Alcohol* with an indicator of high social trust (where trust is proxied by two survey-based measures and blood donation), we find that the impact of *Alcohol* on earnings manipulation is reduced by a high level of social trust.

Finally, we explore the impact of other forms of sin culture. We find that sex, proxied by the intensity of illegal pornography publications, also has a positive (although weaker) relationship with earnings manipulation, whereas the impact of smoking and gaming is largely insignificant. The caveat here is that the data on some elements of the above types of sin culture are indirect. For instance, unlike alcohol consumption, which is not only legal but also able to be heavily advertised in government-controlled TV channels, pornography remains illegal in China. Hence, we can observe only detected cases, where such detection could be influenced by sin culture. We may underestimate its impact in this case. Nonetheless, our results provide some initial evidence that other elements of sin culture could have their own impact on earnings management.

Our paper is closely related to the emerging literature on "sin stocks." This stream of literature has focused on the implications of sin stocks for asset pricing, and it has shown that firms producing sin products are less favored by institutional investors and that these firms have discounted price (e.g., Hong and Kacperczyk, 2009). Instead, we focus on the implications of sin culture on corporate governance.

Furthermore, we contribute to various strands of the literature. First, we contribute to the literature on the effects of culture on economic and financial activities (Weber, 1930; Arrow, 1972; Gambetta,1988; Coleman 1990; Putnam,1993; Williamson, 1993; Fukuyama, 1995; Knack and Keefer, 1997; La Porta et al., 1997,1999; Landes, 1998; Stulz and Williamson, 2003; Guiso, Sapienza, and Zingales2003, 2004, 2008a, b, c, 2009; Bloom, Sadun and Van Reenen 2012; Bottazzi, Da Rin, and Hellmann, 2011; Georgarakos and Inderst 2014; Ahern, Daminelli, and Fracassi, 2012; Duarte, Siegel, and Young, 2012;Sapienza and Zingales, 2012; Gennaioli, Shleifer, and Vishny, 2014a, b; Pevzner, Xie, and Xin, 2015). To the best of our knowledge, we are the first to report a prevailing impact of sin culture—particularly that related to alcohol consumption—on earnings management.

Second, we contribute to the literature on the role of country-level institutions (e.g., Doidge, Karolyi, and Stulz, 2004, 2007; Aggarwal et al., 2010). More explicitly, our results show that sin culture may lead to negative externalities when formal institutions fall short and that such an impact may be suppressed by stricter formal institutions. Furthermore, we show that the effect of sin culture partly arise through

corporate leaders. These findings further enrich our knowledge on the prevailing and persistent impact of a culture of corruption on human behavior (Fisman and Miguel, 2007; DeBacker, Heim, and Tran, 2015; Mironov, 2015; Liu, 2015). Our findings have significant normative implications. Indeed, our results suggest that sin culture may exert a significant negative impact in emerging markets such as China and that one way to prevent this negative externality is to strengthen formal institutions. Our analysis regarding this culture-based externality also brings new insight to the corruption literature, as it helps open up the black box of corruption by identifying cultural elements that contribute to corruption.

Third, our results contribute to the literature on the determinants of earnings management. According to this literature, earnings management can be related to operating and financial characteristics (see DeFond and Park 1997; Watts and Zimmerman 1986; Nissim and Penman 2001), auditing quality and financial reporting practices (DeAngelo 1981; Barth, Landsman, and Lang 2008), market pressure (Das and Zhang 2003; Morsfield and Tan 2006), and investor protection and regulations (Leuz, Nanda, and Wysocki 2003; Dechow, Ge, and Schrand 2010). Our evidence provides another explicit factor that may influence managers' incentives to manage accounting earnings—sin culture.

Finally, we extend the emerging literature examining the activities of Chinese firms. The existing literature offers vast evidence on the misbehavior of Chinese firms (see, among others, Jiang, Lee, and Yue, 2010; Fan, Wei, and Xu, 2010; Fisman and Wang, 2015) and typically focuses on the role of formal institutions (e.g., Allen, Qian, and Qian, 2005) and that of the state—through state ownership or political connections—in exploring the incentives of Chinese firms (e.g., Liao, Liu, and Wang 2014; Calomiris, Fisman, and Wang 2010; Megginson and Netter 2001 provide a general survey). Our unique contribution is that we demonstrate that culture is a fundamental factor that explains the economic activities therein. To the extent that culture is among the most prominent differences between China and Western countries (e.g., Greif and Tabellini 2010), this finding may even shed light on the great divergence between China and the Western world. Perhaps just as Landes (2000, p. 2) has advocated, "If we learn anything from the history of economic development, it is that culture makes almost all of the difference."

The remainder of the paper is organized as follows. Section II presents our variables and summary statistics. Section III reports the relationship between sin culture and earnings management. Section IV explores the potential endogeneity issue. Section V examines the role of corporate leaders in propagating culture. Section VI discusses additional tests and is followed by a short conclusion.

II. Data and Variable Construction

We now describe the sources of our data and the construction of our main variables.

A. Data Sample and Sources

We collect data from multiple resources. First, we collect (in many cases hand collect) alcohol-related regional data from a list of places. Alcohol consumption data come from the *National Bureau of Statistics* (NBS) and *Provincial Statistical Yearbooks*, and household income data come from *China Statistical Yearbooks.* More explicitly, the NBS provides regional urban residents' alcohol consumption data in China starting from 2002 to 2012. For information from 2013 and 2014, we manually collect alcohol-related information from *Provincial Statistical Yearbooks*. If the (regional) data are not available in a *Provincial Statistical Yearbook*, we use the 2012 NBS information to proxy for values in 2013 and 2014. Next, to construct the supply-side measure of alcohol-related sin culture, we hand collect the list of top 200 famous brands of distilled liquor, as published in the *China National Association for Liquor and Spirits Circulation*. This information is available for the period from 2009 to 2014. Finally, the *National Ministry of Public Health* conducted surveys on alcohol intoxication in six provinces in three different years (2005, 2011, and 2014), which we use to construct the third proxy of alcohol-related sin culture.

Regarding the geographic origin of culture, we collect regional data regarding the gender ratio and temperature from *China Statistical Yearbooks*, hand collect information on snow, wind, and hail from *China Civil Affairs' Statistical Yearbooks*, and extract data on tariffs on imported alcohol from the *Document of China's General Administration of Customs*.

In addition to information on alcohol, we also collect information on three alternative measures of sin culture (i.e., sex, smoking, and gaming) as follows. Sex culture data are hand collected from the *China Yearbook of Eliminating Pornography and Illegal Publications*, which provides detailed information about the provincial cases of pornographic publications (books, periodicals, and videos) for the period from 2006 to 2013.[9] Data on smoking are obtained from the NBS and *Provincial Statistical Yearbooks*. Data on gaming are manually collected from the *Baidu Map* search engine (http://map.baidu.com/), which shows the number of Mahjong (a popular four-player game in China, which can also be used for gambling)

[9] For the missing values before 2006 and after 2013, we use the value in the nearest year (2006 and 2013, respectively) to measure those missing values.

rooms across 31 provinces. We also collect development-related information, such as GDP per capita, GDP growth, population growth, and consumption per capita, from *China Statistical Yearbooks* and the NBS. The data on social trust come from the *National Health and Family Planning Commission*, from which we collect blood donation information, and the *World Values Survey (2001)*, from which we collect information based on survey questions that allows us to construct measures of general trust.

Our firm-level data come from two major resources: the *China Stock Market and Accounting Research* (CSMAR) database and the *Wind Financial Database* (WIND).[10] More specifically, we obtain financial and stock return data from the CSMAR database, which we cross-reference with the WIND, and we obtain institutional ownership from the WIND. We then match firm-level data with regional information. Our final testing period ranges from 2002 to 2014. We start with 2002 because the NBS began to compile regional urban residents' alcohol consumption data in 2002; however, our results are quite robust to subsamples analysis. For this testing period, our initial sample is 21,531 firm-year observations. We then exclude financial service firms, as their accounting variables are not comparable to those of nonfinancial firms, and we further exclude firm-year observations without sufficient financial information to calculate the related variables. Our final sample consists of 10,950 firm-year observations and 1,336 firms, across 31 provinces in China.

B. Main Variables

We now describe our main variables. To proxy for earnings management, we consider a list of discretionary accrual measures that are widely used in the literature, including Dechow, Sloan, and Sweeney's (1995) modification of Jones's (1991) residual accruals ("*Accrual_Jones"*), Kothari, Leone, and Wasley's (2005) residual accruals ("*Accrual_KLW"*), and Dechow and Dichev's (2002) residual accruals ("*Accrual_DD"*). *Accrual_Jones* denotes the residuals obtained by regressing total accruals on fixed assets and revenue growth, with growth in credit sales excluded, for year. *Accrual_KLW* further controls for firm fundamentals by matching a firm with another firm from the same country, industry, and year with the closest ROA; moreover, *Accrual_DD* further controls for operating performance by

[10]CSMAR database is available from Wharton Research Data Services (WRDS). The WIND is another leading integrated service provider of financial data, information, and software. It provides Chinese financial market data and information to analysts, fund managers and traders, with full coverage of equities, bonds, funds, indexes, warrants, commodity futures, foreign exchanges, and the economy.

regressing results on past, current, and future cash flows. Since *Accrual_DD* employs the most complete firm controls among the three measures, we use it as our main proxy of earnings management. Our results are robust when the other two measures are used.

In addition to discretionary accruals, we consider another widely used type of earnings management practice, "target beating," in which managers distort information to avoid reporting small losses relative to their heuristic target of zero (e.g., Burgstahler and Dichev, 1997; Degeorge, Patel, and Zeckhauser, 1999). Such incentives lead to a well-known "kink" in the distribution of reported earnings near zero—that is, a statistically small number of firms with small losses and a statistically large number of firms with small profits (e.g., Burgstahler and Dichev, 1997). This type of earnings management is particularly important when investors are sensitive to losses. We use two proxies to capture such target-beating incentives: the first proxy is *target beating on "small positive forecasting profits"* (*SPAF*) based on Degeorge, Patel, and Zeckhauser (1999), which is a dummy that equals 1 if the difference between reported earnings per share and forecasted earnings per share scaled by stock price is between 0% and 1%, and the second proxy is *target beating on small positive profits* (*SPE*) based on Burgstahler and Dichev (1997), which is a dummy that equals 1 if net income scaled by lagged total assets is between 0% and 1%. These two variables proxy for managers' incentives to meet or beat market expectations by a small margin, where market expectations are measured by analyst forecast or a general request for firms to not report losses.

Our main proxy of alcohol-related sin culture comes from the consumption side. More explicitly, we define the alcohol consumption of a region (hereafter, "*Alcohol Consumption*" or simply "*Alcohol*" when there is no confusion) as the per capita annual average alcohol consumption of the urban residents of a province divided by the per capita annual wage of the same population, multiplied by 100. Roughly speaking, *Alcohol* measures the percentage household income spent on alcohol consumption. Regional *Alcohol Consumption* is available at annual frequency for the period from 2002 to 2014.

We also construct two alternative proxies for alcohol-related sin culture. The first alternative proxy aims to capture the impact of culture from the supply side. We therefore count the number of famous brands of distilled liquor near the location of firms and refer to this variable as "*#Famous Brand*." More explicitly, we hand collect the list of top 200 brands of distilled liquor and the geographic location of their headquarters from the *China National Association for Liquor and Spirits Circulation*. For each firm in

our sample, we then count the number of famous liquor brands among the top 200 within a 200-kilometer radius of the firm's headquarters location. Given the popularity of luxury liquor, such as "Maotai," in Chinese political and business life, this supply-side variable is likely to capture important influences of alcohol-related sin culture from the supply side. The limitation of this variable is that the 200-firm list is available only in the later period of our sample (from 2009 to 2014). Hence, for tests involving early years, we need to extrapolate the value of this variable from later years to early years (i.e., for early years, we use the value of this variable as of 2009). To be conservative, therefore, we do not use this variable as our main variable. However, since famous liquor brands and their headquarters locations vary slowly over time, this extrapolation is unlikely to generate significant look-ahead bias. Hence, the variable provides a reasonable robustness check for our main results.

The second alternative proxy of alcohol-related sin culture aims to highlight the social cost of sin culture. We therefore compute the ratio between the number of alcohol intoxication events and the adult population in a region and refer to this variable as "*Intoxication*." A higher value of *Intoxication* depicts a higher intensity of alcohol intoxication—and thus a high social cost associated with alcohol-related sin culture. Again, since we have the information to construct this variable only for a limited number of years (2005, 2011, and 2014—we extrapolate the values for this variable in 2005, 2011, and 2014 to the missing years of 2002-2004, 2006-2010, and 2012-2013, respectively) and for a limited number of regions (six regions), we use this variable for a robustness check rather than for the main analysis.

