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# Lenders' culture and the pricing of public corruption in corporate loans: evidence from the United States

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## ABSTRACT

We investigate how the cultural heritage of bank CEOs shapes the relationship between public corruption and the cost of syndicated loans in the US market. We show that banks led by CEOs that trace their origin in high uncertainty avoidance societies penalize less sharply in loan pricing the presence of high local public corruption in the state of the borrowing firms. We find some similar evidence for banks led by CEOs that trace their origin to more individualistic societies. These findings are consistent with the view that certain cultural traits prompt tolerance for the risks of corruption and show that the pricing of institutional quality in corporate loans is conditional on banks led by CEOs with such traits.

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## 1. Introduction

Public corruption worsens corporate outcomes such as transparency, profitability, value, and innovation (Brown et al. 2019; Dass, Nanda, and Xiao 2016; Dass, Nanda, and Xiao 2020; Ellis, Smith, and White 2019; Ha and Frömmel 2023; Huang and Yuan 2021; Parsons, Sulaeman, and Titman 2018). The adverse effects of corruption on corporations prompt information asymmetry and could reduce cash flows. Consequently, corruption could aggravate lenders' concerns because banks consider the institutional environment in which a borrower operates when assessing its creditworthiness (Qian and Strahan 2007). Recent research shows that loan prices reflect the penalization of public corruption in loan contracts (Hossain, Kryzanowski, and Ma 2020).

However, views about public corruption are susceptible to heterogeneity. For instance, some could perceive engagement in corruption-related unethical activities, such as the bribery of public officials, as unacceptable. In contrast, others could tolerate corruption and view it as an acceptable working practice (Jain 1998). Hence, a bank's prevalent view about public corruption could moderate the degree to which this institutional quality characteristic is penalized in loan prices.

Culture shapes the views about public corruption. Hofstede (1984, 82) defines culture as '*the collective programming of the mind which distinguishes the members of one group or society from those of another.*' Culture influences societal values and, therefore, the predominant view about what a society's members consider 'good' and what they consider 'bad' (Hofstede 1984). Therefore, differences in cultural characteristics form an important reason for the differing views about what is considered ethical across nations and the willingness to tolerate and justify unethical practices (Aggarwal, Goodell, and Goodell 2014; Licht, Goldschmidt, and Schwartz 2007; Parboteeah, Bronson, and Cullen 2005; Vitell, Nwachukwu, and Barnes 1993). Cultural characteristics display a significant association with corruption (Barr and Serra 2010; Boateng et al. 2021; Davis and Ruhe 2003; Gächter

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and Schulz 2016; Husted 1999). Furthermore, attitudes toward risk differ between cultures (Hofstede 1984; 2001), which is also evident in the banking sector (Berger et al. 2021; Mourouzidou-Damtsa, Milidonis, and Stathopoulos 2019; Pappas and Xu 2023). Thus, culture could affect banks' concerns about corruption-induced risks when they set loan prices.

Drawing from the 'upper echelon' theory (Hambrick and Mason 1984) and recent empirical evidence, we posit that the cultural heritage of bank CEOs could shape banks' views about public corruption and its associated risks. Several recent studies show that bank CEOs' cultural heritage affects banks' performance and lending policies, such as pricing and monitoring (Bermpei et al. 2023; Hagendorff, Lim, and Nguyen 2023; Nguyen, Hagendorff, and Eshraghi 2018). These findings conform to the 'upper echelon' theory (Hambrick and Mason 1984), which suggests that organizational leaders' values and preferences pervade the organizations they lead. Hence, this paper aims to answer the question: *'Do the cultural heritage characteristics of bank CEOs moderate the relationship between local public corruption in the area of borrowing firms and the price of syndicated loans?'*

This question is significant regarding its implications for the economy and society. Corruption has detrimental effects on economic growth and private sector development. To combat these adverse effects, corporations could be a crucial ally of governments in the fight against corruption through increased social responsibility and the reduction in bribery supply (Calderón, Álvarez-Arce, and Mayoral 2009; Hess 2009; Rose-Ackerman 2002; Sampath, Gardberg, and Rahman 2018). Rose-Ackerman (2002) argues that corporations' contribution to the corruption reduction effort will be more decisive if firms believe it is in their interest to engage in such an effort. Banks' tolerance of corruption might wane the borrowing firms' willingness to assist in reducing local public corruption. Therefore, understanding the cultural context and factors that drive banks to display tolerance towards corruption is an interesting and valuable exercise.

We use the US syndicated loan market as a testing ground for three reasons. Firstly, syndicated loans are large loan deals. In these large loans, the involvement of bank CEOs is more apparent and direct than in smaller loans. Hagendorff, Lim, and Nguyen (2023) provide survey evidence that loan officers in the syndicated market obey the lending parameters that bank CEOs set and are in direct communication with them in the loan deal negotiations.

Secondly, examining the effects of cultural factors on economic outcomes in a cross-country setting faces the issue of confounding factors, e.g. contract enforcement mechanisms (Cline and Williamson 2017), that correlate with culture. Focusing on a single country with a rich immigration history, such as the US, enables us to assume a moderate homogeneity in confounding factors. At the same time, we could exploit the variability in the cultural heritage of bank CEOs. Several studies show that cultural values are imported with immigration to the host country and display strong intergenerational persistence (DeBacker, Heim, and Tran 2015; Dohmen et al. 2012; Giannetti and Zhao 2019; Guiso, Sapienza, and Zingales 2006; Pan, Siegel, and Yue Wang 2020).

Thirdly, the US exhibits a significant cross-state variation in public corruption (Glaeser and Saks 2006), and a US-focussed study enables the use of objective measures of public corruption. These measures rely on public officials' and employees' corruption-related crime convictions and represent the 'actual' level of public corruption.

To carry out the empirical analysis, we compile a largely hand-collected dataset on the cultural heritage of the CEOs of 82 banks active as lead lenders for syndicated loans to 4,260 borrowing firms in the US over the 1993–2017 period. Similarly to other US studies (e.g. Giannetti and Zhao 2019; Hegde and Tumlinson 2014; Liu 2016; Nguyen, Hagendorff, and Eshraghi 2018), we use the origin of bank CEOs' surnames to infer ethnicity. We trace the origin of bank CEOs to 20 countries. Then, we associate the ethnic origin of the surname with the cultural characteristics (dimensions) of Hofstede in the ancestral country of origin (Hofstede 1983; 2001; Hofstede and Bond 1988). We focus on the following four characteristics (dimensions): power distance, masculinity, uncertainty avoidance, and individualism. *Power distance* refers to the extent to which the less powerful members of a society accept the unequal distribution of power. *Masculinity* captures the extent to which assertiveness, competitiveness, and material achievements are valued within a society. *Uncertainty* refers to the degree to which a society's members feel uncomfortable in uncertain situations. Finally, *individualism* captures the extent to which a society's members value personal independence. Previous research shows that these characteristics affect the extent to which societies tolerate corruption (Davis and Ruhe 2003; DiRienzo et al. 2007;

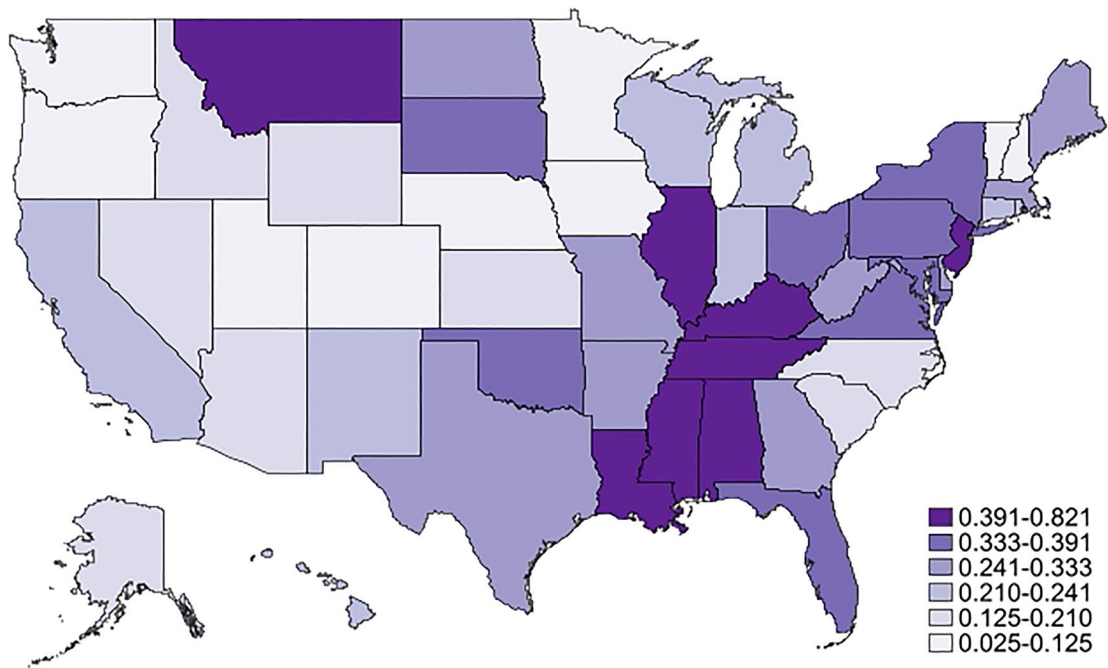


**Figure 1.** A map of the median corruption conviction rate by state from 1993 to 2017.

Husted 1999; Robertson and Watson 2004) and are relevant for bank lending and policies and risk-taking (Berger et al. 2021; Boubakri, Mirzaei, and Samet 2017; Kanagaretnam, Lim, and Lobo 2014).

We merge the bank CEOs' dataset with data on syndicated loans from Dealscan, data on borrowing firms from Compustat, and data from Compustat Bank on the characteristics of the lead banks. Then, we identify the state of the borrowing firms' headquarters to associate it with corruption. As in previous US studies (e.g. Dass, Nanda, and Xiao 2016; Smith 2016), we measure local public corruption with the population-adjusted yearly number of corruption-related convictions across the US states. We obtain these data from the Public Integrity Section (PIN) Reports of the US Department of Justice (DoJ). Figure 1 shows that the US states exhibit high public corruption heterogeneity over the sample period.

Our baseline models' empirical findings support some of our conjectures. Using models with interaction terms, we find that the association of local corruption with the cost of bank loans, as measured by the all-in-spread-drawn (AISD) above LIBOR, is conditioned by some cultural heritage characteristics of bank CEOs. We provide strong evidence that banks led by CEOs with high uncertainty avoidance penalize corruption less sharply. We further find some similar evidence for banks led by CEOs with high individualism. These findings also display economic significance.<sup>1</sup>

The finding of uncertainty avoidance suggests that this cultural characteristic could prompt a view that public corruption could be helpful as an uncertainty-reducing mechanism (Getz and Volkema 2001; Husted 1999; Vitell, Nwachukwu, and Barnes 1993). Individuals originating from high uncertainty avoidance societies do not feel comfortable in uncertain situations. Hence, banks led by uncertainty-avoidant CEOs may view corruption as a way borrowers could circumvent uncertainty-inducing regulatory burdens and other bureaucratic obstacles following the '*grease the wheels*' view of public corruption (Bologna and Ross 2015; Lui 1985). In further cross-sectional tests, we show that the moderating effect of bank CEOs' uncertainty avoidance on the relationship between corruption and loan prices is more evident for borrowers in states with low economic freedom (i.e. in states where state government interference in the economy is high). This finding is consistent with the argument that uncertainty-avoidant individuals may view corruption as an uncertainty-reducing mechanism in heavily regulated environments. Regarding individualism, several studies show that it breeds overconfidence, leads to

underestimating risks, and weakens loan monitoring (Bermpei et al. 2023; Chui, Titman, and Wei 2010; Van den Steen 2004). Thus, banks led by CEOs originating from individualistic societies may underestimate the corruption-induced risks to borrower creditworthiness.

Our findings are robust to several tests. Among others, we perform estimations that control for potential matching between borrowers from corruption with banks led by CEOs with specific cultural heritage traits. We conduct instrumental variable analysis for endogeneity and run several tests to mitigate potential omitted variable issues. We further estimate models with alternative measures for cultural heritage and local corruption, perform regressions excluding recessionary periods, and use alternative clustering of the standard errors. Finally, we conduct further analysis regarding the non-price terms of bank loans (e.g. the presence of covenants and collateral requirements).

We make four contributions to the literature. The first is that we contribute to the growing research that examines the effect of culture and CEOs' cultural heritage on corporate outcomes (Hao et al. 2021; Mourouzidou-Damtsa, Milidonis, and Stathopoulos 2019; Nguyen, Hagendorff, and Eshraghi 2018; Pan, Siegel, and Wang 2015; 2020) and, more specifically, to the stream of this literature that focusses on the banking sector (e.g. Berger et al. 2021; Bermpei et al. 2023; Nguyen, Hagendorff, and Eshraghi 2018). Ours is one of the first studies that examine the effect of bank CEOs' cultural heritage on the cost of bank loans.

Secondly, we also extend the research that examines the effect of the local institutional environment of borrowing firms on the cost of bank loans (see, e.g. Bae and Goyal 2009; Delis, Hasan, and Ongena 2020; Hasan et al. 2017; He and Hu 2016). These studies show that banks penalize low institutional quality with higher loan prices. Our findings demonstrate that the extent of this penalization is conditional on banks' perceptions, stemming from the cultural characteristics of their CEOs, regarding the risks embedded in low institutional quality.

Thirdly, a growing body of research focuses on the effects of corruption on corporate outcomes (Brown et al. 2019; Dass, Nanda, and Xiao 2016; Hossain and Kryzanowski 2021; Parsons, Sulaeman, and Titman 2018; Smith 2016). These studies show that corruption dampens firm performance and transparency. Banks react to these adverse effects of corruption by decreasing bank lending (Bermpei, Kalyvas, and Leonida 2021) and increasing loan prices (Hossain, Kryzanowski, and Ma 2020). By identifying factors that moderate the relationship between corruption and the cost of bank loans, our study represents a valuable addition to this stream of literature.

Finally, we add to the literature that finds cultural characteristics affect how corruption is perceived and how it affects organizations (Barr and Serra 2010; Davis and Ruhe 2003; García-Gómez et al. 2022; Gächter and Schulz 2016; Husted 1999; Vitell, Nwachukwu, and Barnes 1993). We extend this research by providing evidence that individuals' views about corruption, ingrained in their cultural heritage, extend to the business transactions of the organizations they lead.

The rest of the paper is organized as follows. The following section, section 2, develops hypotheses. Section 3 presents the data and methodology. Next, in section 4, we provide the main results. In section 5, we report the results of the main robustness tests. In section 6, we provide a summary of some further robustness checks and analyses. The final section concludes.

## 2. Theoretical considerations and hypotheses development

### 2.1. Banks' concerns about corruption and the importance of bank CEOs' cultural heritage

Local public corruption could aggravate banks' concerns about borrowers' creditworthiness and, consequently, positively affect the cost of bank loans. One concern is the decrease in borrowing firms' cash flows and borrowers' ability to repay their loans. There is ample empirical evidence from both the international and the US contexts, which shows that firms operating in high public corruption areas are less profitable, exhibit less growth and value, engage in more corporate misconduct, and are riskier (Durnev and Fauver 2011; Fisman and Svensson 2007; Healy and Serafeim 2016; Lin et al. 2016; Parsons, Sulaeman, and Titman 2018; Smith 2016; Van Vu et al. 2018). An additional concern is the increase in information asymmetry. Public corruption may prompt local firms to be more secretive regarding their operations and less transparent in their financial statements. Recent US studies show that firms in states with high public corruption display more opacity (Dass, Nanda, and Xiao 2016; 2020; Xu, Dao, and Wu 2019). This could denote managers' desire to hide the firms' involvement in illegal

corruption-related activities from investors and other stakeholders. It could also represent a managerial preemptive strategy to protect firms' assets from expropriation risk. Based on this discussion, local public corruption in the borrower area could increase loan risk (Jenkins, Alshareef, and Mohamad 2023).

Recent empirical studies corroborate the above considerations in the context of the US lending market. Hosain, Kryzanowski, and Ma (2020) show that public corruption in borrowers' states increases loan spreads. In a related paper, Bermpei, Kalyvas, and Leonida (2021) find that high local public corruption decreases bank lending activity. This evidence suggests that, on average, banks penalize local public corruption in a borrower's state. However, the degree to which different banks penalize local public corruption in loan contracts could depend on banks' leniency towards corruption and its associated risks.