We also construct proxies for other elements of sin culture. More explicitly, sex-related related sin culture (*Sex*) is measured as the detected cases of pornographic publications (books, periodicals, and videos) divided by the population aged 15 years or older in a province. We use the provincial tobacco consumption divided by urban employees' per capita GDP to measure smoking-related sin culture (*Smoking*). Finally, the gaming element of sin culture (*Gaming*) is measured as the number of "Mahjong" rooms divided by the population aged 15 years or older in a province, as "Mahjong" is one of the most popular traditional games in China with four players—and "Mahjong" rooms are rooms that people can rent to play not only "Mahjong" but also all other types of games (e.g., cards and chess).

Our main firm-level control variables are the logarithm of firm size (*Size*), financial leverage (*LEV*), return on assets (*ROA*), stock return volatility (*Cret_volatility*), institutional ownership (*Totinsholdper*), logarithm of the number of analysts following the firm (*Analyst*), book-to-market ratio (*BM*), annual stock

return (*RET*), turnover ratio (*Turnover*), dual role for the board chairman (*Dual*), ratio of independent directors (*Indir*), and a dummy variable that takes the value of one for state-owned enterprises (*SOE*). Our main region-level control variables are GDP per capita (*GDP_percapita*), GDP growth (*GDP_growth*), population growth (*Pop_growth*), and the logarithm of the residential consumption per capita (*Consume_percapita*). Detailed definitions of these variables are provided in Appendix A. To avoid extreme values, we winsorize all variables at the 1% level in both tails (our results are robust to the use of this threshold).

Table 1 presents summary statistics for our sample. Panel A tabulates the distribution of the main variables. On average, households spend approximately 0.762% of their income on alcohol, and the standard deviation is 0.207, suggesting that there are significant differences across regions. Indeed, regions at the 75% quantile (0.871) exhibit 43.73% more alcohol consumption than those at the 25% quantile. Figure 1 visualizes the distribution of alcohol consumption across different provinces in China. Likewise, the supply-side variable "*#Famous Brand*" has a mean value of 1.442 and standard deviation of 2.3. The distribution of this variable suggests that famous luxury liquor brands are not evenly geographically distributed in China. Hence, the supply side of alcohol consumption also significantly varies at the regional level in China.

Furthermore, the main dependent variable, *Accrual_DD*, exhibits significant cross-sectional variations (with a standard deviation of 0.062). Firms located at the 75% quantile of the distribution show more than double the accrual values of firms located at the 25% quantile of the distribution. The other accrual variables and target-beating variables exhibit similarly large cross-sectional variations.

In Panel B, we report the correlation matrix of the main variables in Panel A, with Spearman correlations reported in the upper-right part of the matrix and Pearson correlations reported in the bottom-left part. We can see that sin culture and earnings management are positively correlated. Specifically, the correlation between *Alcohol* and *Accrual_DD* is approximately 0.036, which is highly significant at the 1% level. This correlation motivates us to examine the cultural origin of corporate incentives for earnings management. Of course, *Accrual_DD* may be affected by many firm characteristics. Hence, our next task is to use multivariate regressions to highlight the impact of culture after we control for firm characteristics.

III. The Relationship between Alcohol Consumption and Earnings Management

We now investigate the relationship between alcohol consumption and earnings management. We rely on the following regression as a baseline model for our multivariate analyses:

$$Accrual_{i,p,t} = \alpha + \beta \times Alcohol_{p,t-1} + C \times M_{i,p,t-1} + \epsilon_{i,p,t}, \qquad (1)$$

where $Accrual_{i,p,t}$ refers to our main proxy of earnings management for firm i located in province p in year t; $Alcohol_{p,t-1}$ is the alcohol consumption of the region in the previous year (using contemporaneous culture variables only enhances our results); and $M_{i,p,t-1}$ refers to a list of lagged control variables, including the logarithm of firm size (*Size*), financial leverage (*LEV*), return on assets (*ROA*), stock return volatility (*Cret_volatility*), institutional ownership (*Totinsholdper*), log-number of analysts following the firm (*Analyst*), book-to-market ratio (*BM*), annual stock return (*RET*), turnover ratio (*Turnover*), dual role for the board chairman (*Dual*), and an indicator for state-owned enterprises (*SOE*). We also control for industry and year fixed effects and cluster the standard errors at the firm level in all regressions.

The results are tabulated in Table 2. Model (1) presents the baseline regression for all firms in our sample, and Model (4) further controls for development indices at the regional level, including GDP per capita (*GDP_percapita*), GDP growth (*GDP_growth*), population growth (*Pop_growth*), and the logarithm of the residential consumption per capita (*Consume_percapita*). We can see that alcohol consumption is positively associated with earnings management. In Models (1) and (4), for instance, a one-standard-deviation increase in *Alcohol* is associated with 7.4% and 7.05% standard deviation more of earnings management, respectively.[11]

Models (2) and (3) examine the relationship between alcohol-related sin culture and earnings management by using two alternative proxies: the number of nearby famous distilled liquor brands ("*#Famous Brand*") and the intensity of alcohol intoxication ("*Intoxication*"). More explicitly, Models (2) and (5) tabulate the results when we replace *Alcohol* in Equation (1) with "*#Famous Brand*." We can see

[11] The economic magnitude for the regression model of $y = \alpha + \beta \times x + \epsilon$ is estimated as $\beta \times \sigma_x/\sigma_y$, where y and x are the dependent and independent variables, β is the regression coefficient, and σ_y and σ_x are the standard deviation of the dependent and independent variables for the sample, respectively. Hence, in Model (1), the economic magnitude is estimated as $0.022 \times 0.207/0.062 = 7.4\%$.

that using this variable does not change our main results: being closer to more supply of luxury alcohol brands is generally associated with a higher degree of earnings management. Indeed, the economic magnitude is even higher for this supply-side proxy. Specifically, in Model (2) and (5), a one-standard-deviation increase in "*#Famous Brand*" is associated with as high as 11.1% standard deviation more of earnings management (i.e., $0.003 \times 2.28/0.062 = 11.1\%$). In comparison with the aforementioned impact of alcohol consumption, this enhanced magnitude highlights the particularly important role of expensive liquor in Chinese political and business life. Indeed, luxury liquor brands, such as "Maotai," are widely used in official banquets.[12] Although the data for "*#Famous Brand*" are less complete (the data are available only after 2009), this variable is likely to capture the most relevant part of alcohol-related sin culture that it may play a role in the business world.

When we replace *Alcohol* in Equation (1) with "*Intoxication*," we see that a higher intensity of alcohol intoxication is generally associated with a higher degree of earnings management. The results are tabulated in Models (3) and (6). In these two models, a one-standard-deviation increase in "*Intoxication*" is associated with 9.23% and 10.65% standard deviation more of earnings management (i.e., in Model 3, the impact is computed as $3.555 \times 0.002/0.062 = 9.23\%$), respectively; thus, the magnitude is between that of alcohol consumption and that of "*#Famous Brand*". Similar to alcohol consumption, "*Intoxication*" captures the general impact of alcohol-related sin culture—as opposed to the most relevant part as reflected in "*#Famous Brand*"—on firm incentives.

Our analysis thus far suggests that culture is associated with firm incentives for conducting earnings management. There are two issues associated with this observation. The first concerns the generality of this observation: does this relationship apply to a wide range of earnings management practices? The second issue concerns endogeneity: can we assign a causal interpretation to this relationship? We will address the first issues here and leave the second issue to the next section.

Table 3 examines the robustness of Equation (1) by replacing the dependent variable *Acrual_DD* with two alternative discretionary accruals (*Accrual_Jones* and *Accrual_KLW*) and two target-beating measures (*SPAF* and *SPE*). Note that when target-beating measures are used, we use Logistic regression

[12] Maotai, for instance, has been used by China's Premier Zhou Enlai to host the U.S. President Richard Nixon during his historical visit to China in 1972 (https://en.wikipedia.org/wiki/Maotai).

specifications (the two measures are dummy variables). We focus on *Alcohol consumption* as our main proxy for alcohol-related sin culture, although using "*#Famous Brand*" and "*Intoxication*" leads to a same conclusion. Models (1) to (4) control for firm characteristics, while Models (5) to (8) further control for regional characteristics. Across all these different specifications, we see that the relationship between *Alcohol* and earnings management remains significantly positive. Collectively, these results suggest that a fairly general relationship exists between alcohol-related sin culture and incentives for not to honestly reporting earnings.

IV. Does Culture "Cause" Earning Manipulation: An Instrumental Variable Approach

Although we explicitly control for several variables in the main regression, there is still a possible issue of endogeneity and spurious correlation. To address this issue, we adopt an instrumental variable (IV) approach based on geographic "shocks." The idea that geographic variations affect culture can be dated back as early as Aristotle, who argued that "The nations that live in cold regions and those of Europe are full of spirit, but somewhat lacking in skill and intellect; for this reason, while remaining relatively free, they lack political cohesion and the ability to rule over their neighbors. On the other hand the Asiatic nations have in their souls both intellect and skill, but are lacking in spirit; so they remain enslaved and subject" (Politics 7.7, 1327b18-1328a21, trans. Sinclair and Saunders). More recent studies show that social capital can be heavily influenced by both geographic/climate conditions (e.g., Ostrom, 1990, and Durante, 2009) and natural catastrophes (e.g., Castillo and Carter, 2011, and Zylberberg, 2011).

More specifically related to alcohol, we argue that two important geographic "shocks" can significantly influence the formation of culture without directly affecting firm activities. The first is the gender ratio of the existing population (*Gender ratio*), computed as the ratio between the number of male long-term residents and that of female long-term residents in a province. As evident from the "*Global status report on alcohol and health*" of the World Health Organization (WHO), all over the world, males consume more alcohol than females.[13] A persistently higher ratio of males in the population will therefore contribute to the establishment of a culture with more intensive alcohol consumption.

[13] The 2014 edition is available at http://www.who.int/substance_abuse/publications/global_alcohol_report/en/

The second characteristic is related to the geographic environment. One interesting observation from the aforementioned WHO report is that alcohol consumption is likely to be related to temperature. As observed by the *Economist*, there is more alcohol consumption per person in European countries and in the former Soviet states than in other countries.[14] Researchers have also linked alcohol consumption to latitude in the U.S. (e.g., Teague, 1985). Therefore, we use the fraction of areas suffering from snow storms and other natural disasters related to low temperature, wind, and hail as our second instrument for the geographic origin of a drinking culture (hereafter, "*Snow*"). As a robustness check, we also use the average *Temperature* in a region, which, in spirit, is closely related to *Snow*.

We expect these two instruments to be unrelated to earnings management. On the one hand, unlike the total level of the population or its aging conditions, the ratio between males and females is less related to the development conditions of a region. Rather, because of the one-child policy and the relatively tight control of cross-region mobility in China, this ratio is likely to be largely independent of firm activities. In particular, we focus on the gender ratio of long-term residents in a region to avoid any issue that may be related to the mobile population. In contrast to the mobile population, the population of long-term residents is strictly controlled by local governments in China. Although this particular government control could affect the population distribution of local residents in addition to geographic/genetic factors, its potential influence is unrelated to firms' incentives for information manipulation. On the other hand, snow conditions and temperature are pure geographic "shocks." Both instruments, therefore, can introduce variations in regional cultures that are exogenous to firm incentives. In other words, they are reasonable instruments because they satisfy both the inclusion restriction and the exclusion restriction.

Based on the above instruments, we estimate the following two-stage IV specification:

$$First\ stage: Alcohol_{p,t-1} = a + b \times IV_{p,t-1} + c \times M_{i,p,t-1} + \delta_{p,t-1}, \quad (2)$$

$$Second\ stage: Accrual_{i,p,t} = \alpha + \beta \times \widehat{Alcohol}_{p,t-1} + C \times M_{i,p,t-1} + \epsilon_{i,p,t}, \quad (3)$$

where $IV_{p,t}$ denotes the two instrument variables in the first stage for province p and $\widehat{Alcohol}_{p,t}$ refers to the projected value of alcohol consumption obtained from the first-stage regression. The other variables are the same as before.

[14]The Economist, "Drinking habits," 2011, Feb 14.http://www.economist.com/blogs/dailychart/2011/02/global_alcohol_consumption

Table 4 presents the results of the IV specification. We first use the *Gender ratio* and *Snow* as our main instruments, and we report the results of the first and second stages in Models (1) and (2), respectively. We find that both a higher *Gender ratio* (more males with respect to females) and more snowy conditions significantly enhance alcohol consumption in the first stage, and in the second stage, we find that instrumented alcohol consumption significantly enhances earnings manipulation. We further conduct a list of tests to examine the power and validity of the IV regressions. More specifically, F-tests confirm that our variables are not weak instruments. Furthermore, Hansen's J Statistic is insignificant at 1.28, suggesting that the IV specification is not overidentified. Both statistics confirm the quality of the IV specification.