Banks' leniency towards corruption could depend on the characteristics of bank CEOs. The '*upper echelon*' theory suggests that organizational leaders, such as CEOs, exert a decisive influence on corporations (Hambrick and Mason 1984). CEOs' values permeate and influence the decision-making process and the practices within corporations (Bertrand and Schoar 2003; Biggerstaff, Cicero, and Puckett 2015; Chatterjee and Hambrick 2007). Thus, the '*upper echelon*' theory emphasizes the role of CEOs' attributes as drivers of corporate outcomes. CEOs' characteristics gauge the preferences and cognitive views that shape corporate values and practices. Previous banking research provides findings consistent with the '*upper echelons*' theory. Several recent studies find that bank CEOs' characteristics and cultural heritage shape banks' lending policies and propensity towards risk (Hagendorff, Lim, and Nguyen 2023; Ho et al. 2016; Nguyen, Hagendorff, and Eshraghi 2018). The bank CEOs' preferences could be particularly evident in the pricing of syndicated loans. These are large loan deals where bank CEOs are more actively involved than, for example, in the case of small business loans. Hagendorff et al. (2023) provide survey evidence that bank CEOs set the lending parameters that loan officers use to price syndicated loans. They also regularly communicate with loan officers to ensure these lending parameters are followed.

We posit that bank CEOs' cultural heritage characteristics could act as potential moderators of the relationship between public corruption and the cost of bank loans. The literature provides a solid theoretical basis that cultural traits affect individuals' leniency towards corruption (Barr and Serra 2010; Davis and Ruhe 2003; Gächter and Schulz 2016; Husted 1999). Since corruption could increase the risk profile of borrowers, another related research stream is studies that associate cultural characteristics with attitudes towards risk (Hofstede 1984; 2001), the degree of risk-taking in the banking sector (Berger et al. 2021; Mourouzidou-Damtsa, Milidonis, and Stathopoulos 2019) and lending screening, monitoring and performance (Bermpei et al. 2023; Kanagaretnam, Lim, and Lobo 2011; Zheng et al. 2013). We draw on theoretical arguments and empirical evidence from these two streams of literature to develop our hypotheses.

Our focus on bank CEOs' cultural heritage reflects the single-country setting of our study, i.e. the US. Studies exploring the effects of culture on economic outcomes in a cross-country framework face the issue of many potential confounding factors that could correlate with cultural characteristics and affect financial contracts (Aghion et al. 2010). For example, the legal system and contract enforcement mechanisms correlate with culture and contribute to shaping loan contracts (Cline and Williamson 2017; Licht, Goldschmidt, and Schwartz 2007). The US setting allows us to assume a moderate degree of homogeneity in such confounding factors while taking advantage of the multiculturalism and rich immigration history of the country to assign cultural characteristics to bank CEOs based on their ancestral country of origin.

As in other US studies focusing on corporate executives, the vast majority of the CEOs in our sample were born and raised in the US (e.g. Pan, Siegel, and Yue Wang 2020).<sup>2</sup> Despite growing up in the US, individuals from diverse ancestral origins retain distinct preferences and attitudes that persist across several generations (DeBacker, Heim, and Tran 2015; Fernández and Fogli 2009; Giavazzi, Petkov, and Schiantarelli 2019; Pan, Siegel, and Yue Wang 2020). For example, Guiso, Sapienza, and Zingales (2006) demonstrate a strong correlation between US citizens' cultural attributes and their ancestral ethnic origin, enduring across generations. Similarly, Tabellini (2008) shows that the individual beliefs of third-generation immigrants in the US are still influenced by the prevalent norms in their ancestral country of origin. Considering the above studies, we associate bank CEOs with the cultural characteristics of their ancestral country of origin instead of nationality. This approach provides a more nuanced understanding of the cultural attributes of the CEOs of US banks and is similar to other studies focusing on the US (e.g. Bermpei et al. 2023; Giannetti and Zhao 2019; Pham, Pham, and Truong 2022).<sup>3</sup>

To further corroborate our approach, we draw upon studies that shed light on the intergenerational persistence of cultural heritage characteristics (Bisin and Verdier 2000; 2001; Boyd and Richerson 1988; Cavalli-Sforza and Feldman 1981). Variations in cultural characteristics induce heterogeneity in values and preferences nationally. However, culture is mobile, and when individuals migrate from their home country to a host country, they carry their cultural values and beliefs. Further, these migrants are deeply embedded in these values and transfer these perceptions to their descendants. Bisin and Verdier (2000) explain that parents are ‘imperfectly empathic’ regarding their children, suggesting that the former would inspire their children with their norms and beliefs as they think these are the most beneficial for their descendants. However, rational constraints or myopia make parents less able to see things from their children’s perspective. As a result, through imperfect empathy, children adopt values and beliefs similar to those of their parents.

## 2.2. Hypotheses

### 2.2.1. Bank CEO power distance and local public corruption

Following Hofstede’s (1997) definition, power distance refers to the ‘extent to which the less powerful members of institutions and organizations within a country expect and accept that power is distributed unequally.’ High power distance denotes a strong dependency of subordinates on their superiors. This could induce a paternalistic system that encourages favoritism in return for loyalty. Thus, superiors from higher power distance countries make decisions not based on merit but target making subordinates happy in return for their devotion. This cultural environment encourages corruption due to nepotism and favoritism (Husted 1999). Furthermore, high power distance implies accepting that the most powerful members of society are entitled to use their position to enhance their privileges and wealth. This argument is consistent with the view that power distance implies leniency towards civil morality rules (Hofstede 2001) and a higher acceptance of fraudulent and corrupt practices (Jong-Sung and Khagram 2005). Hence, in the context of a high-power distance society, it could be more acceptable for public officials to use their powerful position to extract corruption-related rents. Thus, we posit that banks led by individuals that trace their origin in a high-power distance society would have a more lenient view of public corruption.

In terms of lending, high power distance may prompt bank managers to centralize authority, making it easier to pursue personal objectives that are not necessarily beneficial to bank risk management and performance (Berger et al. 2021). Previous research shows that high power distance prompts banks to incur more significant loan losses, which indicates an underestimation of lending risks (Kanagaretnam, Lim, and Lobo 2011). Hence, banks led by managers who trace their ancestry in high power distance societies, with a more lenient view of corruption, could also be more likely to underestimate borrower risk stemming from corruption.

Based on the above discussion, we formulate hypothesis H1 as follows:

**H1:** The positive association of local public corruption with the cost of syndicated bank loans of US firms would be less pronounced for loans issued by banks led by CEOs that trace their origin in high power distance societies.

### 2.2.2. Bank CEO masculinity and local public corruption

According to Hofstede (1997), masculinity relates to pursuing material achievements. In societies where a masculine culture is prevalent, achievement, advancement, and the accompanying accumulation of money and power are primary targets for a society’s members. On the other hand, in less masculine societies, citizens emphasize values such as affiliation, modesty, and goodwill. They also exhibit more sympathy for the weak. The focus on material success may prompt individuals in high-masculinity societies to be more concerned about their wealth than whether their actions are ethical (Vitell, Nwachukwu, and Barnes 1993). Materialistic societies care more about the ultimate achievement and less about the means they use to accomplish their targets (Getz and Volkema 2001). In this cultural context, individuals’ material goals explain and excuse unethical behavior, such as bribing, should this stance increase their likelihood of material success. Hence, high masculinity is likely to be associated with higher participation in corruption-related activities in the pursuit of the accumulation of riches. In support of this argument, Husted (1999) provides cross-country evidence of a positive association between masculinity and corruption activity. Thus, we posit

that individuals, including bank CEOs, from high-masculinity societies would hold a more lenient view of corruption.

Furthermore, evidence from banking studies shows that in masculine societies, which overemphasize material success and wealth accumulation, banks exhibit riskier behavior. Berger et al. (2021) find that banks in masculine societies are likelier to operate with less capital and liquidity and display a higher failure probability. This evidence is consistent with Kanagaretnam, Lim, and Lobo (2011), who show that banks in masculine societies are less likely to focus on controlling risk. Consequently, this could affect a bank's assessment of lending risks. In support of this argument, Bellucci, Borisov, and Zazzaro (2010) provide evidence that masculinity increases the likelihood of granting credit to riskier borrowers.

Thus, banks led by CEOs who trace their origin in more masculine societies with a more lenient view of corruption are less likely to consider borrowers' risk stemming from corruption as significant as banks led by less masculine CEOs.

Hence, we formulate the following hypothesis *H2*:

**H2:** The positive association of local public corruption with the cost of syndicated bank loans of US firms would be less pronounced for loans issued by banks led by CEOs that trace their origin in more masculine societies.

### 2.2.3. *Bank CEO uncertainty avoidance and local public corruption*

Hofstede (1997, 113) defines uncertainty avoidance as '*the extent to which members of a society feel threatened by uncertainty or unknown situations.*' Individuals in high uncertainty avoidance societies tend to feel uncomfortable and anxious in uncertain and ambiguous situations. Several studies show that corruption is more prevalent in high uncertainty avoidance societies (DiRienzo et al. 2007; Getz and Volkema 2001; Husted 1999; Robertson and Watson 2004; Sanyal and Samanta 2002). An important source of the positive association between uncertainty avoidance and corruption is that individuals originating from high uncertainty avoidance societies may view corruption as an uncertainty-reducing mechanism that they can use to overcome formal procedures and regulations (Husted 1999). In high uncertainty avoidance societies, individuals may feel it is necessary to work through informal, even unethical, channels, such as corruption-related activities, to reduce uncertainty around their objectives (Getz and Volkema 2001; Vitell, Nwachukwu, and Barnes 1993). To reinforce this argument, Hofstede (1997) shows that individuals in high uncertainty avoidance societies could engage in risky and perhaps unethical behavior if that reduces their anxiety.

For example, individuals with high uncertainty avoidance could view public corruption as the means to simplify and speed up costly and uncertainty-inducing regulatory processes. This would be consistent with the '*grease the wheel*' view of public corruption (Bologna and Ross 2015; Johnson et al. 2014; Lui 1985). This source of leniency towards corruption is also consistent with the view that individuals in high uncertainty avoidance societies exhibit low confidence in government institutions and feel that the legal system works against them (Hofstede 2001).

In lending, borrowing firms may use public corruption to overcome uncertainty-inducing situations arising from regulatory, bureaucratic, and political constraints. Such constraints aggravate lenders' concerns about borrowers' performance (Nguyen, Bermpei, and Kalyvas 2022). Therefore, bank CEOs that trace their origin to high uncertainty avoidance societies may view corruption in borrowers' areas as an uncertainty-reducing mechanism that borrowers could use to improve or defend their performance (Afzali, Çolak, and Fu 2021; Bardhan 1997; Søreide 2009). This would be consistent with arguments about uncertainty avoidance prompting the use of informal channels, such as bribery and corruption, to achieve goals (Getz and Volkema 2001) and access credit (Zheng et al. 2013).

Thus, banks led by such CEOs would penalize borrowers from high public corruption areas less sharply if they feel corruption could assist in efficiency gains for the latter by circumventing bureaucratic and regulatory uncertainty. Also, they may be less likely to penalize borrowers' opaqueness stemming from public corruption if they view it as an approach borrowers employ to defend their assets from public officials' expropriation instincts (Dass, Nanda, and Xiao 2016).

Based on the above discussion, we formulate hypothesis *H3* as follows:

**H3:** The positive association of local public corruption with the cost of syndicated bank loans of US firms would be less pronounced for loans by banks led by CEOs that trace their origin in more uncertainty-avoidant societies.

### 2.2.4. Bank CEO individualism and local public corruption

Hofstede (1997) defines individualism as the degree to which the role of individuals versus that of a group is dominant in a society. High individualism societies prioritize personal achievement, and members of such societies narrowly focus on themselves and their close relatives (Hofstede 2001). On the other hand, in societies that score low in individualism – i.e. collectivist societies – individuals view themselves as a part of a larger group (Hofstede 1997). Citizens in collectivist societies emphasize the interests of the group and collective achievements. Husted (1999) suggests a positive relationship between collectivism and corruption-related activities such as bribery because such practices are the means to achieve group benefits. Similarly, LaPalombara (1994) explains that people in collectivist societies confer more value on moral codes than on written laws. In such a cultural context, individuals have fewer concerns about illegal actions, such as corruption, if they benefit their group.

On the contrary, individuals from highly individualistic societies value the rule of law and fair competition. Hence, they could be less tolerant of illegal behavior, such as corruption, as it could distort the playing field and undermine their efforts to achieve personal success. In support of this argument, Zheng et al. (2013) show that individualism (collectivism) improves (worsens) lending integrity. Thus, banks led by CEOs originating from high individualism (i.e. low collectivism) societies might view corruption-induced risks as a negative factor when they set loan prices.

However, individualism breeds overconfidence and over-optimism by emphasizing individual freedom and independent action (Chui, Titman, and Wei 2010; Ferris, Jayaraman, and Sabherwal 2013). Chui, Titman, and Wei (2010) posit that people from more individualistic societies display excessive confidence in the precision of the information they process and are inclined to self-attribution bias. Consequently, individualism is associated with underestimating risks (Van den Steen 2004) and more risk-taking behavior (Breuer, Riesener, and Salzmann 2014). For example, Li et al. (2013) show that CEOs from individualistic societies are overconfident and increase corporate risk-taking. Similarly, in the banking sector, Berger et al. (2021) find a positive association between individualism and bank failures, while Bermpei et al. (2023) show that individualism reduces loan screening and monitoring. Hence, banks led by CEOs that trace their origin to more individualistic societies could underestimate the risks stemming from corruption and penalize corruption in their loan contracts less sharply.

Based on the above discussion, we formulate hypothesis *H4.A* and the competing hypothesis *H4.B* as follows:

**H4.A (H4.B):** The positive association of local public corruption with the cost of syndicated bank loans of US firms would be more (less) pronounced for loans issued by banks led by CEOs that trace their origin in more individualistic societies.

## 3. Data and methods

### 3.1. Sample

We source data on syndicated loans from the Loan Pricing Corporation (LPC)/Dealscan database, which provides comprehensive coverage of the characteristics of loan facilities. Our sample covers all syndicated loans in the US from 1993–2017 and includes information on the cost of loans, size, maturity, and the presence of collateral and covenants, among others. Our sample often includes multiple loan facilities to the same borrowing firms in the same year. Following previous studies (e.g. Hasan et al. 2014), we treat each one of these loan facilities as a unique observation as, even in the case where loan facilities are part of the same loan package deal, they may carry different loan elements such as the purpose/type, maturity, and size of the loan.

The Dealscan database contains information on borrowing firms' names and unique identifiers. Using these identifiers, we match our loan-level data with borrowers' financial and accounting characteristics from the Compustat database. The updated link with borrowers' identifiers up to 2017 by Chava and Roberts (2008) allows a direct match of borrowing firms between the two data sources. Next, we exclude from our sample financial services (with SIC codes 6000–6999) and utility firms (with SIC codes 4900–4949) as these corporations are subject to heavy regulations that render the conditions of granting loans to them quite different from the other firms in our sample.