In Models (3) and (4), we conduct a robustness check by replacing *Snow* with the average *Temperature*. The results are very similar. Additionally, as in the previous case, the F-tests and Hansen's J Statistics suggest that our instruments are powerful and that our system is not overidentified. Combined with the results reported for Models (1) and (2), our results here lend support to a causal interpretation on the relationship between *Alcohol* and earnings management.

Finally, Models (5) and (6) provide another robustness check by combining a time-series shock with a geographic shock, where the time-series shock is the reduction in the tariffs on imported alcohol in 2005. [15] More explicitly, we construct a dummy variable, *Tariff*, which takes the value of one for the years after 2005 and 0 otherwise, and then use it jointly with the gender ratio as the instruments in Equation (2). In line with the existing literature (e.g., Wagenaar, Salois and Komro, 2009), Model (5) indicates that a reduction in tariffs significantly increases alcohol consumption. The second-stage results are similar to the previous results: instrumented alcohol consumption incentivizes firms to distort their earnings to a greater extent.

Table 5 applies our main IV approach to the two alternative proxies for alcohol-related sin culture and the alternative proxies for earnings management. More explicitly, Models (1) and (2) still use the *Gender ratio* and *Snow* as two instruments, and they use the number of nearby famous distilled liquor brands *("#Famous Brand*") as the proxy for alcohol-related sin culture. In other words, the only difference

[15] According to WTO, starting from Jan 1 of 2005, tariffs for wine and distilled spirit will be reduced to 10% to 30%, a significant reduction compared to previous years (e.g., http://www.lmst.com.cn/docview.php3?keyid=4744).

between these two models and Models (1) and (2) in the previous table is that we replace *Alcohol* with *"#Famous Brand*." Interestingly, *Snow* is negatively linked to the number of nearby luxury alcohol brands, which may be due to the reason that luxury alcohol firms want to be located in regions with easy transportation (as opposed to snowy roads). Nonetheless, the results further confirm the geographic origin of alcohol-related sin culture with respect to the supply side. In the second stage, we find that instrumented *"#Famous Brand*" significantly enhances earnings manipulation, as the previous result show.

In Models (3) and (4), we use replace alcohol consumption by the intensity of alcohol intoxication ("*Intoxication*"). Both a higher *Gender ratio* and higher *Snow* significantly enhance the intensity of alcohol intoxication, suggesting that geographic conditions still play an important role in the social cost of alcohol consumption. Moreover, in the second stage, we find that instrumented alcohol intoxication significantly enhances earnings manipulation.

Models (5) to (9) use the same instruments (*Gender ratio* and *Snow*) and culture proxy (*Alcohol consumption*) as the previous table but use alternative definitions of discretionary accruals (*Accrual_Jones* and *Accrual_KLW*) and two target-beating measures (*SPAF* and *SPE*). Focusing on the second-stage results in Models (6) to (9), we can see that across all alternative proxies for earnings management, instrumented alcohol consumption is positively associated with earnings management.

Overall, the analysis in this section lends support to a causal interpretation of the relationship between alcohol-related sin culture and earnings management. This causal interpretation can not only be applied to our main relationship between alcohol consumption and accruals but also be extended to alternative proxies for alcohol-related sin culture and alternative ways of managing earnings. Together with the previous section, these results suggest that (sin) culture may play a fundamental role in affecting firm incentives.

V. How Is Culture Transmitted in a Society?

In the previous section, we show that (alcohol) culture affects earning manipulation. We now examine how culture is transmitted in a society. Recent studies show that culture has a persistent impact on human beings even when they immigrate to a different country (Guiso, Sapienza, and Zingales, 2006, Fisman and Miguel, 2007, DeBacker, Heim, and Tran, 2015, and Liu, 2015). If so, we expect that corporate leaders carry with them the cultural values of their home regions and help spread them through their

corporate leadership. We can also follow the approach of the above literature to further establish the causal impact of culture—beyond that established with the IV specification.

More specifically, we design two tests to verify this channel. In the first test, we examine whether more "alcohol-adapted" CEOs—i.e., CEOs who come from regions with more a prominent drinking culture than the location of their firm—are more prone to enhance the relationship between *Alcohol* and earnings management. To conduct this test, we first hand collect two types of CEO "home regions"—the region of birth ("*Home Region*") and the region of the college they attended ("*College Region*"). The culture in the region of one's birth is of course important, as a person could be exposed to more alcohol-related occasions in a region with high alcohol consumption during childhood. The region of the college one attended is also important to develop the personal habit regarding alcohol consumption, as college is typically the first place in China in which young people start to drink alcohol.[16] We use this information to construct a dummy variable that takes the value of one when the CEO of a firm comes from a region (either the region of the college they attended or the region of birth) with a higher value for *Alcohol* than the region of their firm and zero otherwise. We label this dummy variable "$More\_Alcohol\_CEO$." We then expand the baseline regression of Equation (1) by interacting this dummy variable with the previously defined proxy for alcohol-related sin culture of the region of the firm. In other words, we conduct the following regression:

$$Accrual_{i,p,t} = \alpha + \beta_1 \times Alcohol_{p,t-1} + \beta_2 \times More\_Alcohol\_CEO_{i,t-1} + \gamma \times Alcohol_{p,t-1} \times More\_Alcohol\_CEO_{i,t-1} + C \times M_{i,p,t-1} + \epsilon_{i,p,t}, \quad (5)$$

where $Alcohol_{p,t-1}$ is the alcohol consumption of the region of the firm and $More\_Alcohol\_CEO_{i,t-1}$ refers to the dummy variable for more alcohol-adapted CEOs. If more alcohol-adapted CEOs do enhance the existing relationship between alcohol consumption and earnings management, earnings management should be positively related to this interaction term.

We report the tests in Table 6. In Models (1) and (2), the dummy variable "$More\_Alcohol\_CEO$" is constructed by using the CEOs' region of birth and the region of the college they attended, respectively. Interestingly, earnings management is positively associated with the dummy variable of

[16] Before college, young people in China typically stay with their parents, who strictly control their alcohol consumption. In college, however, young people live in dorms without monitoring by their parents. The drinking culture of a region can thus heavily affect their alcohol consumption.

$More\_Alcohol\_CEO$ itself, suggesting that having a more alcohol-adapted CEO by itself may lead firms to distort more information. More important, the interaction term is associated with an increase in earnings management, suggesting that CEOs' region of origin has an additional cultural impact. Our first step of analysis, therefore, demonstrates that CEOs may play an active role in spreading sin culture.

Next, to further investigate this effect, we modify Equation (1) by including region fixed effects to control for the average incentives for earnings manipulation for firms located in the same region. This specification allows us to directly focus on the relationship between earnings manipulation and the alcohol-related sin culture of CEOs' *home* regions ("*Alcohol_CEO*"). We therefore regress earnings manipulation on "*Alcohol_CEO*" with the additional control of region fixed effects and report the results in Models (3) and (4) of Table 6.

We find a significant positive relationship between earnings manipulation and alcohol-related sin culture of CEOs' home region. This result suggests that the culture of corporate leaders' home region influences the incentives for earnings manipulation above and beyond the general impact of the regional culture of firms' region. In other words, by carrying with them the imprint of their home region's culture, CEOs distort firm information *regardless of the location of their firm*.

Note that Models (3) and (4) adopt the same identification approach used in the current literature to establish the causal impact of culture when immigrants move from their country of origin to new countries (Guiso, Sapienza, and Zingales, 2006, Fisman and Miguel, 2007, DeBacker, Heim, and Tran, 2015, and Liu, 2015). In this regard, we extend this strand of the literature by demonstrating that the same intuition applies to people moving from one region to another region within a country. Economically speaking, this extension engenders one major advantage that has been explored in the literature: i.e., country-level institutions are automatically controlled for when we conduct a region-level analysis. This same intuition has been exploited, for example, by Guiso, Sapienza, and Zingales (2004, 2008b) and Putnam (1993). However, this advantage is even more prominent in the case of China, given the existence of a strong national government. In this regard, our analysis combines the advantages of both literatures, and thus allows us to clearly identify the unique role of culture in the business world.

VI. Further Insights: Culture, Formal Institutions and Trust

We now examine the relationship between culture and other social "glues." We first focus on formal institutions and then consider trust.

A. On the Relationship between Informal Culture and Formal Institutions

We start by examining the relationship between formal institutions and culture, which can be related because weak legal enforcement may incentivize citizens to rely on informal and local rules. For example, Gambetta (1993) documents that the Mafia benefited from the abolishment of feudalism in Sicily.[17] Additionally, and even more interestingly, if sin culture can negatively affect the enforcement of formal institutions, negative externalities may emerge in which all firms want to benefit from sin culture.

We first explore whether culture does indeed affect the enforcement of formal institutions, which may consequently engender negative externalities. To explore this possibility, we begin with the notion that the likelihood of fraud detection should increase with more earnings management, because firms that more heavily distort information are also more likely to conduct corporate fraud (and regulators pay attention to these firms). We then ask whether alcohol-related sin culture can reduce this sensitivity—or the detection rate conditioned on information distortion. Previous research shows that Chinese firms spend money to entertain, if not bribe, government officials (e.g., Cai, Fang, and Xu, 2011). We extend this observation and explore the cultural origin of such behavior. Our underlying hypothesis is that alcohol consumption increases the ability of firms and regulators to connect with each other and therefore reduces the effectiveness of enforcement.

We estimate the following Logistic specification:

$$FraudDetection_{i,p,t} = \alpha + \beta_1 \times Accrual_{i,p,t-1} + \beta_2 \times Alcohol_{p,t-1} + \gamma \times Accrual_{i,p,t-1} \times Alcohol_{p,t-1} + C \times M_{i,p,t-1} + \epsilon_{i,p,t}, \quad (6)$$

where $FraudDetection_{i,p,t}$ is a dummy variable that takes the value of one when fraud is detected for firm i located in province p in year t and the other variables are defined as before. The coefficient of interest is γ: if alcohol-related sin culture reduces the detection rate, the coefficient should be negative.

The results are tabulated in Table 8. Consistent with our presumption that there should be a positive

[17] More complicated mechanisms that shape the joint dynamics of these two factors may exist (Benabou and Tirole, 2011).

relationship between fraud detection and discretionary accruals, we first observe from Model (1) that the likelihood of fraud detection increases with the amount of discretionary accruals. More important, fraud detection decreases in the interaction between accruals and alcohol in Model (3), suggesting that the presence of a more intensive drinking culture reduces the rate of fraud detection, conditioned on the same level of information distortion.

These results have important normative implications, as they suggest that alcohol-related sin culture contributes to a negative externality in which the presence of such a culture reduces the cost of distorting information. If so, dishonest firms benefit from sin culture, incentivizing otherwise honest firms to also distort information. This negative externality may help explain why sin culture has such a prevailing impact on earnings management in the first place.

If culture influences firm incentives when formal institutions are weak, a strengthening in institutions should reduce the impact of culture. The 2012 anticorruption regulation of the central government provides a natural experiment to study this issue. During the meeting of the Central Committee of the Political Bureau of the Communist Party of China (CPC), the country's top-ruling body, on December 4, 2012, the CPC proposed an anticorruption regulation with eight specific items.[18] This regulation is perhaps the most severe anticorruption regulation over the last three decades, with Party leaders at both the region level and the country level being investigated and imprisoned for corruption-related activities owing to this regulation. Moreover, the investigated top leaders come from all the regions in our sample, suggesting that this anticorruption regulation has engendered a widespread strengthening of formal institutions across *all* provinces in China. In this regard, the 2012 anticorruption regulation introduces an exogenous shock in the time series of our analysis.

[18]The anticorruption regulation imposes explicit requirements on how government officials should improve their work style in eight respects. Two are directly related to sin culture: (1) Request 1: "There should be no welcome banner, no red carpet, no floral arrangement or grand receptions for officials' visits"; (2) Request 8: "Leaders must practice thrift and strictly follow relevant regulations on accommodations and cars." Interested readers can find the details of the regulation at http://cpcchina.chinadaily.com.cn/2012-12/05/content_15992256.htm. Among known punished cases, many are indeed related to alcohol consumption.

To examine this shock, we define a dummy variable, *Post_Meet*, which takes the value of one for post-2012 meeting periods (i.e., 2013 and 2014). We then revisit the main results as tabulated in Table 2, interacting *Alcohol* with this *Post_Meet* dummy variable to isolate the impact of alcohol-related sin culture before and after the adoption of the anticorruption regulation. The results are tabulated in Models (4) to (6) of Table 6. Model (4) examines the whole sample. We find that while the impact of alcohol consumption on earnings management is positive as the previous results show, the interaction term between alcohol consumption and the *Post_Meet* dummy is significantly negative. Hence, the impact of alcohol consumption on earnings management is significantly reduced after the adoption of more stringent anticorruption regulation.

One very important feature of the anticorruption regulation is that it mostly applies to Party members (as it is a proposal of a Party meeting). For instance, most investigated and imprisoned cases involve Party leaders and top executives of large SOEs (top executives of large SOEs are typically Party members). By contrast, its influence to non-Party members is indirect. In this case, although this regulation reduces the negative impact of culture in general, its influence should differ between firms run by Party members (i.e., SOEs) and firms run by non-Party members (i.e., non-SOE firms). To test this intuition, we apply the same test to the subsamples of SOE and non-SOE firms in Models (5) and (6), respectively. In line with our expectations, we find that the impact of this anticorruption regulation is significant for SOE firms but insignificant for private firms. The differential response of SOE and non-SOE firms to the regulation not only confirms that formal institutions could suppress the effect of informal culture on firm behavior but also alleviates any concern that the test captures some spurious effect of culture in the time series that is unrelated to the enhanced formal institutions engendered by the anticorruption regulation.

B. On the Relationship between Sin Culture and Social Trust

Previously, we have considered the link between sin culture and formal institutions. We now consider the link between sin culture and other manifestations of culture or informal institutions. Typical candidates are social trust and religion. Given that religion is underdeveloped in China compared with Western countries (Weber, 1958), we focus on social trust and investigate how it affects the influence of sin culture. Since trust represents the collaborative value of a culture, our hypothesis is that social trust will reduce the negative effect of sin culture.

To test this hypothesis, we construct three proxies to measure trust at the provincial level. The first proxy captures general social trust, which is measured based on the World Values Survey in 2001 (see, for instance, the survey paper of Algan and Cahuc 2014 and discussions therein). The World Values Survey asks whether "Most people can be trusted." We use the fraction of population in a region answering "Yes" as this measure for social trust and label it "*Trust*." The second proxy uses answers to the question of whether "most people try to be fair." We refer to this variable as "*Fairness*." For the third measure of trust, we follow Ang, Cheng, and Wu (2015) and use blood donations in a province (hereafter, "*BloodDonation"*), which is constructed as the number of voluntary blood donors in a province divided by the adult population. Information on blood donations is hand collected from the *National Health and Family Planning Commission* and is available for three years: 2009, 2012, and 2014. We extrapolate the information from these three years to the periods of 2002-2008, 2010-2011, and 2013, respectively.

We rely on the following specification to explore the influence of trust on the relationship between earnings management and alcohol consumption:

$$Accrual_{i,p,t} = \alpha + \beta_1 \times Alcohol_{p,t-1} + \beta_2 \times High\_Trust_{p,t-1} + \gamma \times Alcohol_{p,t-1} \times High\_Trust_{p,t-1} + C \times M_{i,p,t-1} + \epsilon_{i,p,t}, \quad (7)$$

where $High\_Trust_{p,t}$ denotes a dummy variable that takes the value of one if the level of social trust of a region is above the median and zero otherwise. The coefficient of the interaction term indicates whether the influence of alcohol consumption on earnings management differs in regions with a higher or lower level of trust.

The results are tabulated in Table 8. More explicitly, Model (1) includes the proxy of "Trust" into our baseline regression in Equation (1), and Model (2) further includes the interaction term between *Alcohol* and *High_Trust* as specified in Equation (7). First, we can find from Model (1) that the influence of *Alcohol* on earnings management is robust when the trust variable is included. This observation suggests that sin culture is not the same as social trust—that is, each element of the culture has its own impact on firm incentives. Furthermore, the interaction term between *Alcohol* and *High_Trust* is significantly negative. This observation is consistent with the notion that high social trust reduces the influence of sin culture on incentives for earnings manipulation.

Models (3) to (4) and Models (5) to (6) further replace the main proxy of *Trust* with "*Fairness*" and "*BloodDonation*," respectively. We can see that across all the specifications, the influence of *Alcohol*

remains significant; however, the presence of a high degree of social trust reduces its influence.

C. On the Impact of Other Elements of Sin Culture

Finally, we explore the impact of other forms of sin culture. We therefore revisit Equation (1) by replacing *Alcohol* with proxies for sex-related sin culture (*Sex*), smoking-related sin culture (*Smoking*), and gaming-related sin culture (*Gaming*).

The results are tabulated in Table 9. We find that *Sex* also exhibits a positive relationship with earnings manipulation, whereas *Smoking* or *Gaming* has largely insignificant impact. The caveat here is that data on some elements of the above types of sin culture are indirect. For instance, unlike alcohol consumption, which is not only legal but also able to be heavily advertised in government-controlled TV channels, pornography remains illegal in China. Hence, what we can observe are only detected cases, where such detection may be influenced by sin culture (i.e., a negative externality that is, unfortunately, unobservable). We may underestimate its impact in this case. Nonetheless, our results provide some initial evidence that other elements of sin culture could have their own impact on earnings manipulation.

Conclusion

In this paper, we examine the impact of sin culture—mainly in the form of alcohol consumption—on firms' incentives to honestly disclose information. To control for formal institutions at the country level, we focus on China, a country with significant regionals variations in terms of culture, and find that firms in regions with a more prominent alcohol consumption are in general associated with more earnings management. Our results are robust when we use alternative proxies for alcohol-related sin culture and alternative measures of earnings management.

Since for formation of alcohol consumption is affected by geographic shocks such as the regional gender ratio and snowfall or temperature, we use these regional variables as instruments to address the potential endogeneity issue. Tests based on these instruments suggest a causal interpretation. We further demonstrate that corporate leaders can transmit and disseminate the impact of culture in society. Most interestingly, a more prominent alcohol-related sin culture in the home region of firms' CEOs can significantly increase earnings management, even when we control for fixed effects for firms' region.

This finding shows how culture is transmitted in a society and further addresses the potential issue of endogeneity.

We further show that culture can generate a negative externality by reducing the likelihood of fraud detection in the presence of a high degree of earnings management. In this case, even honest firms may have an incentive not to disclose information in a honest and fair way. However, improvements in formal institutions, as captured by the 2012 anticorruption regulation, can suppress the negative impact of informal culture, suggesting that the impact of culture is most significant when formal institutions fall short. Finally, we find that the negative impact of culture is more significant in regions with low social trust, and that other elements of sin culture may also affect firm incentives.

Overall, our results provide novel evidence of how culture affects firm activities in the real economy and thus have important normative implications. Culture could serve as a foundational block for an economy when formal institutions fall short—yet not all influences of culture are positive. Our research, therefore, calls attention to the potential negative impact of culture on firm behavior.

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Appendix: Variable definitions

	Definition	Source	Period
Dependent variables			
Accrual_DD	Dechow and Dichev's (2002) residual accruals.	CSMAR	2002-2014
Accrual_Jones	Dechow, Sloan, and Sweeney's (1995) modification of Jones's (1991) residual accruals, obtained by regressing total accruals on fixed assets and revenue growth, with growth in credit sales excluded.	CSMAR	2002-2014
Accrual_KLW	Kothari, Leone, and Wasley's (2005) residual accruals. Based on *Accrual_Jones*, KLW's model further controls for firm's ROA.	CSMAR	2002-2014
SPAF	Target beating on small positive forecasting profits, a dummy variable that equals 1 if the difference between reported earnings per share and forecasted earnings per share scaled by stock price is between 0% and 1%, based on Degeorge, Patel, and Zeckhauser (1999).	CSMAR	2002-2014
SPE	Target beating on small positive profits, a dummy variable that equals 1 if the net income scaled by lagged total assets is between 0% and 1%, based on Burgstahler and Dichev (1997).	CSMAR	2002-2014
Fraud_detection	Likelihood of corporate fraud detection	CSMAR	2002-2014
Sin culture variables			
Alcohol	Alcohol consumption, measured as provincial urban residents' per capita annual average alcohol consumption divided by provincial urban employees' per capita annual wage, multiplied by 100.	National Bureau of Statistics (NBS) and Provincial Statistical Yearbooks	2002-2014
#Famous Brand	The number of Top 200 famous brands of distilled liquor factories near the location of firms (within a 200-kilometer radius).	China National Association for Liquor and Spirits Circulation	2009-2014
Intoxication	Intoxication, measured as the cases of alcohol intoxication scaled by the adult population.	Survey on the residents with alcohol intoxication conducted by the National Ministry of Public Health in six provinces	2005、2011、2014
Sex	Sex culture, measured as the detected cases of pornographic publications (books, periodicals, and videos) divided by the population aged 15 years or older in a province.	China Yearbook of Eliminating Pornography and Illegal Publications	2006-2013
Smoking	Smoking culture, measured as provincial tobacco consumption divided by urban employees' per capita GDP.	National Bureau of Statistics (NBS) and Provincial Statistical Yearbooks	2002-2012
Gaming	Gambling culture, measured as the number of Mahjong rooms divided by the population aged 15 years or older in a province.	Baidu Map search engine (http://map.baidu.com/)	2015
Anticorruption			
Post_Meet	Anticorruption regulation, which equals 1 if the sample period is after the eight-point regulation that	The Website of Commission for Discipline Inspection of CPC	-

	was adopted in December 2012 and 0 otherwise.		
Trust variables			
BloodDonate	Blood donations per capita in a province, measured as the number of blood donation voluntarily in a province divided by its adult population.	National Health and Family Planning Commission	2009、2012、2014
Trust	Fraction of people who believe "Most people can be trusted" in a region.	World Values Survey (2001)	2001
Fairness	Fraction of people who believe "Most people try to be fair" in a region.	World Values Survey (2001)	2001
Instrumental variables			
Gender ratio	Gender ratio, measured as the ratio of males to females in a province, among its long-term residents.	China Statistical Yearbooks	2002-2014
Snow	Snow disasters or storms in a province, measured as the area of snow disasters or storms divided by the provincial total area.	China Civil Affairs' Statistical Yearbooks	2006-2013
Temperature	Annual average temperature in a region.	China Statistical Yearbooks	2007-2013
Tariff	Tariff reduction, a dummy variable that equals 1 for those years after 2005 and 0 otherwise.	Document of China's General Administration of Customs	2002-2014
Control variables			
Size	Firm size.	CSMAR	2002-2014
LEV	Financial leverage.	CSMAR	2002-2014
ROA	Return on assets.	CSMAR	2002-2014
Cret_volatility	Stock return volatility.	CSMAR	2002-2014
Totinsholdper	Institutional ownership.	WIND	2002-2014
Analyst	Natural logarithm of the number of analysts following the firm.	CSMAR	2002-2014
BM	Book-to-market ratio.	CSMAR	2002-2014
RET	Annual stock return.	CSMAR	2002-2014
Turnover	Turnover ratio.	CSMAR	2002-2014
Dual	Dual role for the board chairman.	CSMAR	2002-2014
Indir	Ratio of independent directors.	CSMAR	2002-2014
SOE	State-owned enterprises	CSMAR	2002-2014
Gdp_percapita	GDP divided by the total population.	China Statistical Yearbooks	2002-2014
Gdp_growth	Growth rate of GDP.	China Statistical Yearbooks	2002-2014
Pop_growth	Growth rate of the population.	China Statistical Yearbooks	2002-2014
Consume_percapita	Natural logarithm of resident consumption per capita.	China Statistical Yearbooks	2002-2014

Table 1: Descriptive statistics

This table presents the descriptive statistics of the sample. Panel A presents the descriptive statistics for the full sample. The sample period is from 2002 to 2014. Panel B presents the summary statistics and Spearman (Pearson) correlation coefficients of the main variables that are used in this study. The upper-fight part (bottom-left part) of Panel B is the Spearman (Pearson) correlation matrix. All variables are defined in the Appendix. *, **, and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