One of the main challenges for studies in the loan syndicate market is to assign the lead bank for a specific loan facility. Nearly 90% of our sample has a clearly identified lead arranger, so we classify them as lead banks

**Table 1.** Variable definitions and measurement.

| Variables                                          | Definitions                                                                                                                                                                             | Source                                                                |
|----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| <b>Firm characteristics</b>                        |                                                                                                                                                                                         |                                                                       |
| <i>L.FIRM SIZE</i>                                 | The natural logarithm of firm total assets in year t-1                                                                                                                                  | Compustat                                                             |
| <i>L.ROA</i>                                       | Net operating income of firm divided by total assets in year t-1                                                                                                                        | idem                                                                  |
| <i>L.LEVERAGE RATIO</i>                            | Long-term debt divided by total assets in year t-1                                                                                                                                      | idem                                                                  |
| <i>L.TANGIBILITY</i>                               | Net property, plant and equity of firm divided by total assets in year t-1                                                                                                              | idem                                                                  |
| <i>L.FIRM Z-SCORE</i>                              | Altman's z-score (1968) = $(1.2 * \text{Working Capital } t-1 + 1.4 * \text{Retained Earnings } t-1 + 3.3 * \text{EBIT } t-1 + 0.999 * \text{Sales } t-1) / (\text{Total Assets } t-1)$ | idem                                                                  |
| <b>Loan characteristics</b>                        |                                                                                                                                                                                         |                                                                       |
| <i>LOAN SPREAD (basis points)</i>                  | The 'all-in-spread drawn' (AISD), which is the loan interest payment in basis points over the LIBOR plus the annual fee for a loan facility that a firm obtains in year t               | Dealscan, Loan Pricing Corporation (LPC, Reuters)                     |
| <i>LOAN SIZE (\$ Millions)</i>                     | Total amount of a loan facility obtained by a firm in year t                                                                                                                            | idem                                                                  |
| <i>LOAN MATURITY (year)</i>                        | Number of years to a maturity of a loan facility obtained by a firm in year t                                                                                                           | idem                                                                  |
| <i>COVENANT DUMMY</i>                              | Equals to one if a loan facility obtained by a firm in year t has covenants and zero otherwise                                                                                          | idem                                                                  |
| <i>COLLATERAL DUMMY</i>                            | Equals to one if a loan facility obtained by a firm in year t has collateral and zero otherwise                                                                                         | idem                                                                  |
| <i>LOAN PURPOSE</i>                                | A group of dummy variables capturing the loan's primary purpose.                                                                                                                        | idem                                                                  |
| <i>LOAN TYPE</i>                                   | A group of dummy variables capturing loan type. These primarily involve two types of loans, lines of credit and term loans                                                              | idem                                                                  |
| <i>SYNDICATE SIZE</i>                              | Number of banks that belong to the syndicate of a loan facility obtained by a firm in year t                                                                                            | idem                                                                  |
| <i>NUM BOOKRUNNERS</i>                             | Number of bookrunners of a loan facility obtained by a firm in year t                                                                                                                   | idem                                                                  |
| <b>Bank characteristics</b>                        |                                                                                                                                                                                         |                                                                       |
| <i>L.BANK SIZE</i>                                 | The natural logarithm of bank total assets in year t-1                                                                                                                                  | Compustat Bank                                                        |
| <i>L.BANK EQUITY RATIO</i>                         | Bank equity over total assets in year t-1                                                                                                                                               | idem                                                                  |
| <i>L.BANK RISK</i>                                 | Provision of loan losses over total assets in year t-1                                                                                                                                  | idem                                                                  |
| <b>Corruption and bank CEOs' cultural heritage</b> |                                                                                                                                                                                         |                                                                       |
| <i>State Corruption (STATE COR)</i>                | The number of corruption-related convictions from the Department of Justice Public Integrity Section per 100,000 thousand population of the state.                                      | U.S. Department of Justice's (DoJ's) Public Integrity Section Reports |
| <i>Power Distance Index (PDI)</i>                  | Power distance index in lender's CEO ancestral country of origin                                                                                                                        | Hofstede & Ancestry.com                                               |
| <i>Masculinity Index (MI)</i>                      | Masculinity index in lender's CEO ancestral country of origin                                                                                                                           | idem                                                                  |
| <i>Uncertainty Avoidance Index (UAI)</i>           | Uncertainty avoidance index in lender's CEO ancestral country of origin                                                                                                                 | idem                                                                  |
| <i>Individualism Index (INDIVI)</i>                | Individualism index in lender's CEO ancestral country of origin                                                                                                                         | idem                                                                  |
| <b>Other state level characteristics</b>           |                                                                                                                                                                                         |                                                                       |
| <i>Income (INCOME)</i>                             | The natural logarithm of state-level per capita income                                                                                                                                  | Bureau of Economic Analysis (BEA)                                     |
| <i>Population (POPULATION)</i>                     | The natural logarithm of state population                                                                                                                                               | US Census Bureau                                                      |

following Sufi (2007). Then, for loan facilities with one lender, assigning them as the lead banks is rational. For the remaining loan facilities, which comprise a minor part of our sample, we follow Bharath et al. (2011) and classify as lead banks those banks that retain a large share of the loan (above 25%) and have one of the subsequent roles: arranger, lead bank, agent, or administrative agent. Last, we match our loan- and firm-level data with bank-level data from the Compustat Bank database.

The above process yields data on 23,336 loan facilities provided by 82 banks to 4,260 borrowing firms for the 1993–2017 period. Table 1 defines the variables used in the main regression analysis.

### 3.2. Bank CEOs' cultural heritage

A critical point of our study is to determine the lenders' CEO origin. To this end, we use the origin of the surname approach as in other US studies (e.g. Giannetti and Zhao 2019; Hegde and Tumlinson 2014; Liu 2016; Nguyen, Hagendorff, and Eshraghi 2018). As a first step, we use the Execucomp database that provides the names and surnames of all lenders' CEOs. We manually search all lenders' CEO names and surnames and make corrections in case of spelling errors. We use various sources to finalize the original names and surnames list, including state

digital archives of marriage certificates, new articles, curriculum vitae, and biographies. In this way, we overcome issues surrounding changes in family surnames and maiden names in the case of married female CEOs.

Next, we trace the origin of the bank CEOs' surnames. We use three primary sources to identify the country of origin of the bank CEOs' surnames. First, we use the Forebears website (forebears.io), which gives an initial signal of the surname's country of origin. Next, we use the ancestry.com website and source the most common country of origin of each CEO surname from both the 1940 US Federal Census<sup>4</sup> and the immigration documentation of the New York, Passenger, and Crew Lists (comprising Castle Garden and Ellis Island) during the 1820–1957 period. Finally, following other studies (e.g. Hegde and Tumlinson 2014), we use a commercial database provided by Origins Info Ltd., which is a vendor of name-based classification services for ethnically targeted marketing campaigns, to further verify and complete the tracing of the origin of the bank CEOs' surnames.

While these sources provide comprehensive information regarding the origin of surnames and essentially eliminate the possibility of discrepancies, we acknowledge that CEOs could have mixed ancestry. Consequently, it is harder to identify the origin. However, empirical evidence suggests that less than 15% of bank CEOs in the U.S. have mixed ancestry (Nguyen, Hagendorff, and Eshraghi 2018). In addition, Pagnini and Morgan (1990) highlight that cross-cultural weddings were less likely among immigrants during the twentieth century. As the last step, we group smaller nationalities into larger ethnic groups that reflect contemporary country borders. This is a necessary procedure to assign cultural heritage characteristics to each bank's CEO. With this process, we can identify the surname origin of 126 CEOs of 82 banks during our sample period. Our sample includes CEOs whose surnames originate from 20 countries.<sup>5</sup>

After tracing the country of origin of the surnames of the bank CEOs, we assign them cultural heritage characteristics. We use the following four cultural dimensions as developed by Hofstede, Hofstede, and Minkov (2010): power distance index (*PDI*), masculinity (*MI*), uncertainty avoidance index (*UAI*), and individualism (*INDIVI*). These four dimensions have a scale of 0–100.

### 3.3. Local public corruption

To measure local – i.e. state-level – public corruption, we use the ratio of public corruption-related convictions deflated by each state's population (in terms of 100,000 inhabitants) over the 1993–2017 period. Previous studies have used this measure widely (Campante and Do 2014; Dass, Nanda, and Xiao 2016; Glaeser and Saks 2006; Smith 2016). We obtain data on corruption-related convictions offered by the US Department of Justice (DOJ) in the Public Integrity Section (PIN). The types of data that PIN covers are cases of political fraud, bribery, and prohibited conflict of interest. This corruption measure displays both state and yearly variations.

There are several advantages of using this public corruption measure. First, it captures the 'actual' level of public corruption, and thus, it is more objective than other perception-based measurements used in cross-country studies (Glaeser and Saks 2006). Also, given the similar socioeconomic and regulatory environment across US states, this measure could overcome any bias arising from other confounding institutional characteristics in country-level corruption measures (Fisman and Gatti 2002). Third, the PIN data involve cases ranging from headline cases of public officials to less-notable cases of other government employees. This indicates that this measure captures a wide range of corruption-related cases. Hence, this measure reflects, to an adequate extent, the level of public corruption. Finally, since the federal authorities are in charge of the public corruption cases, we can conjecture some homogeneity of enforcement that facilitates comparability (Glaeser and Saks 2006; Smith 2016).

### 3.4. Regression specification

To test our *H1–H4* hypotheses on the moderating role of the cultural heritage of bank CEOs on the association between local public corruption and the cost of bank loans, we use the following equation:

*Loan spread*<sub>*t*</sub>

$$= f(\text{State } cor_{s,t}, \text{State } cor_{s,t} * \text{Culture bank's CEO}_c, \text{Firm}_{t-1}, \text{Loan}_t, \text{Lead Bank}_{t-1}, \text{State}_{s,t-1}, \text{Set of fixed effects}) \quad (1)$$

where is the ‘*all-in-spread drawn*’ (AISD), which is the loan interest payment in basis points above LIBOR plus the annual fee for a loan facility that a firm obtains in year  $t$ .<sup>6</sup> is the contemporaneous ratio of corruption-associated convictions over a hundred thousand inhabitants (100,000) in state  $s$  following Smith (2016).<sup>7</sup> To test our *H1-H4* hypothesis, we focus our interest on the coefficients of the interactions between local public corruption and the bank CEOs’ cultural heritage characteristics ( $\gamma$ ).  $\gamma$  is a vector of the cultural heritage characteristics of the bank CEOs, which could condition the effect of local public corruption on the cost of syndicated loans. The vector comprises a series of firm-specific lagged control variables, including firm risk (Altman  $z$ -score), size, liquidity, tangibility, and profitability in line with previous studies (Hasan et al. 2014; Kim, Song, and Tsui 2013; Lian 2018). The vector includes loan-level characteristics. These are loan size, loan maturity, the size of the syndicate, the number of book-runners and dummies for the presence of loan covenants, and collateral. In vector we employ lagged bank-level characteristics – namely bank size, bank credit risk, and capitalization of the lead bank in each loan syndicate.<sup>8</sup> We also include in vector, characteristics of the state of each borrowing firm, such as the level of development (i.e. personal income) and population. Including these control variables is important because they could correlate with public corruption (Glaeser and Saks 2006; Smith 2016). Finally, we employ  $\alpha$ , which includes CEO fixed effects. In this way, we capture all the time-invariant bank CEO factors mitigating omitted variable issues to a certain extent. Including CEO fixed effects is important in this study because they capture several factors that could correlate with the cultural heritage of CEOs (e.g. religion). These fixed effects also capture the immigration generation of each CEO (e.g. first generation, second generation, and so on) and other time-invariant factors such as gender. Including CEO fixed effects also means that we drop the cultural heritage characteristics of each bank CEO because they are time-invariant. Hence, the identification of our hypotheses in equation (1) stems from the interaction between the cultural heritage characteristics of bank CEOs and the public corruption in the states of the borrowing firms. We also include a series of loan type, loan purpose, state of the borrowing firm, rated firm, industry of the borrowing firm, borrowing firm, and year fixed effects.

### 3.5. Descriptive statistics

Table 2 shows the summary statistics of all the main and control variables we employ in our models. Our sample’s average loan size, spread, and maturity is \$344.178 million, 225.023 basis points, and 3.750 years, respectively. These values are similar to the ones of previous studies (Graham, Li, and Qiu 2008; Hasan et al. 2014). The mean value of the local public corruption measure is around 0.306, consistent with existing evidence (Smith 2016). Regarding Hofstede’s cultural heritage variables of the bank CEOs, we observe similar summary statistics with the studies of Nguyen, Hagendorff, and Eshraghi (2018) and Hagendorff, Lim, and Nguyen (2023), respectively. In Table 3, we provide descriptive information on public corruption by state. Table 4 reports the Pearson correlation coefficients among the main explanatory variables included in our regression. We also observe that explanatory variables exhibit a low correlation, reducing collinearity issues that could bias our estimations. Also, the rest of the control variables associations are in line with previous empirical work (Bharath et al. 2011; Graham, Li, and Qiu 2008; Hasan et al. 2014).

## 4. Main empirical findings

### 4.1. Baseline models with CEO fixed effects

We employ equation (1) to test the hypotheses that the cultural heritage of lenders’ CEOs could condition the relationship between local public corruption and the cost of bank loans (i.e. *H1-H4*). Hence, we saturate the models in these specifications with bank, borrowing firm, year, state of the borrower, industry, borrower rating, loan purpose, and loan type fixed effects. We employ lenders’ CEO fixed effects to capture any time-invariant characteristic of the lead banks’ CEOs and reduce omitted variable concerns to a certain extent. Including lenders’ CEO fixed effects leads to dropping the four cultural heritage variables from the specifications since they are time-invariant. However, the interactions between public corruption and these cultural heritage characteristics can still be identified. The results of these tests are available in Table 5.

**Table 2.** Descriptive statistics for the dependent and the main regression variables.

| Variable                                           | Count  | Mean    | Standard Deviation | 25th percentile | 50th percentile | 75th percentile |
|----------------------------------------------------|--------|---------|--------------------|-----------------|-----------------|-----------------|
| <b>Firm characteristics</b>                        |        |         |                    |                 |                 |                 |
| <i>L.FIRM SIZE</i>                                 | 22,336 | 6.742   | 1.807              | 5.526           | 6.741           | 7.935           |
| <i>L.ROA</i>                                       | 22,336 | 0.049   | 0.064              | 0.015           | 0.042           | 0.081           |
| <i>L.LEVERAGE RATIO</i>                            | 22,336 | 0.298   | 0.244              | 0.105           | 0.264           | 0.433           |
| <i>L.TANGIBILITY</i>                               | 22,336 | 0.298   | 0.234              | 0.111           | 0.233           | 0.435           |
| <i>L.FIRM Z-SCORE</i>                              | 22,336 | 0.598   | 1.062              | 0.188           | 0.672           | 1.212           |
| <b>Loan characteristics</b>                        |        |         |                    |                 |                 |                 |
| <i>LOAN SPREAD (basis points)</i>                  | 22,336 | 225.023 | 131.944            | 125.000         | 200.000         | 300.000         |
| <i>LOAN SIZE (\$ Millions)</i>                     | 22,336 | 344.178 | 842.278            | 40              | 125             | 350             |
| <i>LOAN MATUR (year)</i>                           | 21,290 | 3.750   | 1.820              | 2.391           | 4.003           | 5.003           |
| <i>COVENANT DUMMY</i>                              | 22,336 | 0.671   | 0.470              | 0               | 1               | 1               |
| <i>COLLATERAL DUMMY</i>                            | 22,336 | 0.640   | 0.480              | 0               | 1               | 1               |
| <i>SYNDICATE SIZE</i>                              | 22,336 | 6.094   | 2.180              | 3.000           | 6.000           | 11.000          |
| <i>NUM BOOKRUNNERS</i>                             | 22,336 | 1.648   | 2.127              | 0.000           | 1.000           | 2.000           |
| <b>Bank characteristics</b>                        |        |         |                    |                 |                 |                 |
| <i>L.BANK SIZE</i>                                 | 22,336 | 13.279  | 1.303              | 12.486          | 13.510          | 14.559          |
| <i>L.BANK EQUITY RATIO</i>                         | 22,336 | 0.085   | 0.016              | 0.075           | 0.086           | 0.097           |
| <i>L.BANK RISK</i>                                 | 22,336 | 0.005   | 0.004              | 0.002           | 0.004           | 0.006           |
| <b>Corruption and bank CEOs' cultural heritage</b> |        |         |                    |                 |                 |                 |
| <i>STATE COR</i>                                   | 22,336 | 0.306   | 0.177              | 0.191           | 0.268           | 0.399           |
| <i>PDI</i>                                         | 22,295 | 39.11   | 15.21              | 28              | 35              | 35              |
| <i>MI</i>                                          | 22,295 | 63.08   | 10.86              | 66              | 66              | 68              |
| <i>UAI</i>                                         | 22,295 | 47.24   | 22.31              | 35              | 35              | 53              |
| <i>INDIVI</i>                                      | 22,295 | 74.55   | 18.97              | 70              | 80              | 89              |
| <b>Other state-level characteristics</b>           |        |         |                    |                 |                 |                 |
| <i>INCOME</i>                                      | 22,336 | 12.841  | 0.870              | 12.283          | 12.835          | 13.487          |
| <i>POPULATION</i>                                  | 22,336 | 16.163  | 0.801              | 15.573          | 16.213          | 16.811          |

The table reports descriptive statistics for the 22,336 sample observations over the 1993–2017 period used in our baseline regression analysis. Table 1 provides full details on the definitions and calculation for all variables.

The first four columns of Table 5 present diagonally the models that comprise the interaction of local public corruption with one CEO's cultural heritage characteristics each time. Model 3 of Table 5 reveals that the individual effect of local public corruption (*STATE COR*) on the cost of bank loans is positive and significant at the 5% level. This finding provides empirical support to the results of the previous study by Hossain, Kryzanowski, and Ma (2020), which shows that higher local public corruption has a positive association with the cost of bank loans. In the same model, the interaction between local public corruption and bank CEOs' uncertainty avoidance (*UAI*) is negative and significant at the 5% level. This result implies that, at low levels of uncertainty avoidance in the cultural heritage of a lead bank's CEO, corruption in the state of the borrowing firm has a significant positive effect on the cost of bank loans. Hence, the positive association between local public corruption and the cost of bank loans weakens at higher levels of uncertainty avoidance of a lead bank's CEO. This finding provides evidence in favor of *H3*. Banks led by higher uncertainty avoidance CEOs may penalize public corruption in the loan contracts less sharply because they may view corruption as a way through which borrowing firms could circumvent regulatory uncertainties. Similarly, they may view corruption-induced borrower opacity as a way borrowing firms could defend themselves against corrupted public officials. In both these cases, the anxiety of high uncertainty avoidance bank CEOs about loan repayment could be reduced.

The rest of the diagonal models of Table 5 (see models 1, 2, and 4) provide some additional evidence – albeit weaker in terms of statistical significance – supporting some of the rest of our hypotheses. In model 1 of Table 5, the interaction between the public corruption variable (*STATE COR*) and the power distance (*PDI*) cultural heritage characteristic of the bank's CEO is negative and weakly significant at the 10% level. In the same model, the individual relationship of public corruption with the cost of bank loans is positive and weakly significant at the 10% level. Hence, this result supports *H1*, which posits that high power distance may prompt tolerance for public corruption.

**Table 3.** Corruption by state.

| State         | Median | Mean  | State          | Median | Mean  |
|---------------|--------|-------|----------------|--------|-------|
| Alabama       | 0.474  | 0.541 | Nebraska       | 0.158  | 0.187 |
| Alaska        | 0.333  | 0.241 | Nevada         | 0.217  | 0.168 |
| Arizona       | 0.241  | 0.258 | New Hampshire  | 0.030  | 0.068 |
| Arkansas      | 0.281  | 0.317 | New Jersey     | 0.451  | 0.432 |
| California    | 0.210  | 0.217 | New Mexico     | 0.363  | 0.305 |
| Colorado      | 0.085  | 0.134 | New York       | 0.267  | 0.319 |
| Connecticut   | 0.229  | 0.253 | North Carolina | 0.183  | 0.186 |
| Delaware      | 0.209  | 0.338 | North Dakota   | 0.286  | 0.328 |
| Florida       | 0.368  | 0.411 | Ohio           | 0.375  | 0.379 |
| Georgia       | 0.286  | 0.301 | Oklahoma       | 0.346  | 0.380 |
| Idaho         | 0.189  | 0.216 | Oregon         | 0.085  | 0.096 |
| Illinois      | 0.347  | 0.413 | Pennsylvania   | 0.391  | 0.400 |
| Indiana       | 0.218  | 0.244 | Rhode Island   | 0.203  | 0.231 |
| Iowa          | 0.135  | 0.172 | South Carolina | 0.105  | 0.123 |
| Kansas        | 0.138  | 0.141 | South Dakota   | 0.821  | 0.651 |
| Kentucky      | 0.617  | 0.553 | Tennessee      | 0.428  | 0.421 |
| Louisiana     | 0.715  | 0.784 | Texas          | 0.286  | 0.303 |
| Maine         | 0.226  | 0.232 | Utah           | 0.067  | 0.091 |
| Maryland      | 0.368  | 0.438 | Vermont        | 0.240  | 0.355 |
| Massachusetts | 0.275  | 0.290 | Virginia       | 0.429  | 0.471 |
| Michigan      | 0.219  | 0.210 | Washington     | 0.125  | 0.142 |
| Minnesota     | 0.111  | 0.113 | West Virginia  | 0.326  | 0.310 |
| Mississippi   | 0.485  | 0.610 | Wisconsin      | 0.214  | 0.206 |
| Missouri      | 0.340  | 0.312 | Wyoming        | 0.025  | 0.036 |
| Montana       | 0.114  | 0.335 |                |        |       |
|               |        |       | Total          | 0.268  | 0.306 |

The corruption variable (*STATE COR*) represents the number of corruption-related convictions from the US Department of Justice Public Integrity Section per 100,000 thousand population of the state.

Next, we follow other studies (e.g. Kashefi-Pour et al. 2020) and provide results from estimations that include the interactions between local public corruption and bank CEOs' four cultural heritage characteristics in the same regression. Such a comprehensive model is essential since the characteristics of cultural heritage display a systematic relationship (Hofstede 1983; Zheng et al. 2013). Hence, a comprehensive model is appropriate to examine the distinct conditioning effect of each cultural heritage characteristic of banks' CEOs on the relationship between corruption and the cost of bank loans.

Model 5 of Table 5 presents the results of this exercise. In this model, the coefficient on local public corruption (*STATE COR*) is positive and significant at the 1% level. We also find that the interaction between local public corruption (*STATE COR*) and uncertainty avoidance (*UAI*) is negative and remains significant, albeit at the 10% level. This result provides further evidence in favor of *H3*. We also find that the interaction between public corruption (*STATE COR*) and individualism (*INDIVI*) is negative and significant at the 1% level. This result implies that, after controlling for the interactions between state corruption and the rest of the cultural heritage characteristics of bank CEOs, individualism exerts a distinct moderating effect on the positive association between local public corruption and the cost of bank loans. The finding that banks led by CEOs with higher individualism penalize public corruption less sharply in terms of the cost of loans provides empirical support to *H4.B*. This is consistent with the studies that find that individualism breeds excessive confidence and leads to risk underestimation (Chui, Titman, and Wei 2010; Van den Steen 2004).

The moderating effects of uncertainty avoidance (*UAI*) and individualism (*INDIVI*) on the relationship between local public corruption and the cost of bank loans are also economically significant. As an illustration, we use the difference between a borrowing firm in New Jersey, where public corruption is high (i.e. 0.432), and a borrowing firm in Maine, where public corruption is low (i.e. 0.232). The difference between these two states (0.200) is comparable to a one-standard-deviation difference in local public corruption (0.177). The findings of the comprehensive model 5 of Table 5 imply that in the absence of uncertainty avoidance and individualism in the lead bank's CEO, the firm from New Jersey would be penalized, in terms of the cost of bank loans, by 42.240 (0.20\*211.2) basis points more in comparison with the firm from Maine, *ceteris paribus*. The average loan size

**Table 4.** Correlation matrix of the dependent and the main explanatory variables.

|                        | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 10     | 11     | 12     | 13     | 14     | 15     | 16     | 17     | 18     | 19     | 20     | 21     | 22 |
|------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----|
| 1 LOAN SPREAD          | 1      |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |    |
| 2 STATE COR            | 0.006  | 1      |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |    |
| 3 L.FIRM SIZE          | −0.171 | −0.016 | 1      |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |    |
| 4 L.ROA                | −0.264 | 0.032  | 0.072  | 1      |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |    |
| 5 L.FIRM Z-SCORE       | −0.326 | 0.011  | 0.067  | 0.503  | 1      |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |    |
| 6 L.LEVERAGE RATIO     | 0.213  | 0.022  | 0.207  | −0.026 | −0.346 | 1      |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |    |
| 7 L.TANGIBILITY        | 0.001  | −0.011 | 0.068  | −0.043 | −0.102 | 0.177  | 1      |        |        |        |        |        |        |        |        |        |        |        |        |        |        |    |
| 8 LOAN MATURITY        | −0.024 | −0.004 | 0.156  | 0.104  | 0.028  | 0.137  | −0.005 | 1      |        |        |        |        |        |        |        |        |        |        |        |        |        |    |
| 9 LOAN SIZE            | −0.229 | −0.014 | 0.768  | 0.139  | 0.095  | 0.209  | 0.088  | 0.247  | 1      |        |        |        |        |        |        |        |        |        |        |        |        |    |
| 10 SYNDICATE SIZE      | −0.181 | 0.020  | 0.593  | 0.110  | 0.054  | 0.214  | 0.056  | 0.255  | 0.654  | 1      |        |        |        |        |        |        |        |        |        |        |        |    |
| 11 NUM BOOKRUNNERS     | 0.015  | −0.046 | 0.548  | 0.060  | −0.007 | 0.173  | −0.040 | 0.260  | 0.514  | 0.416  | 1      |        |        |        |        |        |        |        |        |        |        |    |
| 12 COLLATERAL DUMMY    | 0.388  | 0.005  | −0.214 | −0.177 | −0.243 | 0.184  | −0.007 | 0.111  | −0.165 | −0.097 | −0.005 | 1      |        |        |        |        |        |        |        |        |        |    |
| 13 COVENANT DUMMY      | 0.010  | 0.017  | −0.181 | 0.004  | −0.005 | −0.040 | −0.018 | −0.039 | −0.100 | 0.041  | −0.133 | 0.240  | 1      |        |        |        |        |        |        |        |        |    |
| 14 L.BANK SIZE         | 0.024  | −0.074 | 0.500  | 0.059  | 0.021  | 0.095  | −0.067 | 0.204  | 0.475  | 0.314  | 0.532  | −0.022 | −0.058 | 1      |        |        |        |        |        |        |        |    |
| 15 L.BANK EQUITY RATIO | 0.047  | −0.095 | 0.244  | −0.006 | −0.003 | −0.021 | −0.085 | 0.153  | 0.216  | 0.040  | 0.507  | 0.002  | −0.125 | 0.406  | 1      |        |        |        |        |        |        |    |
| 16 L.BANK RISK         | 0.169  | −0.013 | −0.012 | −0.044 | −0.049 | −0.015 | 0.002  | −0.064 | −0.040 | −0.036 | −0.053 | 0.018  | −0.004 | 0.102  | −0.129 | 1      |        |        |        |        |        |    |
| 17 INCOME              | 0.029  | −0.011 | 0.093  | −0.042 | −0.029 | −0.058 | −0.133 | 0.036  | 0.075  | −0.003 | 0.186  | 0.035  | −0.014 | 0.238  | 0.242  | −0.010 | 1      |        |        |        |        |    |
| 18 POPULATION          | 0.007  | 0.019  | −0.016 | −0.041 | −0.023 | −0.070 | −0.088 | −0.020 | −0.024 | −0.055 | 0.029  | 0.033  | 0.005  | 0.050  | 0.058  | −0.005 | 0.956  | 1      |        |        |        |    |
| 19 PDI                 | 0.087  | −0.019 | −0.276 | −0.090 | −0.087 | −0.098 | 0.030  | −0.114 | −0.281 | −0.218 | −0.282 | 0.079  | 0.096  | −0.271 | −0.126 | 0.105  | −0.062 | −0.019 | 1      |        |        |    |
| 20 MI                  | −0.086 | 0.027  | 0.247  | 0.078  | 0.082  | 0.115  | 0.015  | 0.090  | 0.259  | 0.219  | 0.183  | −0.075 | −0.049 | 0.298  | −0.029 | −0.079 | −0.002 | −0.032 | −0.584 | 1      |        |    |
| 21 UAI                 | 0.079  | 0.003  | −0.234 | −0.082 | −0.057 | −0.098 | 0.045  | −0.113 | −0.230 | −0.215 | −0.200 | 0.058  | 0.081  | −0.262 | −0.035 | 0.121  | −0.025 | −0.009 | 0.846  | −0.464 | 1      |    |
| 22 INDIVI              | −0.115 | 0.053  | 0.100  | 0.064  | 0.062  | 0.074  | −0.013 | 0.036  | 0.114  | 0.180  | −0.060 | −0.058 | −0.002 | −0.011 | −0.223 | −0.059 | −0.056 | −0.011 | −0.719 | 0.446  | −0.815 | 1  |

This table reports Pearson correlations coefficients for the main variables used in our regressions. Table 1 includes full details on the definitions and calculation for all variables.

**Table 5.** The role of banks' CEO cultural heritage in the relationship between local public corruption and bank loan spreads – baseline estimations.

| VARIABLES                    | (1)<br>Model             | (2)<br>Model             | (3)<br>Model             | (4)<br>Model             | (5)<br>Model             |
|------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| <i>STATE COR</i>             | 37.68*<br>(20.2)         | −18.9<br>(45.04)         | 34.29**<br>(16.16)       | −10.03<br>(20.42)        | 211.2***<br>(69.55)      |
| <i>STATE COR* PDI</i>        | −0.846*<br>(0.469)       |                          |                          |                          | −0.119<br>(1.076)        |
| <i>STATE COR* MI</i>         |                          | 0.38<br>(0.742)          |                          |                          | −0.445<br>(0.69)         |
| <i>STATE COR* UAI</i>        |                          |                          | −0.635**<br>(0.302)      |                          | −1.565*<br>(0.868)       |
| <i>STATE COR* INDIVI</i>     |                          |                          |                          | 0.203<br>(0.231)         | −1.328***<br>(0.455)     |
| <i>Firm size</i>             | −5.222**<br>(2.038)      | −5.177**<br>(2.018)      | −5.279**<br>(2.046)      | −5.175**<br>(2.038)      | −5.243**<br>(2.007)      |
| <i>Firm roa</i>              | −163.577***<br>(27.144)  | −163.663***<br>(26.805)  | −164.044***<br>(26.811)  | −163.513***<br>(26.718)  | −165.164***<br>(26.577)  |
| <i>Firm altman risk</i>      | −9.086***<br>(1.687)     | −9.118***<br>(1.726)     | −9.032***<br>(1.679)     | −9.115***<br>(1.718)     | −8.893***<br>(1.689)     |
| <i>Firm leverage</i>         | 25.949***<br>(7.762)     | 26.081***<br>(7.899)     | 26.109***<br>(7.730)     | 26.101***<br>(7.856)     | 26.178***<br>(7.736)     |
| <i>Firm tangibility</i>      | 10.658<br>(6.525)        | 10.311<br>(6.505)        | 10.368<br>(6.600)        | 10.308<br>(6.524)        | 9.756<br>(6.427)         |
| <i>Loan maturity</i>         | −6.610<br>(4.421)        | −6.653<br>(4.418)        | −6.572<br>(4.413)        | −6.626<br>(4.427)        | −6.568<br>(4.396)        |
| <i>Loan size</i>             | −10.263***<br>(0.805)    | −10.268***<br>(0.806)    | −10.258***<br>(0.802)    | −10.266***<br>(0.804)    | −10.250***<br>(0.809)    |
| <i>Syndicate size</i>        | −12.482***<br>(3.252)    | −12.457***<br>(3.243)    | −12.450***<br>(3.253)    | −12.462***<br>(3.250)    | −12.440***<br>(3.249)    |
| <i>Number of bookrunners</i> | 3.682***<br>(1.173)      | 3.682***<br>(1.184)      | 3.698***<br>(1.175)      | 3.687***<br>(1.181)      | 3.653***<br>(1.191)      |
| <i>Collateral</i>            | 24.480***<br>(3.705)     | 24.481***<br>(3.686)     | 24.401***<br>(3.718)     | 24.484***<br>(3.693)     | 24.291***<br>(3.683)     |
| <i>Covenant</i>              | −0.128<br>(4.149)        | −0.035<br>(4.165)        | −0.116<br>(4.110)        | −0.034<br>(4.149)        | −0.331<br>(4.075)        |
| <i>Bank size</i>             | −20.372<br>(13.560)      | −20.551<br>(13.595)      | −20.451<br>(13.602)      | −20.558<br>(13.620)      | −19.911<br>(13.582)      |
| <i>Bank equity ratio</i>     | −563.208***<br>(121.635) | −565.648***<br>(121.839) | −555.392***<br>(120.925) | −565.673***<br>(121.230) | −535.043***<br>(122.481) |
| <i>Bank risk</i>             | −102.817<br>(908.567)    | −90.253<br>(917.858)     | −102.828<br>(906.611)    | −81.417<br>(915.292)     | −115.015<br>(896.160)    |
| <i>Personal Income</i>       | −20.789<br>(22.954)      | −20.582<br>(24.110)      | −18.424<br>(22.453)      | −19.602<br>(23.323)      | −26.522<br>(24.239)      |
| <i>Population</i>            | −18.703<br>(31.491)      | −17.624<br>(32.078)      | −20.662<br>(31.746)      | −18.857<br>(32.173)      | −12.760<br>(32.329)      |
| Constant                     | 1,249**<br>(556.3)       | 1,232**<br>(556.6)       | 1,251**<br>(560)         | 1,239**<br>(557.8)       | 1,218**<br>(555.8)       |
| Observations                 | 20,115                   | 20,115                   | 20,115                   | 20,115                   | 20,115                   |
| R-squared                    | 0.716                    | 0.716                    | 0.716                    | 0.716                    | 0.716                    |
| Control variables            | Y                        | Y                        | Y                        | Y                        | Y                        |
| Loan type and purpose FE     | Y                        | Y                        | Y                        | Y                        | Y                        |
| State, bank and year FE      | Y                        | Y                        | Y                        | Y                        | Y                        |
| Industry and Rated FE        | Y                        | Y                        | Y                        | Y                        | Y                        |
| Firm and CEO FE              | Y                        | Y                        | Y                        | Y                        | Y                        |