Panel A: Summary statistics

Variable	Mean	STD	10%	25%	Median	75%	90%
Alcohol	0.762	0.207	0.544	0.606	0.725	0.871	1.039
Intoxication	0.001	0.002	0.000	0.000	0.001	0.002	0.003
#Famous Brand	1.442	2.279	0.000	0.000	1.000	2.000	4.000
Sex	2.727	3.800	0.137	0.583	1.315	2.875	5.824
Smoking	0.841	0.648	0.307	0.400	0.644	1.043	1.570
Gaming	0.021	0.008	0.012	0.016	0.021	0.028	0.030
Accrual_DD	0.098	0.062	0.035	0.054	0.081	0.125	0.184
Accrual_Jones	0.056	0.054	0.007	0.018	0.040	0.076	0.129
Accrual_KLW	0.053	0.051	0.007	0.017	0.038	0.072	0.117
SPAF	0.148	0.355	0.000	0.000	0.000	0.000	1.000
SPE	0.141	0.348	0.000	0.000	0.000	0.000	1.000
Fraud_detection	0.133	0.339	0.000	0.000	0.000	0.000	1.000
Size	21.673	1.170	20.369	20.875	21.548	22.290	23.195
LEV	0.484	0.184	0.223	0.355	0.498	0.625	0.713
Cret_volatility	0.129	0.053	0.074	0.092	0.117	0.154	0.200
Totinsholdper	0.168	0.184	0.003	0.022	0.097	0.259	0.452
Analyst	1.637	1.755	0.000	0.000	1.099	3.219	4.277
BM	1.083	0.928	0.288	0.484	0.821	1.378	2.178
RET	0.299	0.948	-0.457	-0.268	-0.018	0.555	1.533
ROA	0.036	0.062	0.000	0.010	0.030	0.061	0.105
Turnover	20.281	1.318	18.366	19.332	20.434	21.213	21.888
Dual	0.156	0.362	0.000	0.000	0.000	0.000	1.000
Indir	0.353	0.061	0.333	0.333	0.333	0.375	0.429
SOE	0.605	0.489	0.000	0.000	1.000	1.000	1.000
Gdp_percapita	3.506	2.133	1.022	1.722	3.156	5.065	6.724
Gdp_growth	0.154	0.053	0.084	0.107	0.158	0.196	0.225
Pop_growth	0.011	0.024	0.001	0.003	0.006	0.012	0.029
Consume_percapita	9.485	0.426	8.843	9.176	9.528	9.790	10.054
BloodDonation	0.962	0.611	0.267	0.345	0.937	1.357	1.619
Trust	0.538	0.118	0.400	0.520	0.530	0.560	0.720
Fairness	0.700	0.123	0.520	0.600	0.710	0.800	0.880
Post_Meet	0.231	0.422	0.000	0.000	0.000	0.000	1.000
GenderRatio	1.013	0.042	0.965	0.984	1.009	1.037	1.071
Snow	1.643	3.771	0.674	1.330	2.149	2.613	2.783
Temperature	12.430	4.431	6.917	10.083	12.008	14.483	19.983
Tariff	0.749	0.434	0.000	0.000	1.000	1.000	1.000

Panel B: Correlation coefficient (Spearman for the upper-right part, and Pearson for the bottom-left part)

Variable	*Accrual_DD*	*Alcohol*	*Size*	*LEV*	*Cret_volatility*	*Totinsholdper*	*Analyst*	*BM*	*RET*	*Turnover*	*ROA*	*Dual*	*Indir*	*SOE*	*Gdp_percapita*	*Pop_growth*	*Pop_growth*	*Consume_percapita*
Accrual_DD	1	0.040***	-0.108***	0.159***	0.081***	-0.054***	-0.159***	-0.022**	-0.029***	-0.081***	-0.083***	0.004	-0.014	-0.060***	-0.121***	0.087***	-0.026***	-0.134***
Alcohol	0.036***	1	0.040***	0.013	0.091***	0.086***	0.107***	-0.082***	0.079***	0.189***	0.020**	0.038***	0.129***	-0.076***	0.123***	0.068***	-0.113***	0.235***
Size	-0.139***	0.052***	1	0.352***	-0.067***	0.117***	0.537***	0.480***	0.020**	0.472***	0.176***	-0.095***	0.099***	0.183***	0.262***	-0.078***	0.057***	0.253***
LEV	0.135***	0.017*	0.345***	1	0.087***	-0.013	-0.016*	0.530***	-0.012	0.035***	-0.339***	-0.043***	0.029***	0.085***	-0.01	0.048***	-0.005	-0.021**
Cret_volatility	0.103***	0.078***	-0.082***	0.080***	1	0.131***	0.027***	-0.203***	0.259***	0.410***	-0.046***	0.020**	0.106***	-0.030***	0.058***	0.112***	0.034***	0.059***
Totinsholdper	-0.044***	0.074***	0.063***	-0.014	0.137***	1	0.301***	-0.161***	0.159***	0.212***	0.227***	0.012	0.069***	-0.042***	0.103***	0.018*	0.053***	0.125***
Analyst	-0.164***	0.071***	0.561***	-0.022**	-0.026***	0.196***	1	-0.048***	0.068***	0.558***	0.444***	0.020**	0.154***	-0.022**	0.386***	-0.124***	0.048***	0.424***
BM	-0.045***	-0.038***	0.508***	0.501***	-0.184***	-0.102***	0.027***	1	-0.376***	-0.248***	-0.353***	-0.093***	-0.01	0.158***	-0.048***	0.034***	-0.065***	-0.071***
RET	0.024**	0.064***	-0.013	0.016*	0.473***	0.158***	0.031***	-0.302***	1	0.293***	0.209***	0.006	0.063***	-0.022**	0.041***	-0.169***	0.051***	0.047***
Turnover	-0.091***	0.210***	0.494***	0.030***	0.383***	0.134***	0.564***	-0.151***	0.327***	1	0.267***	0.005	0.225***	-0.021**	0.397***	-0.027***	0.074***	0.439***
ROA	-0.070***	0.026***	0.178***	-0.331***	-0.033***	0.149***	0.410***	-0.251***	0.163***	0.264***	1	0.002	0.022**	-0.053***	0.131***	0.008	0.079***	0.141***
Dual	0.006	0.052***	-0.093***	-0.044***	0.009	0.006	0.024**	-0.073***	-0.002	0.007	-0.003	1	0.070***	-0.167***	0.087***	-0.052***	-0.029***	0.099***
Indir	-0.004	0.160***	0.100***	0.023**	0.105***	0.068***	0.166***	0.029***	0.063***	0.250***	0.047***	0.076***	1	-0.115***	0.204***	0.009	0.004	0.243***
SOE	-0.070***	-0.091***	0.189***	0.087***	-0.015	-0.012	-0.027***	0.134***	0.002	-0.023**	-0.048***	-0.167***	-0.125***	1	-0.198***	0.136***	0.035***	-0.230***
Gdp_percapita	-0.089***	0.178***	0.257***	-0.033***	-0.005	0.060***	0.371***	0.018*	-0.034***	0.374***	0.134***	0.083***	0.201***	-0.179***	1	-0.354***	0.336***	0.942***
Gdp_growth	0.077***	-0.066***	-0.091***	0.050***	0.140***	0.029***	-0.137***	0.01	-0.069***	-0.045***	0.001	-0.051***	0.029***	0.133***	-0.378***	1	0.01	-0.378***
Pop_growth	-0.006	-0.172***	0.071***	-0.023**	-0.012	0.026***	0.081***	-0.057***	-0.004	0.111***	0.081***	-0.006	0.025***	0.007	0.320***	0.021**	1	0.284***
Consume_percapita	-0.106***	0.305***	0.263***	-0.023**	0.044***	0.092***	0.433***	-0.001	0.005	0.489***	0.150***	0.094***	0.294***	-0.222***	0.900***	-0.330***	0.283***	1

Table 2: The effect of alcohol-related sin culture on earnings management

This table presents the results of the following multivariate regression:

$$Accrual_{i,p,t} = \alpha + \beta \times Alcohol_{p,t-1} + C \times M_{i,p,t-1} + \epsilon_{i,p,t},$$

where $Accrual_{i,p,t}$ refers to discretionary accruals following Dechow and Dichev's (2002) model (*Accrual_DD*) for firm i located in province p in year t and $Alcohol_{p,t-1}$ refers to the lagged alcohol consumption of the region in Models (1) and (4), the number of nearby famous distilled liquor brands ("#Famous Brand") in Models (2) and (5), and the intensity of alcohol intoxication ("Intoxication") in Models (3) and (6). $M_{i,p,t-1}$ stacks a list of lagged control variables, including the logarithm of firm size (*Size*), financial leverage (*LEV*), return on assets (*ROA*), stock return volatility (*Cret_volatility*), institutional ownership (*Totinsholdper*), logarithm of the number of analysts following the firm (*Analyst*), book-to-market ratio (*BM*), annual stock return (*RET*), turnover ratio (*Turnover*), dual role for the board chairman (*Dual*), an indicator for state-owned enterprises (*SOE*), GDP per capita (*GDP_percapita*), GDP growth (*GDP_growth*), population growth (*Pop_growth*), and logarithm of the residential consumption per capita (*Consume_percapita*). These variables are defined in the Appendix. Obs denotes the number of firm-year observations, and AdjRsq is the adjusted R^2. We further control for industry and year fixed effects (IY) and cluster the standard errors at the firm level in all regressions. The superscripts ***, **, and * refer to the 1%, 5%, and 10% levels of statistical significance, respectively. The sample covers the period from 2002 to 2014.

Dep. Var=*Accrual_DD*	(1)	(2)	(3)	(4)	(5)	(6)
Alcohol	0.022**			0.021**		
	(2.23)			(2.06)		
#Famous Brand		0.003***			0.003***	
		(3.23)			(3.45)	
Intoxication			3.555*			4.100**
			(1.92)			(2.16)
Size	-0.002	-0.002	-0.004	-0.003	-0.003	-0.003
	(-1.22)	(-1.23)	(-1.17)	(-1.42)	(-1.53)	(-0.98)
LEV	0.065***	0.065***	0.063***	0.066***	0.066***	0.063***
	(8.54)	(8.53)	(4.95)	(8.57)	(8.62)	(4.90)
Cret_volatility	0.162***	0.161***	0.156***	0.161***	0.158***	0.160***
	(7.23)	(7.14)	(4.39)	(7.18)	(7.04)	(4.47)
Totinsholdper	-0.009	-0.010*	-0.003	-0.008	-0.009*	-0.004
	(-1.61)	(-1.79)	(-0.32)	(-1.57)	(-1.72)	(-0.41)
Analyst	-0.003***	-0.003***	-0.001	-0.003***	-0.003***	-0.001
	(-4.03)	(-3.96)	(-0.99)	(-3.98)	(-3.90)	(-0.97)
BM	-0.006***	-0.006***	-0.003	-0.006***	-0.006***	-0.003
	(-3.51)	(-3.47)	(-1.09)	(-3.48)	(-3.42)	(-1.05)
RET	-0.003**	-0.003**	-0.004*	-0.003**	-0.003**	-0.004*
	(-2.30)	(-2.14)	(-1.91)	(-2.26)	(-2.11)	(-1.94)
Turnover	-0.005***	-0.005***	-0.002	-0.005***	-0.005***	-0.002
	(-2.91)	(-2.97)	(-0.62)	(-2.90)	(-2.86)	(-0.75)
ROA	0.065***	0.066***	0.056*	0.066***	0.067***	0.058*
	(3.86)	(3.90)	(1.78)	(3.90)	(3.94)	(1.86)
Dual	-0.001	-0.001	0.002	-0.001	-0.001	0.003
	(-0.30)	(-0.48)	(0.49)	(-0.29)	(-0.49)	(0.64)
Indir	0.029*	0.025	0.026	0.030*	0.027	0.026
	(1.65)	(1.43)	(0.93)	(1.72)	(1.53)	(0.95)
SOE	-0.007***	-0.007***	-0.002	-0.007***	-0.008***	-0.003
	(-2.86)	(-2.95)	(-0.42)	(-3.01)	(-3.12)	(-0.71)
Gdp_percapita				0.003**	0.004***	-0.001
				(2.52)	(3.19)	(-0.19)
Gdp_growth				0.055**	0.053*	0.034
				(1.99)	(1.92)	(0.80)
Pop_growth				0.091***	0.082***	-0.160*
				(3.83)	(3.38)	(-1.67)
Consume_percapita				-0.020**	-0.023***	-0.019
				(-2.52)	(-3.03)	(-0.77)
Constant	0.192***	0.195***	0.151***	0.366***	0.396***	0.307
	(5.66)	(5.27)	(2.66)	(4.87)	(5.32)	(1.43)
Fixed Effects	*IY*	*IY*	*IY*	*IY*	*IY*	*IY*
Obs	10950	10950	4126	10950	10950	4126
Adj Rsq	0.11	0.11	0.14	0.11	0.12	0.14

Table 3: Alternative proxies for earnings management

This table presents the results of the following multivariate regression:

$$Accrual_{i,p,t} = \alpha + \beta \times Alcohol_{p,t-1} + C \times M_{i,p,t-1} + \epsilon_{i,p,t},$$

where $Accrual_{i,p,t}$ refers to alternative proxies for earnings management for firm i located in province p in year t, including Dechow, Sloan, and Sweeney's (1995) modification of Jones's (1991) residual accruals (*Accrual_Jones*), Kothari, Leone, and Wasley's (2005) residual accruals (*Accrual_KLW*), and target beating on "small positive forecasting profits" (*SPAF*) and "small positive profits" (*SPE*) based on Burgstahler and Dichev (1997). $Alcohol_{p,t-1}$ refers to the lagged alcohol consumption of the region. $M_{i,p,t-1}$ stacks a list of lagged control variables, including the logarithm of firm size (*Size*), financial leverage (*LEV*), return on assets (*ROA*), stock return volatility (*Cret_volatility*), institutional ownership (*Totinsholdper*), logarithm of the number of analysts following the firm (*Analyst*), book-to-market ratio (*BM*), annual stock return (*RET*), turnover ratio (*Turnover*), dual role for the board chairman (*Dual*), an indicator for state-owned enterprises (*SOE*), GDP per capita (*GDP_percapita*), GDP growth (*GDP_growth*), population growth (*Pop_growth*), and logarithm of the residential consumption per capita (*Consume_percapita*). These variables are defined in the Appendix. Obs denotes the number of firm-year observations, AdjRsq is the adjusted R^2, and Pseudo Rsq is the Pseudo R^2. We further control for industry and year fixed effects and cluster the standard errors at the firm level in all regressions. The superscripts ***, **, and * refer to the 1%, 5%, and 10% levels of statistical significance, respectively. The sample covers the period from 2002 to 2014.