This table presents results from regressing bank loan spreads on the interactions between bank CEO cultural characteristics (Power Distance (PDI), Masculinity (MI), Uncertainty Avoidance (UAI), and Individualism (INDIVI)) and local public corruption (*STATE COR*) after controlling for loan-level, firm-level and state-level characteristics. Table 1 includes full details on the definitions and calculation for all variables. Regressions are based on OLS regressions with robust standard errors in parentheses and within bank-level clustering. Significance at the 10%, 5%, and 1% level, is represented by \*, \*\*, and \*\*\* respectively.

in the sample is \$344.178 million, and the average loan maturity is 3.75 years. Hence, this translates into around \$5,450,000 ( $344.178 \times 3.75 \times 0.0042240$ ) in additional loan interest costs. However, the value (−1.564) of the coefficient of the interaction between public corruption (*STATE COR*) and uncertainty avoidance (*UAI*) implies that with each point of increase in the uncertainty avoidance of the lead lender's CEO, the penalization of public

**Table 6.** The role of banks' CEO cultural heritage in the relationship between local public corruption and bank loan spreads – baseline estimations without CEO fixed effects.

| VARIABLES                | (1)<br>Model            | (2)<br>Model            | (3)<br>Model            | (4)<br>Model            | (5)<br>Model            |
|--------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| <i>STATE COR</i>         | 40.594**<br>(19.637)    | −17.923<br>(42.219)     | 37.373**<br>(15.124)    | −13.759<br>(19.484)     | 199.379***<br>(57.453)  |
| <i>PDI</i>               | 0.650**<br>(0.300)      | 0.392<br>(0.265)        | 0.358<br>(0.276)        | 0.377<br>(0.263)        | 0.420<br>(0.424)        |
| <i>STATE COR* PDI</i>    | −0.871*<br>(0.477)      |                         |                         |                         | −0.143<br>(0.945)       |
| <i>MI</i>                | −0.096<br>(0.224)       | −0.204<br>(0.355)       | −0.098<br>(0.227)       | −0.092<br>(0.224)       | 0.045<br>(0.296)        |
| <i>STATE COR* MI</i>     |                         | 0.395<br>(0.680)        |                         |                         | −0.492<br>(0.599)       |
| <i>UAI</i>               | −0.325<br>(0.200)       | −0.355*<br>(0.201)      | −0.122<br>(0.236)       | −0.349*<br>(0.204)      | 0.108<br>(0.329)        |
| <i>STATE COR* UAI</i>    |                         |                         | −0.659**<br>(0.295)     |                         | −1.464*<br>(0.817)      |
| <i>INDIVI</i>            | −0.237<br>(0.222)       | −0.270<br>(0.218)       | −0.268<br>(0.224)       | −0.358<br>(0.235)       | 0.072<br>(0.274)        |
| <i>STATE COR* INDIVI</i> |                         |                         |                         | 0.277<br>(0.214)        | −1.155***<br>(0.404)    |
| Constant                 | 1,236.87**<br>(540.910) | 1,238.30**<br>(541.703) | 1,248.52**<br>(545.577) | 1,249.44**<br>(542.698) | 1,186.32**<br>(544.352) |
| Observations             | 20,118                  | 20,118                  | 20,118                  | 20,118                  | 20,118                  |
| R-squared                | 0.714                   | 0.714                   | 0.714                   | 0.714                   | 0.714                   |
| Control Variables        | Y                       | Y                       | Y                       | Y                       | Y                       |
| Loan type and purpose FE | Y                       | Y                       | Y                       | Y                       | Y                       |
| State, bank and year FE  | Y                       | Y                       | Y                       | Y                       | Y                       |
| Industry and Rated FE    | Y                       | Y                       | Y                       | Y                       | Y                       |
| Firm FE                  | Y                       | Y                       | Y                       | Y                       | Y                       |

This table presents results from regressing bank loan spreads on the interactions between bank CEO cultural characteristics (Power Distance (*PDI*), Masculinity (*MI*), Uncertainty Avoidance (*UAI*), and Individualism (*INDIVI*)) and local public corruption (*STATE COR*) after controlling for loan-level, firm-level and state-level characteristics. Table 1 includes full details on the definitions and calculation for all variables. Regressions are based on OLS regressions with robust standard errors in parentheses and within bank-level clustering. Significance at the 10%, 5%, and 1% level, is represented by \*, \*\*, and \*\*\* respectively.

corruption in the cost of bank loans decreases by around \$40,400.<sup>9</sup> Similarly, the value of the coefficient of the interaction between corruption (*STATE COR*) and individualism (*INDIVI*) is −1.328. Hence, for each point of increase in the individualism of the banks' CEOs, the cost of bank loans is reduced by around \$34,280.<sup>10</sup>

The median uncertainty avoidance and individualism cultural heritage characteristics of the bank CEOs in our sample are 35 and 80, respectively. Thus, for banks led by such CEOs, the penalization of local public corruption in the loan contract is \$1,293,600 (\$5,450,000 − (35\*\$40,400) − (80\*\$34,280)) in additional interest costs. Therefore, these findings are economically meaningful.

#### 4.2. Baseline models without CEO fixed effects

Next, we replicate the models of Table 5 in section 4.1, but this time without including CEO fixed effects. In this way, we can use interaction plots to visually demonstrate our findings regarding the hypotheses for which we find significant empirical support.

The results from this exercise are available in Table 6.

We continue to find evidence supporting hypothesis *H3*, which posits that bank CEOs' uncertainty avoidance cultural heritage would moderate the positive relationship between local public corruption and the cost of bank loans. In model 3 of Table 6, the interaction between uncertainty avoidance (*UAI*) and the corruption variable is negative and significant at the 5% level. In the same model, the individual association of local public corruption (*STATE COR*) is positive and significant at the 5% level. In the comprehensive model 5 of Table 6, we continue to find significant evidence in support of hypothesis *H3* as the interaction between uncertainty avoidance and corruption remains negative and significant.

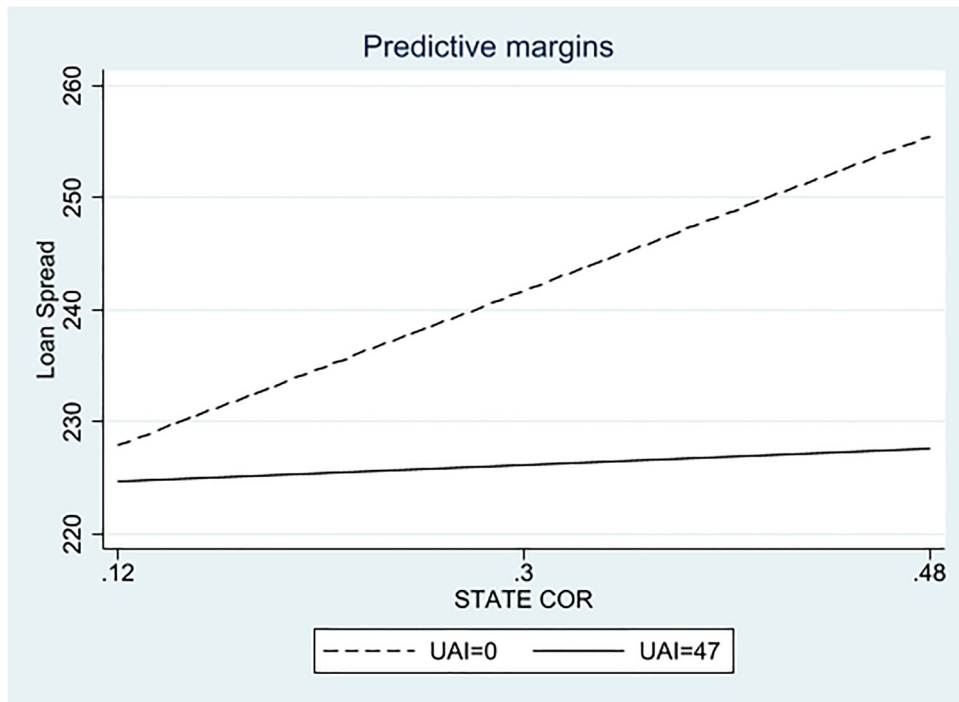


**Figure 2.** The effect of local public corruption (STATE COR) on loan spreads by different uncertainty avoidance (UAI) cultural heritage of bank CEOs.

Notes: The x-axis represents a range of local public corruption (STATE COR) of one standard deviation around the sample mean. The y-axis represents predicted loan spreads based on the comprehensive Model 5 of Table 6 while holding control variables constant at their sample mean. UAI = 0 represents a bank led by a CEO with zero uncertainty avoidance. UAI = 47 represents a bank led by a CEO with the sample mean of uncertainty avoidance.

In the comprehensive model 5 of Table 6, we also continue to find support for hypothesis *H4.B* regarding the moderating effect of the individualism cultural heritage of bank CEOs in the positive relationship between corruption and the cost of bank loans. In model 6, the interaction between individualism (*INDIVI*) and local public corruption (*STATE COR*) is negative and significant at the 1% level. At the same time, the individual correlation of the latter variable with the cost of bank loans is also significant but positive.

We also note that in all the models of Table 6, the individual associations between the cultural heritage characteristics of bank CEOs and the cost of bank loans are insignificant. These findings, in combination with the results of the interaction effects, could denote that a significant channel through which the different cultural heritage characteristics of bank CEOs could affect the cost of bank loans is through prompting heterogeneous pricing of institutional quality in loan contracts. In the case of corruption, several studies show that cultural characteristics affect the level of tolerance towards corruption (Barr and Serra 2010; Boateng et al. 2021; Davis and Ruhe 2003; Gächter and Schulz 2016; Husted 1999).

In Figures 2 and 3, we present two interaction plots of bank CEOs' uncertainty avoidance and individualism heritage characteristics with public corruption based on the results of the comprehensive model 5 of Table 6. The predicted loan spreads are on the y-axis, and the public corruption levels in the borrowers' states are on the x-axis. The slopes in each of these interaction plots, one representing a higher level and the other representing a lower level of the same cultural heritage characteristic of bank CEOs, illustrate the varying impact of corruption on loan spreads granted by banks led by CEOs with different uncertainty avoidance heritage level (Figure 2) and individualism heritage level (Figure 3). Statistically, these slopes capture the interaction effect of model 5 of Table 6, where corruption and bank CEO cultural heritage characteristics jointly influence loan spreads. We hold the control variables constant at their sample mean values.

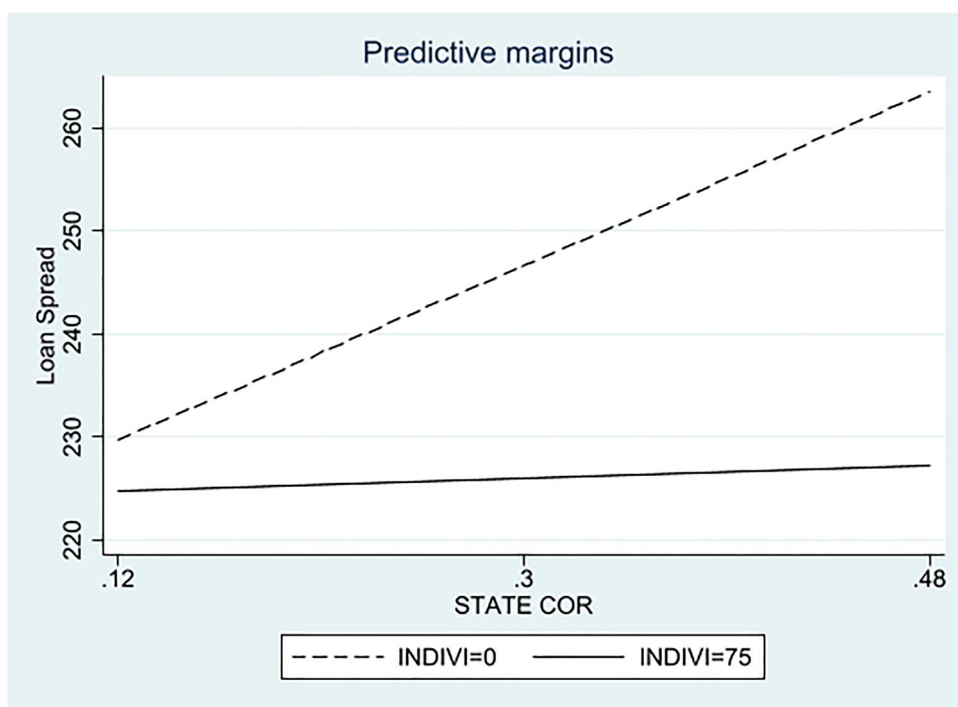


**Figure 3.** The effect of local public corruption (STATE COR) on loan spreads by different individualism (INDIVI) cultural heritage of bank CEOs.

The x-axis represents a range of local public corruption (STATE COR) of one standard deviation around the sample mean. The y-axis represents predicted loan spreads based on the comprehensive Model 5 of Table 6 while holding control variables constant at their sample mean. INDIVI = 0 represents a bank led by a CEO with zero individualism. INDIVI = 75 represents a bank led by a CEO with the sample mean of individualism.

In Figure 2, the solid line, representing the predicted spreads for loans granted by banks led by CEOs with uncertainty avoidance at the sample mean (i.e. when UAI is 47), is significantly less steep compared to the dashed line, depicting the loan spreads in the hypothetical scenario where a bank CEO's uncertainty avoidance would be zero. Similarly, in Figure 3, the solid line, illustrating the predicted spreads for loans granted by banks led by CEOs with individualism at the sample mean (i.e. when INDIVI is 75), is substantially less steep than the dashed line, representing the loan spreads in the hypothetical scenario where a bank CEO's individualism would be zero. Thus, Figures 2 and 3 suggest that the positive association between local public corruption and loan spreads weakens for banks led by CEOs with ancestral origin in high uncertainty avoidance societies (hypothesis *H3*) or high individualism societies (hypothesis *H4.B*).

#### 4.3. Addressing the potential matching between borrower local public corruption and the cultural heritage characteristics of bank CEOs

A concern regarding the findings of Table 5 is the potential bias stemming from the possible matching between banks led by CEOs with specific cultural heritage characteristics and borrowers from states with high public corruption. For example, the moderating effect of cultural heritage characteristics of bank CEOs on the positive relationship between local public corruption and the cost of bank loans could stem from the possibility that firms from high public corruption states may approach banks led by CEOs with high uncertainty avoidance and individualism cultural heritage. In all our previous estimations, we use bank, bank CEO, borrowing firm, and borrowing firm state fixed effects to contain this issue to a certain extent. In this section, we first test empirically for this potential matching issue. Then, we use an alternative identification strategy that considers this matching concern.

**Table 7.** Matching between bank CEOs' cultural heritage and borrowing firms from states with high public corruption.

| VARIABLES         | (1)<br>PDI<br>Model | (2)<br>MI<br>Model | (3)<br>UAI<br>Model | (4)<br>INDIVI<br>Model |
|-------------------|---------------------|--------------------|---------------------|------------------------|
| STATE COR         | −2.492<br>(4.187)   | 1.894<br>(2.126)   | 0.399<br>(3.915)    | 2.589<br>(4.228)       |
| Constant          | 101.4***<br>(22.74) | 28.10<br>(31.92)   | 201.7***<br>(34.79) | 28.17<br>(27.24)       |
| Observations      | 21,185              | 21,185             | 21,185              | 21,185                 |
| R-squared         | 0.148               | 0.172              | 0.154               | 0.116                  |
| Control variables | Y                   | Y                  | Y                   | Y                      |

This table presents results from regressing bank CEO cultural characteristics (Power Distance (PDI), Masculinity (MI), Uncertainty Avoidance (UAI), and Individualism (INDIVI)) on local public corruption (STATE COR) after controlling for loan-level, firm-level and state-level characteristics. Table 1 includes full details on the definitions and calculation for all variables. Regressions are based on OLS regressions with robust standard errors in parentheses and within bank-level clustering. Significance at the 10%, 5%, and 1% levels is represented by \*, \*\*, and \*\*\* respectively.

To empirically test for this matching issue, we follow an approach similar to that of Hagendorff, Lim, and Nguyen (2023). We run estimations whereby we regress the bank CEOs' cultural heritage characteristics on local public corruption of the state of the borrowing firms together with all the control variables.<sup>11</sup> The results from these estimations are in Table 7.

In the models of Table 7, we do not observe a significant association between local public corruption in the borrowing firms' states and the bank CEOs' cultural heritage traits. Hence, our sample does not display a systematic relationship between public corruption in the borrowing firms' state and the cultural heritage traits of bank CEOs.

Nevertheless, we proceed with an identification strategy that takes into account this potential matching issue. We re-estimate the baseline models of Table 5 by including bank\*bank CEO\*borrowing firm fixed effects. Including this type of fixed effect in the models means that we compare the cost of bank loans by the same bank while it has the same bank CEO to the same borrowing firm under different values of the local public corruption variable in the borrower's state (STATE COR). Hence, the identification of the coefficient of the variables of interest in these models stems only from the variation in public corruption of the borrowing firms' state over time.<sup>12</sup> The findings of this exercise are available in Table 8.

These results provide further evidence for the results of the baseline analysis in Table 6. In model 3 of Table 8, the individual association of public corruption (STATE COR) and the cost of bank loans is positive and highly significant at the 1% level. In the same model, the interaction between public corruption and bank CEOs' uncertainty avoidance (UAI) is negative and significant at the 5% level, providing further evidence for H3. Similarly, the comprehensive model 5 of Table 8 further supports H3 as the interaction between uncertainty avoidance (UAI) and public corruption (STATE COR) remains negative and significant at the 1% level. In the comprehensive model 5 of Table 8, we also find, in accordance with the baseline results and H4.B, that the interaction between banks' CEOs' individualism (INDIVI) and public corruption (STATE COR) is also negative and highly significant at the 1% level.

## 5. Main robustness analysis

### 5.1. Addressing endogeneity concerns

There are two ways that public corruption could be subject to endogeneity with the cost of bank loans. The first is through a feedback effect (i.e. reverse causality). For example, more expensive loans because of the penalization of corruption in the loan contracts could motivate firms to refrain from engaging in public corruption-related activities. This could, consequently, decrease local public corruption. Further, recent research shows that financial development and easier access to credit reduce corruption (Altunbaş and Thornton 2012; Sharma and

**Table 8.** The role of banks' CEO cultural heritage in the relationship between local public corruption and bank loan spreads – Baseline estimations with bank\*bank CEO\*borrowing firm fixed effects.

| VARIABLES                | (1)<br>Model      | (2)<br>Model      | (3)<br>Model        | (4)<br>Model      | (5)<br>Model         |
|--------------------------|-------------------|-------------------|---------------------|-------------------|----------------------|
| STATE COR                | 46.80<br>(29.15)  | −9.932<br>(58.97) | 45.22***<br>(16.08) | −22.86<br>(34.71) | 285.8***<br>(98.24)  |
| STATE COR* PDI           | −1.134<br>(0.746) |                   |                     |                   | −0.621<br>(0.925)    |
| STATE COR* MI            |                   | 0.210<br>(0.963)  |                     |                   | −1.102<br>(1.201)    |
| STATE COR* UAI           |                   |                   | −0.920**<br>(0.354) |                   | −1.770***<br>(0.618) |
| STATE COR* INDIVI        |                   |                   |                     | 0.346<br>(0.392)  | −1.412***<br>(0.282) |
| Constant                 | 387.7<br>(849.4)  | 404.2<br>(861.8)  | 380.7<br>(857.6)    | 421.4<br>(875.2)  | 312.2<br>(831.1)     |
| Observations             | 18,830            | 18,830            | 18,830              | 18,830            | 18,830               |
| R-squared                | 0.773             | 0.773             | 0.773               | 0.773             | 0.773                |
| Control variables        | Y                 | Y                 | Y                   | Y                 | Y                    |
| Loan purpose and type FE | Y                 | Y                 | Y                   | Y                 | Y                    |
| State and Year FE        | Y                 | Y                 | Y                   | Y                 | Y                    |
| Bank* CEO* Firm FE       | Y                 | Y                 | Y                   | Y                 | Y                    |
| Industry and Rated FE    | Y                 | Y                 | Y                   | Y                 | Y                    |

This table presents results from regressing bank loan spreads on the interactions between bank CEO cultural characteristics (Power Distance (PDI), Masculinity (MI), Uncertainty Avoidance (UAI), and Individualism (INDIVI)) and local public corruption (STATE COR) after controlling for loan-level, firm-level and state-level characteristics. These estimations include Bank\*bank CEO\*Borrowing Firm fixed effects. Table 1 includes full details on the definitions and calculation for all variables. Regressions are based on OLS regressions with robust standard errors in parentheses and within bank-level clustering. Significance at the 10%, 5%, and 1% levels is represented by \*, \*\*, and \*\*\* respectively.

Paramati 2021). Second, although our estimations employ state-level controls and state fixed effects, endogeneity could be present if our models still omit variables correlated with public corruption (Wooldridge 2002). The possibility of endogeneity of public corruption implies that its interaction term with the cultural heritage of bank CEOs could also be susceptible to endogeneity.

We run two-stage least squares instrumental variable (2SLS-IV) estimations to account for this possibility. We follow Dass, Nanda, and Xiao (2016) and use two instruments for public corruption. The first is the number of days an individual has to be a resident in a state to be eligible to vote in the state elections. The motivation behind this instrument is based on the idea that the right to vote could act as a helpful weapon against the power of corrupt officials. Stringent residency requirements regarding vote rights, i.e. an increased number of residency days, would impose limitations on the electorate to punish politicians' corrupt behavior (Johnson, LaFountain, and Yamarik 2011). Furthermore, Johnson, LaFountain, and Yamarik (2011) posit that stricter residency requirements positively correlate with a state's history of disfranchisement and, therefore, more local corruption. Hence, we expect this instrument to be positively associated with public corruption.

The second instrument is the age of the constitution of each state. This is a proxy for the quality of each state's governing principles and the capacity to restrict corruption. The constitution plays a critical role in states' governance. Changes in state governance could occur through constitutional amendments or the adoption of a new constitution. Adopting a new constitution represents a radical change in the governing rules between the citizens and the state (Tarr 2000). Johnson, LaFountain, and Yamarik (2011) posit that in establishing an entirely new constitution, numerous issues are on the table compared with mere amendments of an older constitution. Hence, the durability of a state's constitution could be a proxy for the quality of its governing rules and could relate negatively to corruption (Johnson, LaFountain, and Yamarik 2011).

We expect these two instruments to associate with public corruption significantly and, therefore, satisfy the inclusion restriction. As in Dass, Nanda, and Xiao (2016), both instruments were measured in 1970. Hence, it is unlikely that these two instruments could directly affect the contemporaneous cost of bank loans (i.e. the exclusion restriction). Several other studies use these instruments for local public corruption (e.g. Hossain, Hossain,

and Kryzanowski 2021; Huang and Yuan 2021; Ucar and Staer 2020). Since these instruments are time-invariant, we use them in instrumental variable estimations without firm or state fixed effects.

Another potential endogeneity issue stems from the cultural heritage characteristics of bank CEOs. In our baseline models, we include CEO fixed effects to account for all the time-invariant characteristics of CEOs. These could comprise factors such as gender, birth period, religion, or any factors that correlate with the cultural heritage of the bank CEOs. Hence, using CEO fixed effects, the interaction terms between the cultural heritages' characteristics and public corruption in the baseline models take into account other time-invariant characteristics related to the cultural heritage of bank CEOs. Nevertheless, we also use instruments to enhance further the evidence that these interaction terms reflect bank CEOs' specific cultural heritage characteristics and lessen the concern for this omitted variable endogeneity issue. Hence, we interact the corruption instruments with instruments for the cultural heritage variables in our instrumental variable analysis.

We first identify instruments for uncertainty avoidance (*UAI*) and individualism (*INDIVI*) that emerge as the most significant cultural heritage characteristics in the baseline estimations. To this end, we rely on the study of Nash and Patel (2019), which provides an analysis of instruments of cultural values. We also enhance the selection of the instruments for uncertainty avoidance and individualism by choosing variables that several other finance studies use (e.g. Bermpei et al. 2023; Dang et al. 2019; El Ghouli and Zheng 2016; Gaganis, Hasan, and Pasiouras 2020; Shao, Kwok, and Zhang 2013).

A candidate instrument for uncertainty avoidance is whether the majority of a country's population speaks a language that comprises multiple second-person pronouns. The continuous self-monitoring of speakers to choose the correct second-person pronoun prompts uneasiness with uncertain situations. Kashima and Kashima (1998) show that this linguistic trait is positively associated with uncertainty avoidance (i.e. the inclusion restriction). Furthermore, it is unlikely that such a linguistic heritage trait of bank CEOs would display a direct association with the cost of bank loans (i.e. the exclusion restriction). Hence, we follow Kashima and Kashima (1998) and use an indicator variable (*2P-PRON*) about the number of second-person pronouns as an instrument of uncertainty avoidance. This variable takes the value of one if the prominent language in the country of origin of a bank CEO's surname entails only one second-person pronoun, while it takes the value of two for languages with more than one second-person pronoun.

Regarding individualism (*INDIVI*), we identify two candidate instruments. The first is a linguistic trait. Languages that require person-indexing pronouns (e.g. 'I' in English) distinguish the speaker from the general context of the discussion. On the other hand, languages that allow the omission of the subject pronoun remove the spotlight from the speaker (Kashima and Kashima 1998; Nash and Patel 2019). Kashima and Kashima (1998) posit that this 'pronoun drop' linguistic trait mirrors a society's perspective regarding the relationship between the group and the individual. For example, omitting the subject pronoun in a language mirrors a society focusing less on the individual. Nash and Patel (2019) report a strong negative correlation between 'pronoun drop' and individualism. Hence, this instrument could satisfy the inclusion restriction. Further, it is not likely that this linguistic heritage trait would directly affect the loan spreads (i.e. the exclusion restriction). Thus, as the first instrument of individualism, we use a dummy variable (*PRON*) that takes the value of one in case the prominent language in the country of origin of a bank CEO's surname permits the omission of first-person singular pronouns and zero otherwise.

The second is the historical prevalence of pathogens in a country. This instrument relies on studies investigating geography's influence on cultural development (e.g. Fincher et al. 2008). Societies at higher risk for infectious diseases display more collectivism (i.e. less individualism) because support from a person's social network could serve as a coping mechanism for exposure to new pathogens (Nash and Patel 2019). Fincher et al. (2008) show a negative association between the historical pathogen prevalence in a country and individualism (i.e. the inclusion restriction). On the other hand, it is not very likely that the historical pathogen prevalence in the country of origin of a bank's CEO would directly affect the cost of bank loans (i.e. the exclusion restriction). Therefore, as the second instrument of individualism, we use a variable (*Pathogen*) that measures a country's historical prevalence of pathogens detrimental to human health (Fincher et al. 2008).

The results from the 2SLS-IV models are available in Table 9.

In all the models of Table 9, the first-stage results (see the lower part of the models) show that, in most cases, the instruments have a highly significant relationship with the interaction terms of local public corruption and

**Table 9.** The role of banks' CEOs cultural heritage in the relationship between local public corruption and bank loan spreads – Addressing endogeneity with 2SLS-IV estimations.

| VARIABLES                              | (1)<br>Model         | (2)<br>Model         | (3)<br>Model         | (4)<br>Model          |
|----------------------------------------|----------------------|----------------------|----------------------|-----------------------|
| Pred STATE COR                         | 51.962**<br>(21.434) | −50.984<br>(35.797)  | 108.125*<br>(59.928) | 447.696*<br>(250.771) |
| Pred (STATE COR *PDI)                  |                      |                      |                      | 1.433<br>(1.263)      |
| Pred (STATE COR *MI)                   |                      |                      |                      | −4.092<br>(2.585)     |
| Pred (STATE COR *UAI)                  | −0.658**<br>(0.271)  |                      | −0.979**<br>(0.458)  | −2.752***<br>(1.017)  |
| Pred (STATE COR *INDIVI)               |                      | 0.575<br>(0.361)     | −0.555*<br>(0.284)   | −1.181*<br>(0.627)    |
| <b>First Stage</b>                     |                      |                      |                      |                       |
| CONSTITUTION age                       | −0.020***<br>(0.005) | −0.016***<br>(0.004) | −0.011*<br>(0.006)   | −0.019**<br>(0.009)   |
| RESIDENCY days                         | 0.057***<br>(0.008)  | 0.070***<br>(0.010)  | 0.055***<br>(0.011)  | 0.072***<br>(0.021)   |
| CONSTITUTION age*2P-PRON               |                      | −0.808***<br>(0.177) | −1.011***<br>(0.237) | −0.973***<br>(0.248)  |
| RESIDENCY days*2P-PRON                 | 4.605***<br>(0.407)  |                      | 3.574***<br>(0.534)  | 4.275***<br>(0.607)   |
| CONSTITUTION age *PRON                 |                      | 0.531<br>(0.297)     | 0.493<br>(0.418)     | 0.732<br>(0.908)      |
| RESIDENCY days *PRON                   |                      | −2.090***<br>(0.745) | −1.723**<br>(0.812)  | −3.143**<br>(1.285)   |
| CONSTITUTION age *Pathogen             |                      | 1.309***<br>(0.277)  | 0.983**<br>(0.416)   | 0.972*<br>(0.562)     |
| RESIDENCY days *Pathogen               |                      | −1.745**<br>(0.720)  | −1.742***<br>(0.579) | −1.116*<br>(0.613)    |
| CONSTITUTION age * Communist Past      |                      |                      |                      | −2.871***<br>(0.837)  |
| RESIDENCY days * Communist Past        |                      |                      |                      | 10.636***<br>(2.463)  |
| CONSTITUTION age *30-years temperature |                      |                      |                      | 0.074<br>(0.069)      |
| RESIDENCY days *30-years temperature   |                      |                      |                      | −0.388***<br>(0.142)  |
| Observations                           | 19,100               | 19,100               | 19,100               | 19,100                |
| R-squared                              | 0.216                | 0.203                | 0.221                | 0.229                 |
| Wald F-Test (WIT)                      | 372.725              | 311.374              | 187.610              | 126.478               |
| With critical value                    | 11.04                | 15.72                | 15.18                | N/A                   |
| Hansen J p-value (OIT p-value)         | 0.448                | 0.362                | 0.668                | 0.862                 |
| Control Variables                      | Y                    | Y                    | Y                    | Y                     |
| Loan purpose and type FE               | Y                    | Y                    | Y                    | Y                     |
| Year and bank FE                       | Y                    | Y                    | Y                    | Y                     |
| Industry and Rated FE                  | Y                    | Y                    | Y                    | Y                     |

This table presents results from regressing bank loan spreads on the interactions between bank CEO cultural characteristics (Power Distance (PDI), Masculinity (MI), Uncertainty Avoidance (UAI), and Individualism (INDIVI)) and local public corruption (STATE COR) after controlling for loan-level, firm-level and state-level characteristics. The models show the results from a two-stage instrumental variable regression where we use two instruments for corruption: i) the constitution age ii) and the residency days. These variables are state-level and sourced from the Book of the States in 1970. To instrument the interaction terms we use four instruments for the cultural traits; i) the number of second-person pronouns, ii) a dummy variable that takes the value of one if the language in the country of origin of a CEO's surname allows for the omission of first-person singular pronouns, iii) the historical prevalence in a country of pathogens detrimental to human health, and iv) a dummy which takes the value of one if the country of origin of a CEO's surname has a communist past and zero otherwise v) the 30 years average temperature of the country of origin of the surname of the CEOs. We interact the culture instruments with the corruption instruments in the first stage. WIT is the Wald F-statistic of the weak identification test, which must be higher than its critical value to reject the null. OIT is the over-identification test of Hansen. Table 1 includes full details on the definitions and calculation for all variables. Significance at the 10%, 5%, and 1% levels is represented by \*, \*\*, and \*\*\* respectively.

the cultural heritage of the bank CEOs. The appropriateness of the instruments is also supported by Hansen's overidentification test (OIT) and the high values of the Wald F-test, which implies that weak identification is not an issue. The second-stage results (see the upper part of the models) are consistent with our baseline findings. In the first two models of Table 10, we focus on the instrumented interactions of corruption (*STATE COR*) with uncertainty avoidance (*UAI*) and with individualism (*INDIVI*) because they provide the strongest results in the baseline estimations of the main analysis. In model 1, the instrumented interaction between corruption (*STATE COR*) and uncertainty avoidance (*UAI*) is negative and significant at the 5% level. In model 2 of Panel A, we do not find a significant coefficient on the instrumented interaction between corruption (*STATE COR*) and individualism (*INDIVI*). However, in model 3, when we include both instrumented interactions in the same model, they emerge with a negative and significant coefficient. In comprehensive model 4, we include the instrumented interactions of corruption (*STATE COR*) with all the cultural heritage variables.<sup>13</sup> We continue to find a negative and significant at the 1% level instrumented interaction between public corruption (*STATE COR*) and uncertainty avoidance (*UAI*). Finally, in the same comprehensive model 4, we find a negative and significant coefficient at the 10% level on the instrumented interaction between public corruption (*STATE COR*) and individualism (*INDIVI*). Note also that the individual association of the instrumented public corruption (*STATE COR*) is positive and significant in the models comprising significant instrumented interactions.