Dep. Var=	*Accrual_Jones*	*Accrual_KLW*	*SPAF*	*SPE*	*Accrual_Jones*	*Accrual_KLW*	*SPAF*	*SPE*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Alcohol	0.007**	0.007**	0.361*	0.547***	0.005*	0.006*	0.410**	0.401**
	(2.01)	(2.18)	(1.92)	(2.94)	(1.68)	(1.80)	(2.04)	(2.11)
Size	-0.005***	-0.004***	0.264***	-0.070	-0.005***	-0.005***	0.246***	-0.051
	(-5.20)	(-5.78)	(4.96)	(-1.37)	(-5.73)	(-6.29)	(4.60)	(-0.98)
LEV	0.025***	0.028***	1.168***	0.758***	0.025***	0.029***	1.187***	0.731***
	(6.44)	(8.48)	(4.84)	(3.45)	(6.58)	(8.64)	(4.93)	(3.29)
Cret_volatility	0.027*	0.001	-0.949	2.713***	0.026*	-0.000	-0.992	2.807***
	(1.81)	(0.11)	(-1.10)	(3.70)	(1.72)	(-0.016)	(-1.16)	(3.82)
Totinsholdper	0.002	0.001	0.107	-0.253	0.002	0.001	0.110	-0.248
	(0.53)	(0.44)	(0.62)	(-1.50)	(0.52)	(0.43)	(0.63)	(-1.47)
Analyst	-0.001**	-0.001**	-0.242***	-0.219***	-0.001**	-0.001**	-0.240***	-0.220***
	(-2.30)	(-2.21)	(-8.78)	(-8.37)	(-2.17)	(-2.06)	(-8.68)	(-8.45)
BM	-0.003***	-0.003***	-0.487***	0.320***	-0.002**	-0.002***	-0.473***	0.307***
	(-2.88)	(-3.19)	(-7.00)	(7.38)	(-2.52)	(-2.84)	(-6.84)	(7.05)
RET	0.008***	0.006***	0.136**	-0.302***	0.008***	0.006***	0.138**	-0.306***
	(6.71)	(5.91)	(2.35)	(-4.93)	(6.80)	(6.02)	(2.40)	(-4.97)
Turnover	0.002*	0.001	-0.231***	-0.010	0.002*	0.001	-0.227***	-0.019
	(1.67)	(1.17)	(-4.22)	(-0.19)	(1.85)	(1.38)	(-4.14)	(-0.37)
ROA	-0.027**	0.018*	2.576***	-9.303***	-0.026**	0.018*	2.587***	-9.270***
	(-2.06)	(1.78)	(3.46)	(-16.2)	(-2.05)	(1.77)	(3.47)	(-16.1)
Dual	0.000	0.001	-0.012	0.167**	0.000	0.001	-0.020	0.169**
	(0.22)	(0.52)	(-0.12)	(2.04)	(0.12)	(0.44)	(-0.22)	(2.07)
Indir	0.008	0.016**	0.065	-0.006	0.007	0.016**	0.052	0.013
	(0.81)	(2.01)	(0.11)	(-0.011)	(0.76)	(1.97)	(0.085)	(0.024)
SOE	-0.004***	-0.002*	0.364***	0.144*	-0.004***	-0.002*	0.368***	0.124*
	(-2.83)	(-1.96)	(4.72)	(1.92)	(-2.72)	(-1.85)	(4.76)	(1.65)
Gdp_percapita					0.001	0.001	0.027	4.706*
					(1.32)	(1.24)	(0.72)	(1.93)
Gdp_growth					0.023	0.015	1.248	0.036
					(1.41)	(1.01)	(1.24)	(0.95)
Pop_growth					0.019	0.028	0.132	0.029
					(0.93)	(1.58)	(0.11)	(0.030)
Consume_percapita					0.001	0.001	0.105	0.068
					(0.33)	(0.33)	(0.44)	(0.062)
Constant	0.090***	0.091***	-2.935***	-1.321**	0.076*	0.079**	-4.000	-0.582**
	(4.86)	(5.83)	(-2.66)	(-2.12)	(1.78)	(2.14)	(-1.59)	(-2.43)
Fixed Effects	*IY*	*IY*	*IY*	*IY*	*IY*	*IY*	*IY*	*IY*
Obs	14777	16689	13110	17495	14777	16689	13110	17495
Adj Rsq / Pseudo Rsq	0.06	0.06	0.107	0.127	0.06	0.06	0.108	0.128

Table 4: Alcohol consumption and earnings management: Instrumental variable approach

This table presents the results of the following two-stage IV specification:

$$First\ stage: Alcohol_{p,t} = a + b \times IV_{p,t} + c \times M_{i,p,t-1} + \delta_{p,t-1}, \quad (2)$$

$$Second\ stage: Accrual_{i,p,t} = \alpha + \beta \times \widehat{Alcohol}_{p,t-1} + C \times M_{i,p,t-1} + \epsilon_{i,p,t}, \quad (3)$$

where $IV_{p,t}$ denotes the instrument variables in the first stage for province p and $\widehat{Alcohol}_{p,t-1}$ refers to the projected value of lagged alcohol consumption obtained from the first-stage regression. $M_{i,p,t-1}$ stacks a list of lagged control variables as before. The instruments are the gender ratio (*Gender ratio*), the fraction of areas suffering from snow storms and other natural disasters related to low temperature, wind, and hail (*Snow*), the average Temperature in a region in a year (*Temperature*), and the dummy variable indicating a reduction in alcohol tariffs (*Tariff*). Obs denotes the number of firm-year observations, and AdjRsq is the adjusted R^2. We further control for industry and year fixed effects and cluster the standard errors at the firm level in all regressions. The superscripts ***, **, and * refer to the 1%, 5%, and 10% levels of statistical significance, respectively. The sample covers the period from 2002 to 2014.

IVs=	*Panel A :GenderRatio & Snow*		*Panel B: GenderRatio & Temperature*		*Panel C: GenderRatio & Tariff*	
Dep. Var=	Stage 1 *Alcohol*	Stage 2 *Accrual_DD*	Stage 1 *Alcohol*	Stage 2 *Accrual_DD*	Stage 1 *Alcohol*	Stage 2 *Accrual_DD*
	(1)	(2)	(3)	(4)	(5)	(6)
GenderRatio	0.641***		0.702***		0.654***	
	(7.58)		(15.1)		(7.71)	
Snow	0.002***					
	(3.79)					
Temperature			-0.001***			
			(-4.67)			
Tariff					0.009***	
					(4.93)	
Alcohol_hat		0.058**		0.101***		0.078*
		(2.40)		(2.60)		(1.88)
Size	-0.002	-0.003*	-0.003	0.001	-0.002	-0.003*
	(-0.39)	(-1.74)	(-0.68)	(0.33)	(-0.37)	(-1.93)
LEV	0.052**	0.056***	0.046**	0.056***	0.050**	0.059***
	(2.44)	(7.00)	(2.24)	(6.72)	(2.36)	(7.16)
Cret_volatility	0.019	0.138***	0.008	0.162***	0.015	0.153***
	(0.34)	(6.31)	(0.16)	(6.64)	(0.26)	(6.80)
Totinsholdper	0.014	-0.012**	0.002	-0.010	0.016	-0.011**
	(0.98)	(-2.17)	(0.11)	(-1.64)	(1.08)	(-1.99)
Analyst	-0.003	-0.002***	-0.003	-0.004***	-0.003	-0.002***
	(-1.07)	(-2.79)	(-1.27)	(-4.88)	(-1.13)	(-2.95)
BM	-0.004	-0.005***	-0.002	-0.007***	-0.004	-0.006***
	(-0.95)	(-3.38)	(-0.51)	(-4.09)	(-0.87)	(-3.48)
RET	-0.005	0.000	-0.007**	-0.002	-0.005	-0.001
	(-1.57)	(0.15)	(-2.22)	(-1.10)	(-1.54)	(-0.87)
Turnover	0.011**	-0.005***	0.008	-0.006***	0.011**	-0.005***
	(2.09)	(-2.71)	(1.62)	(-3.34)	(2.11)	(-2.96)
ROA	-0.069	0.038**	-0.076	0.092***	-0.065	0.057***
	(-1.63)	(2.24)	(-1.61)	(4.46)	(-1.55)	(3.30)
Dual	0.013*	-0.001	0.004	-0.001	0.013*	-0.002
	(1.66)	(-0.22)	(0.52)	(-0.21)	(1.69)	(-0.57)
Indir	0.031	0.045**	0.048	0.042*	0.032	0.033*
	(0.60)	(2.50)	(0.87)	(1.91)	(0.63)	(1.79)
SOE	-0.012	-0.007***	-0.008	-0.008***	-0.012	-0.007***
	(-1.48)	(-2.94)	(-1.01)	(-3.11)	(-1.55)	(-2.67)
Gdp_percapita	-0.040***	0.007***	-0.012***	0.004**	-0.041**	0.007***
	(-11.2)	(2.73)	(-2.63)	(2.26)	(-11.6)	(3.08)
Gdp_growth	-0.217***	0.029	-0.018	0.042	-0.172**	0.038
	(-2.80)	(0.99)	(-0.19)	(1.17)	(-2.28)	(1.31)
Pop_growth	-0.989***	-0.035	-0.670***	0.045*	-0.973***	-0.059
	(-12.9)	(-0.90)	(-9.53)	(1.65)	(-12.7)	(-1.49)
Consume_percapita	-0.274***	-0.038**	-0.077**	-0.022*	-0.281***	-0.041***
	(-11.2)	(-2.44)	(-2.28)	(-1.87)	(-11.4)	(-2.60)
Constant	4.127***	0.591***	2.526***	0.377***	4.198***	0.650***
	(19.0)	(3.43)	(8.31)	(3.03)	(19.2)	(3.69)
Fixed Effects	*IY*	*IY*	*IY*	*IY*	*IY*	*IY*
Obs	10950	10950	10950	10950	10950	10950
Adj Rsq	0.27	0.14	0.19	0.12	0.26	0.09
Weak IV *F* Statistics	95.010		161.015		57.462	
Hansen's *J* Statistics	1.278		0.163		0.003	

Table 5: IV Regressions for Alternative Proxies for Culture and Earnings Management

This table presents the results of the following two-stage IV specification:

$$First\ stage: Alcohol_{p,t-1} = a + b \times IV_{p,t-1} + c \times M_{i,p,t-1} + \delta_{p,t-1},$$

$$Second\ stage: Accrual_{i,p,t} = \alpha + \beta \times \widehat{Alcohol}_{p,t-1} + C \times M_{i,p,t-1} + \epsilon_{i,p,t},$$

where $IV_{p,t-1}$ denotes the two instrument variables in the first stage, including the lagged gender ratio (*Gender ratio*) and the lagged fraction of areas suffering from snow storms and other natural disasters related to low temperature, wind, and hail (Snow). In Models (1) to (4), $Accrual_{i,p,t}$ refers to our main proxy for discretionary accruals (*Accrual_DD*), and $Alcohol_{p,t}$ refers to the number of nearby famous distilled liquor brands ("#Famous Brand") in Models (2) and (5) and the intensity of alcohol intoxication ("Intoxication"). In Models (5) to (9), $Accrual_{i,p,t}$ refers to alternative proxies for earnings management for firm i located in province p in year t, including Dechow, Sloan, and Sweeney's (1995) modification of Jones's (1991) residual accruals (*Accrual_Jones*), Kothari, Leone, and Wasley's (2005) residual accruals (*Accrual_KLW*), and target beating on "small positive past-earnings profits" (*SPAF*) and "small positive profits" (*SPE*) based on Burgstahler and Dichev (1997). $Alcohol_{p,t}$ refers to our main proxy of regional alcohol consumption. In all specifications, $M_{i,p,t-1}$ stacks a list of lagged control variables as before, and $\widehat{Alcohol}_{p,t-1}$ refers to the projected lagged value of alcohol obtained from the first-stage regression. Obs denotes the number of firm-year observations, and AdjRsq is the adjusted R^2. We further control for industry and year fixed effects and cluster the standard errors at the firm level in all regressions. The superscripts ***, **, and * refer to the 1%, 5%, and 10% levels of statistical significance, respectively. The sample covers the period from 2002 to 2014.

IVs=	*Panel A: Alternative Measures of Alcohol Culture*				*Panel B: Alternative Measures of Earnings Manipulation*				
	Stage 1	Stage 2	Stage 1	Stage 2	Stage 1	Stage 2			
Dep. Var=	*#Famous Brand*	*Accrual_DD*	*Intoxication*	*Accrual_DD*	*Alcohol*	*Accrual_Jones*	*Accrual_KLW*	*SPAF*	*SPE*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
GenderRatio	-0.236		0.021***		0.641***				
	(-0.25)		(8.29)		(7.58)				
Snow	-0.026***		0.000***		0.002***				
	(-4.48)		(6.60)		(3.79)				
#Famous Brand_hat		0.060***							
		(3.88)							
Intoxication_hat				2.497*					
				(1.95)					
Alcohol_hat						0.008**	0.020**	0.173**	0.239***
						(2.33)	(1.99)	(2.08)	(3.28)
Size	0.104	-0.011**	0.000	-0.005*	-0.002	-0.004***	-0.004***	0.020**	-0.020***
	(1.40)	(-2.12)	(1.26)	(-1.80)	(-0.39)	(-4.30)	(-4.48)	(2.45)	(-2.66)
LEV	-0.540*	0.099***	-0.000	0.061***	0.052**	0.019***	0.024***	0.141***	0.131***
	(-1.80)	(4.74)	(-0.92)	(4.81)	(2.44)	(4.42)	(6.68)	(3.62)	(3.50)
Cret_volatility	0.916	0.099*	-0.001	0.139***	0.019	0.014	0.004	0.045	0.322***
	(1.13)	(1.72)	(-1.36)	(4.42)	(0.34)	(0.77)	(0.23)	(0.34)	(2.80)
Totinsholdper	0.355	-0.036**	-0.000	-0.006	0.014	-0.002	0.001	0.047*	-0.006
	(1.45)	(-2.14)	(-0.60)	(-0.65)	(0.98)	(-0.56)	(0.33)	(1.70)	(-0.22)
Analyst	-0.014	-0.000	-0.000	0.000	-0.003	-0.001***	-0.001***	-0.023***	-0.019***
	(-0.38)	(-0.16)	(-0.67)	(0.36)	(-1.07)	(-2.76)	(-3.56)	(-5.86)	(-4.63)
BM	-0.010	-0.005	-0.000	-0.004	-0.004	-0.002**	-0.002***	-0.047***	0.038***
	(-0.19)	(-1.43)	(-0.26)	(-1.40)	(-0.95)	(-2.08)	(-2.73)	(-6.61)	(4.50)
RET	-0.060*	0.004	-0.000*	-0.002	-0.005	0.010***	0.006***	0.019**	-0.032***
	(-1.85)	(1.43)	(-1.70)	(-0.71)	(-1.57)	(6.20)	(4.80)	(2.07)	(-4.20)
Turnover	-0.091	0.000	0.000	-0.000	0.011**	0.001	0.001	-0.033***	0.009
	(-1.25)	(0.088)	(0.17)	(-0.067)	(2.09)	(1.21)	(0.63)	(-4.21)	(1.10)
ROA	0.420	0.018	0.000	0.011	-0.069	-0.030**	0.021*	0.183*	-1.122***
	(0.62)	(0.40)	(0.37)	(0.36)	(-1.63)	(-2.08)	(1.80)	(1.71)	(-12.0)
Dual	0.214	-0.018*	0.000	0.003	0.013*	-0.000	0.000	0.002	0.027*
	(1.33)	(-1.73)	(0.042)	(0.67)	(1.66)	(-0.19)	(0.21)	(0.18)	(1.87)
Indir	1.386**	-0.043	-0.000	0.031	0.031	0.008	0.019**	-0.004	0.014
	(1.98)	(-0.82)	(-0.082)	(1.12)	(0.60)	(0.76)	(2.08)	(-0.044)	(0.16)
SOE	0.194*	-0.022***	0.000	-0.004	-0.012	-0.004***	-0.003**	0.036***	0.008
	(1.79)	(-2.83)	(1.09)	(-1.05)	(-1.48)	(-2.84)	(-2.35)	(3.40)	(0.65)
Gdp_percapita	-0.135**	0.011***	0.001***	-0.004	-0.040***	0.001	0.000	0.013	0.003
	(-2.44)	(3.07)	(8.14)	(-1.23)	(-11.2)	(0.78)	(0.15)	(1.57)	(0.28)
Gdp_growth	0.248	0.017	0.007***	-0.039	-0.217***	0.005	-0.011	0.159	-0.026
	(0.29)	(0.29)	(3.12)	(-0.77)	(-2.80)	(0.25)	(-0.64)	(1.06)	(-0.18)
Pop_growth	-1.534*	0.056	0.002	-0.122	-0.989***	-0.015	0.019	-0.225	0.260
	(-1.77)	(1.11)	(0.99)	(-1.27)	(-12.9)	(-0.41)	(0.62)	(-1.06)	(1.18)
Consume_percapita	-0.413	0.007	-0.002***	0.019	-0.274***	0.003	0.009	-0.034	-0.056
	(-1.43)	(0.36)	(-4.18)	(0.76)	(-11.2)	(0.38)	(1.34)	(-0.55)	(-0.86)
Constant	4.034	0.097	-0.004	-0.012	4.127***	0.094	0.022	0.769	0.790
	(1.37)	(0.48)	(-0.70)	(-0.051)	(19.0)	(1.01)	(0.28)	(1.12)	(1.10)
Fixed Effects	*IY*	*IY*	*IY*	*IY*	*IY*	*IY*	*IY*	*IY*	*IY*
Obs	10950	10950	4126	4126	10950	10463	10463	10950	10950
Adj Rsq	0.06	0.11	0.33	0.07	0.27	0.05	0.05	0.08	0.10
Weak IV *F* Statistics	55.021		38.024			51.243	61.406	53.079	53.076
Hansen's *J* Statistics	0.639		0.180			1.311	1.715	0.513	0.076

Table 6: The role of corporate leaders in transmitting culture

The first two columns of this table present the results of the following regression:

$$Accrual_{i,p,t} = \alpha + \beta_1 \times Alcohol_{p,t-1} + \beta_2 \times More\_Alcohol\_CEO_{i,t-1} + \gamma \times Alcohol_{p,t-1} \times More\_Alcohol\_CEO_{i,t-1} + C \times M_{i,p,t-1} + \epsilon_{i,p,t},$$

where $Accrual_{i,p,t}$ refers to discretionary accruals following Dechow and Dichev's (2002) model (*Accrual_DD*) for firm i located in province p in year t, $Alcohol_{p,t-1}$ is the lagged alcohol consumption of the region of the firm, and $More\_Alcohol\_CEO_{i,t-1}$ refers to the lagged dummy variable for more alcohol-adapted CEOs, which takes the value of one when the CEO of a firm comes from a region (either the region of the college they attended or the region of birth) with a higher value of *Alcohol Consumption* than the firm's region and zero otherwise. We further control for industry and year fixed effects (IY) and cluster the standard errors at the firm level in all regressions. The last two columns of the table presents the results of the following multivariate regression:

$$Accrual_{i,p,t} = \alpha + \beta \times Alcohol\_CEO_{p,t-1} + C \times M_{i,p,t-1} + \epsilon_{i,p,t},$$

where $Alcohol\_CEO_{p,t-1}$ refers to the lagged alcohol consumption of CEOs' region of origin (either the region of the college they attended or the region of birth). We further control for industry, year, and region fixed effects (IYR) and cluster the standard errors at the firm level in all regressions. The superscripts ***, **, and * refer to the 1%, 5%, and 10% levels of statistical significance, respectively. The sample covers the period from 2002 to 2014.

Dep. Var=*Accrual_DD*	CEO Home Province	CEO College Province	CEO Home Province	CEO College Province
	(1)	(2)	(3)	(4)
Alcohol	0.022	0.001		
	(1.15)	(1.13)		
More_Alcohol_CEO	0.013*	0.029**		
	(1.73)	(2.21)		
*Alcohol*More_Alcohol_CEO*	0.063**	0.040*		
	(2.07)	(1.92)		
Alcohol_CEO			0.041**	0.085***
			(2.08)	(4.18)
Size	-0.006	-0.006**	-0.002	-0.009**
	(-1.63)	(-2.25)	(-0.43)	(-2.13)
LEV	0.055***	0.063***	0.055***	0.087***
	(3.31)	(5.40)	(3.27)	(5.41)
Cret_volatility	0.060***	0.054***	0.054***	0.037***
	(2.97)	(4.07)	(2.97)	(3.33)
Totinsholdper	0.006	-0.009	0.002	-0.009
	(0.82)	(-0.95)	(0.17)	(-0.74)
Analyst	-0.001***	-0.000***	-0.000***	-0.000*
	(-2.99)	(-2.64)	(-2.91)	(-1.69)
BM	-0.002	-0.006***	-0.003	-0.005
	(-0.76)	(-2.73)	(-1.06)	(-1.55)
RET	-0.006	-0.002	-0.006*	0.002
	(-1.61)	(-0.078)	(-1.75)	(0.78)
Turnover	0.003	0.001	0.002	0.002
	(0.89)	(0.71)	(0.54)	(0.62)
ROA	0.111***	0.030	0.118***	0.021
	(2.96)	(1.18)	(2.75)	(0.49)
Dual	0.004	-0.000	0.004	0.001
	(0.67)	(-0.077)	(0.68)	(0.15)
Indir	0.038	0.036	0.030	0.004
	(0.78)	(1.09)	(0.65)	(0.11)
SOE	-0.008	-0.009**	-0.014**	-0.008
	(-1.40)	(-2.12)	(-2.31)	(-1.27)
Gdp_percapita	-0.005*	-0.001	-0.002	0.011**
	(-1.78)	(-0.35)	(-0.24)	(2.04)
Gdp_growth	0.019	-0.050	0.043	-0.093
	(0.33)	(-1.05)	(0.60)	(-1.14)
Pop_growth	-0.058	0.119**	-0.136**	0.100
	(-0.83)	(2.01)	(-1.97)	(1.31)
Consume_percapita	0.018	-0.003	0.011	0.041
	(1.02)	(-1.21)	(0.31)	(1.04)
Constant	0.103	0.251*	-0.061	-0.212
	(1.15)	(1.73)	(-0.19)	(-0.61)
Fixed Effects	IY	IY	IYR	IYR
Obs	2039	3180	2039	3180
Adj Rsq	0.20	0.22	0.17	0.30

Table 7: The results on the relationship between informal culture and formal institutions

The first three columns of this table present the results of the following Logistic specification:

$$FraudDetection_{i,p,t} = \alpha + \beta_1 \times Accrual_{i,p,t-1} + \beta_2 \times Alcohol_{p,t-1}$$

$$+\gamma \times Accrual_{i,p,t-1} \times Alcohol_{p,t-1} + C \times M_{i,p,t-1} + \epsilon_{i,p,t},$$

where $FraudDetection_{i,p,t}$ is a dummy variable that takes the value of one when fraud is detected for firm i located in province p in year t, $Accrual_{i,p,t-1}$ refers to discretionary accruals following Dechow and Dichev's (2002) model (*Accrual_DD*) for firm i located in province p in year t, $Alcohol_{p,t}$ refers to the alcohol consumption of the region, and the other variables are defined as before. The next three columns of the table augment the baseline regression in the following specification:

$$Accrual_{i,p,t} = \alpha + \beta \times Alcohol_{p,t-1} + \gamma \times Alcohol_{p,t-1} \times Post\_Meet_t + C \times M_{i,p,t-1} + \epsilon_{i,p,t},$$

where $Post\_Meet_t$ is a dummy variable that takes the value of one for periods after the recent anticorruption regulation (the eight-point regulation, which was adopted in December 2012) and zero otherwise. Obs denotes the number of firm-year observations, AdjRsq is the adjusted R^2, and Pseudo Rsq is the Pseudo R^2. We further control for industry and year fixed effects (IY) and cluster the standard errors at the firm level in all regressions. The superscripts ***, **, and * refer to the 1%, 5%, and 10% levels of statistical significance, respectively. The sample covers the period from 2002 to 2014.