These 2SLS-IV results provide further evidence in favor of *H3* and *H4.B* regarding the moderating effects of banks' CEOs' uncertainty avoidance and individualism cultural heritage on the relationship between public corruption and the cost of bank loans.

## 5.2. Addressing omitted variable concerns about banks and bank CEOs

The baseline estimations in Table 5 might still be subject to some omitted variable issues, although we employ several fixed effects to attenuate this issue to a large extent. One such concern over omitted variables stems from time-variant CEO characteristics that could affect the attitude of bank CEOs toward risk and, hence, the risks that stem from public corruption. These could comprise the bank CEO's pay incentives, tenure, age, and other characteristics (Fahlenbrach and Stulz 2011; Hagendorff and Vallascas 2011). Thus, we augment the models of Table 6 with variables that reflect the bank CEO compensation incentives (*Vega* and *Delta*)<sup>14</sup>, the bank CEO age, the natural logarithm of the years of a CEO's tenure (*Tenure*), and a duality dummy (*DUAL*) which takes the value of 1 in the case a bank CEO also holds the position of the Chairman of the Board in a given year.<sup>15</sup> These estimations are available in Panel A of Table 10.

In model 1 of Panel A of Table 10, we find that the significant positive effect of public corruption (*STATE COR*) on the cost of bank loans significantly declines at higher levels of uncertainty avoidance (*UAI*). In model 3 of Panel A, both the interactions of corruption (*STATE COR*) with uncertainty avoidance (*UAI*) and with individualism (*INDIVI*) are negative and significant. We find similar results in the comprehensive model 4 of Panel A when we also control for the interactions of public corruption with power distance (*PDI*) and with masculinity (*MI*). In models 5 and 6 of Panel A, we replicate models 3 and 4 with bank CEO\*year fixed effects to capture all time-variant CEO characteristics. These models continue to provide supporting evidence for *H3* and *H4.B*.

Next, we add bank-specific variables that could influence loan prices to the baseline models. We add the lagged ratio of non-performing assets to total assets (*L.NPA/TA*) as a second measure of bank-risk taking, the lagged return on assets as a measure of bank profitability (*L. ROA*), and the lagged ratio of cash to total assets ratio as a measure of bank liquidity (*L.BANK CASH RATIO*). We depict the results from these specifications in Panel B of Table 10.

In these models, we continue to find, in support of *H3*, that higher bank CEO uncertainty avoidance (*UAI*) significantly weakens the positive effect of public corruption on the cost of bank loans (see models 1, 3 and the comprehensive model 4 in Panel B of Table 10). In model 3 and the comprehensive model 4 of Panel B, we find similar evidence for the interaction between public corruption (*STATE COR*) and individualism (*INDIVI*). Hence, these results also support *H4.B*. Subsequently, in models 5 and 6 of Panel B, we replicate models 3 and 4 with bank\*year fixed effects. Hence, we control for all the time-variant bank variables. This exercise is useful

**Table 10.** The role of banks' CEO cultural heritage in the relationship between local public corruption and bank loan spreads – Addressing omitted variables issues at the bank CEO and bank level.**Panel A:** Addressing bank CEO omitted variable issues

| VARIABLES                   | (1)<br>Model          | (2)<br>Model         | (3)<br>Model           | (4)<br>Model           | (5)<br>Model         | (6)<br>Model        |
|-----------------------------|-----------------------|----------------------|------------------------|------------------------|----------------------|---------------------|
| <i>STATE COR</i>            | 36.638**<br>(16.511)  | −11.009<br>(23.758)  | 193.118***<br>(59.096) | 228.208***<br>(81.996) | 139.3***<br>(47.79)  | 147.2*<br>(76.28)   |
| <i>STATE COR* PDI</i>       |                       |                      |                        | −0.205<br>(1.267)      |                      | 0.0575<br>(1.215)   |
| <i>STATE COR* MI</i>        |                       |                      |                        | −0.527<br>(0.887)      |                      | −0.132<br>(1.009)   |
| <i>STATE COR* UAI</i>       | −0.690**<br>(0.309)   |                      | −1.697***<br>(0.536)   | −1.650*<br>(0.922)     | −1.296***<br>(0.435) | −1.346<br>(0.933)   |
| <i>STATE COR* INDIVI</i>    |                       | 0.216<br>(0.240)     |                        | −1.397**<br>(0.543)    | −0.983**<br>(0.433)  | −0.975**<br>(0.482) |
| <i>Delta</i>                | −0.012***<br>(0.003)  | −0.012***<br>(0.003) | −0.012***<br>(0.003)   | −0.012***<br>(0.003)   |                      |                     |
| <i>Vega</i>                 | 0.003<br>(0.003)      | 0.002<br>(0.003)     | 0.003<br>(0.003)       | 0.003<br>(0.003)       |                      |                     |
| <i>Ln age</i>               | −103.980<br>(322.512) | −99.766<br>(323.991) | −98.683<br>(310.956)   | −95.018<br>(316.035)   |                      |                     |
| <i>Tenure</i>               | −0.037<br>(6.368)     | 0.156<br>(6.463)     | −0.418<br>(6.197)      | −0.463<br>(6.165)      |                      |                     |
| <i>Duality</i>              | −3.009<br>(3.128)     | −3.035<br>(3.036)    | −2.544<br>(3.159)      | −2.595<br>(3.196)      |                      |                     |
| Constant                    | 1.678<br>(1.491)      | 1.640<br>(1.495)     | 1.635<br>(1.453)       | 1.635<br>(1.453)       | 1,010*<br>(546.4)    | 1,010*<br>(544.5)   |
| Observations                | 18,500                | 18,500               | 18,500                 | 18,500                 | 20,049               | 20,049              |
| R-squared                   | 0.716                 | 0.716                | 0.716                  | 0.716                  | 0.723                | 0.723               |
| Control Variables           | Y                     | Y                    | Y                      | Y                      | Y                    | Y                   |
| Loan purpose and type FE    | Y                     | Y                    | Y                      | Y                      | Y                    | Y                   |
| State and Bank FE           | Y                     | Y                    | Y                      | Y                      | Y                    | Y                   |
| Year and CEO FE             | Y                     | Y                    | Y                      | Y                      | N                    | N                   |
| Firm, Industry and Rated FE | Y                     | Y                    | Y                      | Y                      | Y                    | Y                   |
| CEO*year FE                 | −                     | −                    | −                      | −                      | Y                    | Y                   |

**Panel B:** Addressing bank omitted variable issues

| VARIABLES                | (1)<br>Model        | (2)<br>Model       | (3)<br>Model         | (4)<br>Model         | (5)<br>Model         | (6)<br>Model        |
|--------------------------|---------------------|--------------------|----------------------|----------------------|----------------------|---------------------|
| <i>STATE COR</i>         | 33.69**<br>(15.85)  | −8.564<br>(18.98)  | 180.4***<br>(47.61)  | 214.1***<br>(67.77)  | 139.3***<br>(47.91)  | 147.2*<br>(76.47)   |
| <i>STATE COR* PDI</i>    |                     |                    |                      | −0.159<br>(1.058)    |                      | 0.0575<br>(1.218)   |
| <i>STATE COR* MI</i>     |                     |                    |                      | −0.509<br>(0.677)    |                      | −0.132<br>(1.011)   |
| <i>STATE COR* UAI</i>    | −0.616**<br>(0.287) |                    | −1.548***<br>(0.425) | −1.527*<br>(0.841)   | −1.296***<br>(0.436) | −1.346<br>(0.935)   |
| <i>STATE COR* INDIVI</i> |                     | 0.187<br>(0.214)   | −1.365***<br>(0.443) | −1.312***<br>(0.447) | −0.983**<br>(0.434)  | −0.975**<br>(0.483) |
| <i>L.NPA/TA</i>          | 830.3<br>(1,019)    | 831.2<br>(1,029)   | 816.9<br>(1,015)     | 817<br>(1,023)       |                      |                     |
| <i>L.ROA</i>             | −1,131<br>(742.9)   | −1,140<br>(754.9)  | −1,148<br>(730.4)    | −1,160<br>(726)      |                      |                     |
| <i>L.BANK CASH RATIO</i> | 104.2<br>(148.2)    | 110.7<br>(150.8)   | 99.59<br>(147.9)     | 99.51<br>(147.7)     |                      |                     |
| Constant                 | 1,308**<br>(588.9)  | 1,297**<br>(586.9) | 1,275**<br>(588)     | 1,278**<br>(584)     | 1,010*<br>(547.8)    | 1,010*<br>(545.8)   |
| Observations             | 20,115              | 20,115             | 20,115               | 20,115               | 20,049               | 20,049              |
| R-squared                | 0.716               | 0.716              | 0.716                | 0.716                | 0.723                | 0.723               |
| Control Variables        | Y                   | Y                  | Y                    | Y                    | Y                    | Y                   |
| Loan purpose and type FE | Y                   | Y                  | Y                    | Y                    | Y                    | Y                   |
| State FE                 | Y                   | Y                  | Y                    | Y                    | Y                    | Y                   |

(continued).

**Table 10.** Continued.

|                             |   |   |   |   |   |   |
|-----------------------------|---|---|---|---|---|---|
| Year and Bank FE            | Y | Y | Y | Y | N | N |
| CEO FE                      | Y | Y | Y | Y | Y | Y |
| Firm, Industry and Rated FE | Y | Y | Y | Y | Y | Y |
| Bank*year FE                | – | – | – | – | Y | Y |

This table presents results from regressing bank loan spreads on the interactions between bank CEO cultural characteristics (Power Distance (PDI), Masculinity (MI), Uncertainty Avoidance (UAI), and Individualism (INDIVI)) and local public corruption (STATE COR) after controlling for loan-level, firm-level and state-level characteristics. Models 1–4 of Panel A includes additional CEO variables (Delta, Vega, CEO age, Tenure, and Duality), while Models 5–6 of Panel A includes CEO-Year FE to capture all CEO time-variant characteristics. Models 1–4 of Panel B includes additional bank-level variables (NPL/TA, ROA and BANK CASH RATIO), while Models 5–6 of Panel B includes Bank-Year FE to capture all bank time-variant characteristics. Table 1 includes full details on the definitions and calculation for all variables. Regressions are based on OLS regressions with robust standard errors in parentheses and within bank-level clustering. Significance at the 10%, 5%, and 1% levels is represented by \*, \*\*, and \*\*\* respectively.

because banks could have corporate governance structures, such as highly independent boards (Srivastav and Hagedorff 2016; Vallascas, Mollah, and Keasey 2017), that could moderate and control the bank policies that CEOs impose. Furthermore, recent evidence shows that organizational culture could affect a bank's lending policies (Luu, Nguyen, and Wilson 2022). Luu, Nguyen, and Wilson (2022) provide such evidence using time-varying measures of banks' organizational culture. Hence, another reason to estimate models with bank\*year fixed effects is to control for banks' organizational culture and its changes over the years. The results from these specifications continue to provide empirical support to our previous findings.

### 5.3. Addressing the correlation between the cultural heritage characteristics

Cultural heritage characteristics display a systematic relationship (Hofstede 1983; Zheng et al. 2013). In the baseline estimations in Table 5, we also present results from a comprehensive specification that comprises the interactions of local public corruption with all the four cultural heritage attributes of bank CEOs. In this way, we investigate the distinct conditioning effect of each cultural heritage characteristic of banks' CEOs on the relationship between corruption and the cost of bank loans. This robustness exercise provides evidence that the baseline results are not driven merely by the correlation between the cultural heritage variables. First, we construct cultural heritage measures based on the residuals from regressions that employ one cultural heritage characteristic as a dependent variable and the rest of the three cultural heritage characteristics as explanatory variables. Therefore, the residuals from these regressions are proxies for the portion of each cultural heritage characteristic that is not explained by the rest of the cultural heritage characteristics. Then, we replicate the baseline estimations using the interactions of these residuals-based cultural heritage measures with the local public corruption variables. The results from this exercise are available in Table 11.

In model 3 of Table 11, we find that the interaction between the residuals-based uncertainty avoidance (UARES) and local public corruption in borrowers' states (STATE COR) is negative and significant at the 10% level. Model 4 shows that the interaction between bank CEOs' residuals-based individualism (INDIVIRES) and corruption (STATE COR) is also negative and significant at the 1% level. In the comprehensive model 5 of Table 11, we continue to find the interactions of residuals-based uncertainty avoidance (UARES) and individualism (INDIVIRES) with local corruption (STATE COR) to be negative and significant at conventional statistical levels. The results from this exercise are consistent with the baseline findings. We continue to find that banks led by CEOs that trace their origin in more uncertainty-avoidant and more individualistic societies penalize less sharply the presence of public corruption in the borrowing firms' states (i.e. hypotheses H3 and H4.B).

### 5.4. Cross-sectional analysis based on states' economic freedom

Our main analysis's strongest finding is that banks led by CEOs whose ancestral society scores high in uncertainty avoidance penalize the presence of public corruption in the borrowing firms' state less sharply (hypothesis H3). An important theoretical argument favoring this hypothesis is that for uncertainty-avoidant individuals, corruption could be viewed as a mechanism to reduce the uncertainty that stems from regulatory and bureaucratic obstacles (Husted 1999). This argument is in accordance with the 'grease the wheel' view of public

**Table 11.** Addressing the correlation between the cultural heritage characteristics.

| VARIABLES                    | (1)<br>Model        | (2)<br>Model       | (3)<br>Model       | (4)<br>Model         | (5)<br>Model        |
|------------------------------|---------------------|--------------------|--------------------|----------------------|---------------------|
| <i>STATE COR</i>             | 5.522<br>(9.940)    | 5.892<br>(9.977)   | 5.017<br>(8.464)   | 6.235<br>(8.851)     | 5.473<br>(5.176)    |
| <i>STATE COR* PDIRES</i>     | −0.00374<br>(0.902) |                    |                    |                      | −0.409<br>(0.757)   |
| <i>STATE COR* MIRES</i>      |                     | −0.586<br>(0.682)  |                    |                      | 0.164<br>(0.815)    |
| <i>STATE COR* UARES</i>      |                     |                    | −1.827*<br>(1.047) |                      | −3.169**<br>(1.275) |
| <i>STATE COR* INDIVIRES</i>  |                     |                    |                    | −1.352***<br>(0.413) | −2.877**<br>(1.368) |
| Constant                     | 1,229**<br>(554.4)  | 1,231**<br>(555.0) | 1,034*<br>(608.7)  | 1,196**<br>(555.9)   | 1,218**<br>(555.8)  |
| Observations                 | 20,115              | 20,115             | 20,115             | 20,115               | 20,115              |
| R-squared                    | 0.715               | 0.716              | 0.715              | 0.716                | 0.716               |
| Control variables            | Y                   | Y                  | Y                  | Y                    | Y                   |
| Loan type and purpose FE     | Y                   | Y                  | Y                  | Y                    | Y                   |
| State, year, bank and CEO FE | Y                   | Y                  | Y                  | Y                    | Y                   |
| Industry FE                  | Y                   | Y                  | Y                  | Y                    | Y                   |
| Rated FE                     | Y                   | Y                  | Y                  | Y                    | Y                   |
| Firm FE                      | Y                   | Y                  | Y                  | Y                    | Y                   |

This table presents results from regressing bank loan spreads on the interactions between the residuals-based cultural characteristics (residuals-based power distance (PDIREs), residuals-based masculinity (MIREs), residuals-based uncertainty avoidance (UAIREs), and residuals-based individualism (INDIVIREs)) and local public corruption (*STATE COR*) after controlling for loan-level, firm-level and state-level characteristics. Table 1 includes full details on the definitions and calculation for all variables. Regressions are based on OLS regressions with robust standard errors in parentheses and within bank-level clustering. Significance at the 10%, 5%, and 1% level, is represented by \*, \*\*, and \*\*\* respectively.

corruption (Bologna and Ross 2015; Johnson et al. 2014; Lui 1985). To explore the presence of evidence supporting this argument, we perform cross-sectional tests based on states' economic freedom. Economic freedom indices proxy for the state government's involvement in the economy, such as state regulations, state government spending, and taxation. It is rational to assume that borrowing firms face more regulatory and bureaucratic burdens in states with less economic freedom. Therefore, it is more likely for banks led by uncertainty-avoidant CEOs to view local public corruption as an uncertainty-reducing mechanism when a borrower's state displays less economic freedom.

We use the US states' economic freedom index from the Fraser Institute to perform this test. This index measures each state's economic freedom regarding government spending, taxes, and labor market freedom. The index ranges from 0–10, with higher values denoting more economic freedom. We average economic freedom indices for each state by decade and create two subsamples based on loans provided to borrowing firms in states above or below the sample median. Consequently, we estimate models that comprise the interaction between the bank CEOs' uncertainty avoidance cultural heritage (*UAI*) and the local public corruption in borrowers' states (*STATE COR*). These results are available in models 1–6 of Table 12.

We find the interaction *UAI\*STATE COR* to be negative and significant only in the subsample of states with lower economic freedom (i.e. in the states where local government interference in the local economy is higher). Furthermore, the difference in this interaction coefficient between the two subsamples is statistically significant at conventional levels. These results support the argument that banks led by CEOs with higher uncertainty avoidance cultural heritage may view public corruption in the borrowing firms' state as an uncertainty-reducing mechanism that could assist borrowers in circumventing regulatory and bureaucratic obstacles.

## 6. Summary of additional robustness tests and further analysis

### 6.1. Additional robustness tests

We perform several additional robustness tests that we present and discuss in the Internet Appendix. We take into account two additional omitted variable issues. The first is the distance between the banks and the borrowing

**Table 12.** Cross-sectional analysis based on states' Economic Freedom (EF).

| VARIABLES                                               | High-EF states<br>(1)<br>Model | Low-EF states<br>(2)<br>Model | High-EF states<br>(3)<br>Model | Low-EF states<br>(4)<br>Model | High-EF states<br>(5)<br>Model | Low-EF states<br>(6)<br>Model |
|---------------------------------------------------------|--------------------------------|-------------------------------|--------------------------------|-------------------------------|--------------------------------|-------------------------------|
| STATE COR                                               | 23.76<br>(15.53)               | 41.03<br>(26.05)              | 99.59<br>(63.05)               | 155.4***<br>(55.51)           | 177.7*<br>(93.97)              | 149.1*<br>(80.20)             |
| STATE COR* PDI                                          |                                |                               |                                |                               | −1.923<br>(1.605)              | 0.791<br>(1.222)              |
| STATE COR* MI                                           |                                |                               |                                |                               | −1.045<br>(1.120)              | −0.0709<br>(0.898)            |
| STATE COR* UAI                                          | −0.203<br>(0.186)              | −1.030**<br>(0.466)           | −0.577<br>(0.359)              | −1.869***<br>(0.564)          | 0.462<br>(1.088)               | −2.194**<br>(1.070)           |
| STATE COR* INDIVI                                       |                                |                               | −0.718<br>(0.570)              | −1.057**<br>(0.512)           | −0.468<br>(0.636)              | −1.055*<br>(0.526)            |
| Constant                                                | 569.4<br>(779.6)               | 2,015***<br>(687.1)           | 552.9<br>(780.1)               | 1,995***<br>(689.3)           | 546.8<br>(785.5)               | 1,985***<br>(691.6)           |
| Observations                                            | 9,541                          | 9,354                         | 9,541                          | 9,354                         | 9,541                          | 9,354                         |
| R-squared                                               | 0.746                          | 0.742                         | 0.746                          | 0.742                         | 0.746                          | 0.742                         |
| Control variables                                       | Y                              | Y                             | Y                              | Y                             | Y                              | Y                             |
| Loan type and purpose FE                                | Y                              | Y                             | Y                              | Y                             | Y                              | Y                             |
| State, year, bank and CEO FE                            | Y                              | Y                             | Y                              | Y                             | Y                              | Y                             |
| Industry FE                                             | Y                              | Y                             | Y                              | Y                             | Y                              | Y                             |
| Rated FE                                                | Y                              | Y                             | Y                              | Y                             | Y                              | Y                             |
| Firm FE                                                 | Y                              | Y                             | Y                              | Y                             | Y                              | Y                             |
| Z-score (diff. in the coefficient of<br>STATE COR* UAI) |                                | 1.65*                         |                                | 1.93*                         |                                | 1.74*                         |

This table presents results from regressing bank loan spreads on the interactions between bank CEO cultural characteristics (Power Distance (PDI), Masculinity (MI), Uncertainty Avoidance (UAI), and Individualism (INDIVI)) and local public corruption (STATE COR) after controlling for loan-level, firm-level and state-level characteristics. Models 1, 3, 5 include high-economic freedom states, while models 2,4,6 include low-economic freedom states. Table 1 includes full details on the definitions and calculation for all variables. Regressions are based on OLS regressions with robust standard errors in parentheses and within bank-level clustering. Significance at the 10%, 5%, and 1% level, is represented by \*, \*\*, and \*\*\* respectively.

firms, and the second is the level of corruption in the states of the banks. A shorter distance between a bank and a borrowing firm implies less information asymmetry (Hollander and Verriest 2016). For example, banks that are geographically closer to a borrowing firm are more familiar with the firm and the institutional and economic environment of the state in which the firm is located. This could moderate any information asymmetry issues stemming from high public corruption in the state of the borrowing firm. Similarly, banks from states that display high public corruption are more familiar with lending in a more corrupt environment. Hence, we run tests that control for public corruption in the banks' state and tests that comprise state of the bank fixed effects. We also carry out the Oster (2019) test for omitted variable bias to attenuate further omitted variable concerns.

We also perform tests that employ alternative measures of the cultural heritage characteristics of the bank CEOs. To carry out these tests, we source cultural data from the Global Leadership and Organizational Behaviour Effectiveness (GLOBE) research program (House et al. 2004). Further, we run regressions that employ alternative measures of public corruption. We use both alternative convictions-based and perceptions-based measures of public corruption. In terms of alternative convictions-based measures, we use the 10-year average of the corruption-related convictions scaled by the population of each state. Using this measure reduces the potential noise in the yearly convictions-based corruption data (Campante and Do 2014). We also construct another alternative measure of public corruption by assigning to each observation (i.e. loan) a high corruption dummy, which takes the value of one if, in a given year, this observation is associated with a state corruption value that is above 75% of the yearly corruption distribution and zero otherwise. Finally, we also use a perception-based measure of local public corruption. This is the 'State Integrity Index' of the Center of Public Integrity.

Additionally, we use alternative ways of clustering standard errors. Firms could obtain several loans in a given year. Hence, we estimate models that cluster standard errors by firm and year. Furthermore, the measure of local public corruption exhibits both state and yearly variations. Thus, we replicate the baseline models by clustering

the standard errors by state and year, as in Smith (2016). We also employ models where we cluster the standard errors just by the borrower and just by the state of the borrower.

We carry out several other tests, such as excluding recession periods from the sample and controlling for each bank CEO's ancestral country of origin and cultural clusters. These additional robustness exercises provide results that are generally consistent with the findings of the main analysis.

## 6.2. Further analysis: non-price loan contract terms

In further analysis, we investigate whether the cultural heritage of bank CEOs affects the relationship between public corruption in the state of the borrowing firm and the non-pricing loan contract terms. These comprise the presence of covenants and collateral requirements, loan maturity, and loan size. We present and discuss these results in the Internet Appendix. In summary, we do not find strong evidence that the cultural characteristics of bank CEOs condition the relationship between public corruption and loan maturity or loan size. However, we find further evidence supporting *H3* and *H4.B* for the presence of covenants and collateral requirements in loan contracts. We show that the positive effect of public corruption on the presence of covenants and collateral requirements in loan contracts weakens for banks led by CEOs with higher uncertainty avoidance (*H3*) and individualism (*H4.B*) cultural heritage.

We further examine whether the conditioning effect of the cultural heritage of bank CEOs on the relationship between public corruption and the cost of loans depends on the non-price terms of the loan contracts. We find that the positive relationship between public corruption and the cost of bank loans and the moderating effects of the cultural heritage characteristics of bank CEOs are more evident for loans that do not comprise covenants and collateral requirements. This finding shows that the risks and information asymmetry issues stemming from corruption are priced in the loan contracts when banks are not protected from formal contracting provisions such as covenants and collateral requirements.

## 7. Conclusion

We show that the cultural heritage of bank CEOs affects how banks perceive the institutional quality of the areas where borrowing firms are located and price the loan contracts accordingly. We use the US syndicated loans setting and find strong evidence that banks led by CEOs that originate from more uncertainty-avoidant societies penalize the presence of high local public corruption in the area (state) of the borrowing firms less sharply. We also find some similar evidence regarding banks led by CEOs that originate from societies with a more individualistic culture. These results conform to theory and previous research, which posits that certain cultural characteristics induce tolerance for public corruption and an underestimation of its associated risks. These findings also show that the pricing of institutional quality in corporate loans is conditional on the perceptions stemming from the cultural heritage that bank CEOs have regarding the lending risks and information asymmetry embedded in low institutional quality.

In this respect, we demonstrate that the cultural heritage characteristics of bank CEOs shape banks' lending policies and attitudes towards institutional quality factors that induce borrower risk and information asymmetry. These findings extend the recent stream of research showing that the cultural heritage of bank CEOs could affect bank performance (Nguyen, Hagendorff, and Eshraghi 2018), loan contracting (Hagendorff et al. 2023), and loan monitoring (Bermpei et al. 2023). Specifically, we provide evidence from the banking sector that deep-rooted cultural perceptions of organizational leaders about corruption could infiltrate the organization they lead with real-world implications regarding financial contracts. From this standpoint, we show that the way corruption is perceived through the informal lens of culture could have implications in formal business transactions, extending previous related research (Barr and Serra 2010; Davis and Ruhe 2003; García-Gómez et al. 2022; Gächter and Schulz 2016; Husted 1999; Vitell, Nwachukwu, and Barnes 1993).

From a managerial standpoint, bank governance structures could consider that certain cultural heritage characteristics, such as uncertainty avoidance and individualism, of bank CEOs may induce a lending policy that would underestimate the risks of corruption in the borrowers' area. Underestimating corruption risks could weaken bank soundness as public corruption is one of the driving factors of loan losses (Goel and

Hasan 2011). Bank governance structures could consider promoting the establishment of a more rigid and objective due diligence, screening, and monitoring process when it comes to granting loans to borrowers in high-corruption areas. In this way, some of the cultural biases of bank CEOs regarding corruption could be neutralized.

From a broader economic and societal standpoint, the penalization of corruption in loan contracts could be an essential factor in motivating firms (e.g. through a decrease in bribery supply) to assist governments in combating corruption (Calderón, Álvarez-Arce, and Mayoral 2009). This is because bank credit is firms' most crucial external capital source. Reducing corruption could be economically beneficial for firms if corruption incurs a high penalization in loan contracts. Lenders' tolerance of corruption, stemming from cultural factors of banks' organizational leaders, might erode private sector discipline and diminish firms' incentive to assist in combatting corruption. Therefore, measures that bank governance structures could take to reduce cultural biases in pricing corruption in loan contracts could also prompt a positive spillover to the broader economy and society.

## Notes

1. We provide details about the economic significance of the results in section 4.1.
2. In our sample, 119 of the 126 bank CEOs were born and grew up in the United States.
3. We note that a stream of literature on the effects of cultural diversity of corporate executives on financial outcomes uses nationality instead of cultural heritage (e.g., Nielsen and Nielsen 2013; Frijns, Dodd, and Cimerova 2016). However, although this is also a legitimate approach, in this paper, we follow the recent stream of research that focuses on US CEOs' cultural heritage for the reasons we explain in this section.
4. This census is no longer subject to the '72-Year Rule' of US confidentiality regulations.
5. The ancestral countries of origin of the CEO surnames and the associated number of CEOs (loan observations) in the sample are Armenia 1 (8), China 1 (5), Denmark 1(5), France 6 (591), Germany 16 (1402), Greece 1 (1348), Hungary 2(395), India 1 (21), Ireland 13 (5,597), Israel 4 (59), Italy 5 (46), Lithuania 1 (4), Netherlands 2 (385), Poland 1 (88), Serbia 1 (1290), Spain 1 (14), Sweden 1 (84), Ukraine 1 (68), the United Kingdom 63 (10,859) and the United States 3 (64). In a few cases, we assign the United States as the country of origin when a surname is absent from the immigration records and the Origins Info Ltd database (commercial vendor) came back with a US origin. The results are similar when these cases are excluded.
6. We use the loan spread as the dependent variable following other studies on the determinants of the cost of bank loans (see, e.g., Delis, Hasan, and Ongena 2020 and others).
7. We use contemporaneous data on local public corruption as in Smith (2016) because corruption-related convictions have an inherent lag from the occurrence of the corruption-related crime.
8. We use lagged values of bank and firm-level control variables to mitigate simultaneity to a certain extent. We also use lagged values of the CEO cultural heritage characteristics to allow time for the culture of CEOs to be reflected in banks' policies as, for example, in the case of a CEO change.
9. One point of increase in the uncertainty avoidance of the bank CEOs decreases the coefficient of corruption to 209.635 (211.2–1.565). Thus, the increase in basis points falls to 41.927 ( $0.2 \times 209.365$ ). Hence, additional interest costs in this case are \$5,411,400 ( $344.178 \times 3.75 \times 0.0041927$ ). This represents an around \$40,400 decrease in interest costs with each point of increase in uncertainty avoidance.
10. One point of increase in the bank CEOs' individualism decreases the corruption coefficient to 209.872 (211.2–1.328). Thus, the increase in basis points falls to 41.974 ( $0.2 \times 209.872$ ). Hence, additional interest costs, in this case, are \$5,417,500 ( $344.178 \times 3.75 \times 0.0041974$ ). This represents a decrease of around \$34,280 in interest costs with each point of increase in individualism.
11. We follow Hagendorff, Lim, and Nguyen (2023), and in these tests, we do not include fixed effects in order to derive the cross-sectional mapping of the relationship between the corruption in the state of the borrower bank CEOs' cultural heritage characteristics. When we include fixed effects, we obtain similar results (i.e., the corruption variable is not significant in any of the models).
12. A concern with this identification strategy is that it relies on changes in the public corruption of each state over the years since the public corruption data display yearly frequency. This could be an issue because yearly conviction-based public corruption could comprise some noise (Campante and Do 2014). Hence, we also estimate the models of Table 8 using averaged local public corruption at a lower frequency (e.g., five- and ten-year public corruption averages). The findings are robust to these alternative specifications. These results are available upon request.
13. In the comprehensive model 4 in Table 9, we use additional instruments for CEOs' power distance (PDI) and masculinity (MI) cultural heritage characteristics. For power distance (PDI), we use a dummy that takes the value of one if the country of origin of a CEO's surname has a communist past and zero otherwise. For masculinity (MI), we use the 30-year average temperature of the country of origin of the surname of the CEOs. This instrument for masculinity is based on Parker (1997). Due to space limitations, we do not provide an extensive discussion about these instruments here as in the robustness analysis; we focus

on the interactions of corruption with the cultural heritage characteristics of CEOs that provide the strongest results in the baseline analysis (i.e., uncertainty avoidance (*UAI*) and individualism (*INDIVI*)). Nash and Patel (2019) thoroughly discuss these instruments in the context of finance research.

14. We source *Delta* and *Vega* data from the website of Prof Naveen (<https://sites.temple.edu/lnaveen/data/>) and these are based on the following papers: Coles, Daniel, and Naveen (2006) and Core and Guay (2002).
15. We control for time-invariant CEO characteristics with CEO fixed effects. In section IA.3 of the Internet Appendix, we provide estimations without CEO fixed effects that also control for the CEOs' gender.

## Disclosure statement

No potential conflict of interest was reported by the author(s).

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