Dep. Var =	*Prob(Fraud Detection)*			*Accrual_DD*		
	Full sample	Full sample	Full sample	Full sample	SOE	Non SOE
	(1)	(2)	(3)	(4)	(5)	(6)
Accrual_DD	2.384***	2.242***	6.058***			
	(6.39)	(5.99)	(3.04)			
Alcohol		0.370	0.283	0.025***	0.025***	0.030**
		(1.60)	(1.21)	(3.52)	(3.10)	(2.30)
*Accrual_DD*Alcohol*			-3.058***			
			(-3.04)			
*Alcohol*Post_Meet*				-0.029***	-0.033***	0.010
				(-2.92)	(-2.67)	(1.36)
Size	-0.412***	-0.416***	-0.410***	-0.005***	-0.004**	-0.004
	(-9.81)	(-9.86)	(-9.73)	(-2.67)	(-2.13)	(-1.44)
LEV	2.057***	2.117***	2.120***	0.064***	0.064***	0.065***
	(13.4)	(13.8)	(13.8)	(8.41)	(6.63)	(5.71)
Cret_volatility	1.710***	1.767***	1.770***	0.154***	0.124***	0.196***
	(2.62)	(2.71)	(2.71)	(7.16)	(4.45)	(6.20)
Totinsholdper	0.338***	0.355***	0.355***	-0.010*	-0.011*	0.000
	(2.60)	(2.72)	(2.71)	(-1.81)	(-1.75)	(0.0022)
Analyst	-0.020	-0.023	-0.027	-0.003***	-0.000	-0.006***
	(-1.06)	(-1.22)	(-1.39)	(-3.24)	(-0.25)	(-4.78)
BM	0.073*	0.070*	0.065	-0.006***	-0.005***	-0.007**
	(1.78)	(1.69)	(1.58)	(-3.82)	(-2.75)	(-2.55)
RET	0.004	-0.000	-0.001	-0.002	0.000	-0.005**
	(0.074)	(-0.0042)	(-0.017)	(-1.23)	(0.14)	(-2.24)
Turnover	0.143***	0.152***	0.148***	-0.004**	-0.003	-0.007***
	(3.49)	(3.70)	(3.61)	(-2.48)	(-1.20)	(-2.65)
ROA	-2.880***	-2.963***	-2.957***	0.054***	0.022	0.085***
	(-6.44)	(-6.60)	(-6.59)	(3.24)	(0.98)	(3.36)
Dual	0.335***	0.350***	0.354***	0.001	0.004	-0.004
	(5.65)	(5.90)	(5.97)	(0.22)	(0.82)	(-1.18)
Indir	0.377	0.389	0.378	0.039**	0.004	0.071**
	(0.92)	(0.95)	(0.92)	(2.24)	(0.19)	(2.48)
SOE	-0.347***	-0.360***	-0.361***			
	(-7.09)	(-7.32)	(-7.33)			
Gdp_percapita	-0.053**	-0.092***	-0.092***	0.003**	0.003	0.003
	(-2.05)	(-3.45)	(-3.43)	(2.13)	(1.64)	(1.52)
Gdp_growth	-1.902**	-1.810**	-1.892**	0.042	0.048	0.054
	(-2.42)	(-2.30)	(-2.40)	(1.49)	(1.45)	(1.09)
Pop_growth	-2.324**	-1.432	-1.381	0.043*	0.030	0.055
	(-2.06)	(-1.25)	(-1.21)	(1.74)	(0.99)	(1.29)
Consume_percapita	-0.338**	-0.074	-0.094	-0.008	-0.010	-0.007
	(-2.05)	(-0.43)	(-0.55)	(-1.03)	(-1.05)	(-0.56)
Constant	7.790***	4.757***	5.371***	0.280***	0.266***	0.265**
	(4.55)	(2.67)	(3.00)	(3.73)	(2.71)	(2.18)
Fixed Effects	*IY*	*IY*	*IY*	*IY*	*IY*	*IY*
Obs	10950	10950	10950	10950	6526	4424
Adj Rsq / Pseudo Rsq	0.0868	0.0900	0.0907	0.12	0.10	0.16

Table 8: The influence of alcohol consumption in high- and low-trust regions

This table presents the results of the following specification:

$$Accrual_{i,p,t} = \beta_1 \times Alcohol_{p,t-1} + \beta_2 \times Trust_{p,t-1} + \gamma \times Alcohol_{p,t-1} \times Trust_{p,t-1}$$

$$+C \times M_{i,p,t-1} + \epsilon_{i,p,t},$$

where $Accrual_{i,p,t}$ refers to discretionary accruals following Dechow and Dichev's (2002) model (*Accrual_DD*) for firm i located in province p in year t; $Alcohol_{p,t-1}$ refers to the lagged alcohol consumption of the region; and $Trust_{p,t-1}$ refers to the lagged level of social trust, which is proxied by "Trust," the fraction of population in a region answering "Yes" to the question whether "Most people can be trusted," "Fairness," the fraction of population in a region answering "Yes" to the question of "most people try to be fair," and "BloodDonation," the number of blood donations per capita in a province. Obs denotes the number of firm-year observations, and AdjRsq is the adjusted R^2. We further control for industry and year fixed effects (IY) and cluster the standard errors at the firm level in all regressions. The superscripts ***, **, and * refer to the 1%, 5%, and 10% levels of statistical significance, respectively. The sample covers the period from 2002 to 2014.

Trust=	*Trust*		*Fairness*		*BloodDonation*	
	(1)	(2)	(3)	(4)	(5)	(6)
Alcohol	0.013***	0.032***	0.013***	0.023***	0.006*	0.010**
	(3.41)	(3.39)	(3.49)	(4.83)	(1.71)	(2.01)
High_Trust	-0.000	0.014**	-0.002	0.015***	-0.008***	-0.002
	(-0.30)	(2.10)	(-1.28)	(2.96)	(-4.66)	(-0.31)
*High_Trust*Alcohol*		-0.022**		-0.024***		-0.008*
		(-2.20)		(-3.36)		(-1.75)
Size	-0.003***	-0.003***	-0.003***	-0.003***	-0.003***	-0.003***
	(-3.31)	(-3.27)	(-3.32)	(-3.27)	(-3.32)	(-3.32)
LEV	0.064***	0.064***	0.064***	0.064***	0.065***	0.065***
	(16.0)	(15.9)	(16.1)	(15.9)	(16.8)	(16.8)
Cret_volatility	0.159***	0.160***	0.159***	0.160***	0.159***	0.160***
	(9.22)	(9.26)	(9.23)	(9.25)	(9.43)	(9.45)
Totinsholdper	-0.010***	-0.010***	-0.009***	-0.009***	-0.011***	-0.011***
	(-2.77)	(-2.77)	(-2.75)	(-2.60)	(-3.18)	(-3.12)
Analyst	-0.003***	-0.003***	-0.003***	-0.003***	-0.003***	-0.003***
	(-5.95)	(-5.95)	(-5.94)	(-5.94)	(-5.88)	(-5.89)
BM	-0.006***	-0.006***	-0.006***	-0.006***	-0.006***	-0.006***
	(-5.18)	(-5.14)	(-5.18)	(-5.14)	(-5.90)	(-5.89)
RET	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
	(-0.72)	(-0.72)	(-0.72)	(-0.73)	(-0.93)	(-0.95)
Turnover	-0.004***	-0.004***	-0.004***	-0.004***	-0.004***	-0.004***
	(-3.48)	(-3.47)	(-3.49)	(-3.51)	(-4.22)	(-4.21)
ROA	0.061***	0.061***	0.061***	0.061***	0.051***	0.052***
	(5.05)	(5.03)	(5.03)	(5.05)	(4.40)	(4.41)
Dual	-0.002	-0.002	-0.002	-0.002	0.000	0.000
	(-1.00)	(-0.96)	(-1.02)	(-1.00)	(0.092)	(0.079)
Indir	0.043***	0.043***	0.043***	0.042***	0.039***	0.039***
	(3.92)	(3.87)	(3.88)	(3.82)	(3.59)	(3.58)
SOE	-0.007***	-0.007***	-0.007***	-0.007***	-0.007***	-0.007***
	(-5.21)	(-5.18)	(-5.22)	(-5.21)	(-5.99)	(-5.99)
Gdp_percapita	-0.000	-0.001	-0.000	0.000	0.001*	0.002**
	(-0.47)	(-0.97)	(-0.23)	(0.060)	(1.95)	(2.19)
Gdp_growth	-0.019	-0.023	-0.016	-0.012	0.018	0.022
	(-0.87)	(-1.05)	(-0.72)	(-0.54)	(0.87)	(1.06)
Pop_growth	0.027	0.036	0.027	0.035	0.040	0.041
	(0.97)	(1.26)	(0.96)	(1.26)	(1.43)	(1.46)
Consume_percapita	0.004	0.007	0.003	0.004	-0.002	-0.004
	(0.82)	(1.46)	(0.59)	(0.84)	(-0.45)	(-0.75)
Constant	0.163***	0.120**	0.174***	0.156***	0.227***	0.236***
	(3.45)	(2.35)	(3.66)	(3.27)	(5.03)	(5.15)
Fixed Effects	*IY*	*IY*	*IY*	*IY*	*IY*	*IY*
Obs	10068	10068	10068	10068	10950	10950
Adj Rsq	0.11	0.11	0.11	0.11	0.11	0.11

Table 9: The impact of other elements of sin culture on earnings management

This table presents the results of the following multivariate regression:

$$Accrual_{i,p,t} = \alpha + \beta \times Sin_{p,t-1} + C \times M_{i,p,t-1} + \epsilon_{i,p,t},$$

where $Accrual_{i,p,t}$ refers to discretionary accruals following Dechow and Dichev's (2002) model (Accrual_DD) for firm i located in province p in year t and $Sin_{p,t-1}$ refers to other types of sin culture, including sex-related sin culture (Sex), smoking-related sin culture (Smoking), and gaming-related sin culture (Gaming). These variables are defined in the Appendix. Obs denotes the number of firm-year observations, and AdjRsq is the adjusted R^2. We further control for industry and year fixed effects (IY) and cluster the standard errors at the firm level in all regressions. The superscripts ***, **, and * refer to the 1%, 5%, and 10% levels of statistical significance, respectively. The sample covers the period from 2002 to 2014.

Dep. Var=*Accrual_DD*	(1)	(2)	(3)
Sex	0.059*		
	(1.90)		
Smoking		0.001	
		(0.39)	
Gaming			-0.253
			(-1.50)
Size	-0.004**	-0.004**	-0.004**
	(-2.06)	(-2.07)	(-2.05)
LEV	0.062***	0.062***	0.063***
	(8.18)	(8.17)	(8.33)
Cret_volatility	0.155***	0.155***	0.157***
	(7.20)	(7.22)	(7.32)
Totinsholdper	-0.010*	-0.009*	-0.010*
	(-1.83)	(-1.80)	(-1.86)
Analyst	-0.003***	-0.003***	-0.003***
	(-3.41)	(-3.41)	(-3.56)
BM	-0.006***	-0.006***	-0.006***
	(-3.81)	(-3.79)	(-3.59)
RET	-0.001	-0.001	-0.001
	(-1.16)	(-1.16)	(-1.20)
Turnover	-0.004***	-0.004***	-0.004***
	(-2.67)	(-2.65)	(-2.68)
ROA	0.052***	0.051***	0.054***
	(3.12)	(3.05)	(3.26)
Dual	-0.001	-0.001	-0.000
	(-0.19)	(-0.23)	(-0.051)
Indir	0.035**	0.035**	0.034**
	(2.01)	(2.01)	(1.97)
SOE	-0.008***	-0.008***	-0.009***
	(-3.17)	(-3.16)	(-3.50)
Gdp_percapita	0.004***	0.004***	0.002*
	(2.78)	(3.01)	(1.66)
Gdp_growth	0.041	0.046	0.054*
	(1.47)	(1.60)	(1.92)
Pop_growth	0.015	0.021	-0.009
	(0.62)	(0.83)	(-0.37)
Consume_percapita	-0.014*	-0.016**	-0.005
	(-1.85)	(-2.04)	(-0.61)
Constant	0.348***	0.361***	0.278***
	(4.75)	(4.82)	(3.79)
Fixed Effects	IY	IY	IY
Obs	10950	10950	10950
Adj Rsq	0.11	0.12	0.12

Figure 1: **Map of residents' alcohol consumption**