Effects of National Culture on Bank Risk-taking Behavior

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Abstract

Theory suggests that national culture influences bank risk-taking behavior directly by conditioning the decision-making of human participants. This study uses an international sample of banks from 75 countries and examines the direct effects of national culture on bank risk-taking behavior. We measure national culture with four dimensions—uncertainty avoidance, individualism vs. collectivism, masculinity vs. femininity and power distance— from Hofstede's framework of national culture. We find strong evidence that bank risk-taking is significantly higher in countries which have high individualism, low uncertainty avoidance, and low power distance cultural values. We confirm main results using alternate cultural dimensions from House *et al.* (2004)'s framework of national culture, using alternative bank risk-taking proxies, and using instrumental variables analysis for endogeneity issues. This paper adds to our understanding by finding that cultural values lead to bank risk-taking decisions that may deviate in systematic and geographically predictable ways.

Keywords: National culture; bank risk-taking; banking regulations; uncertainty avoidance; individualism

1. Introduction

Bank risk-taking research has grown in importance in recent years in response to global financial crisis of 2007-2009 which originated in USA and spread across the world. Because after the origination of the crisis in USA the banking sectors in some countries experienced more severe panic than the banking sectors in other countries, the literature examining the determinants of cross-country differences in bank risk-taking has got specific importance. Research, in this area, normally finds that banking industry regulations such as capital requirements, activity restrictions and deposit insurance, and legal institutional factors such as a country's legal origin, level of creditor rights and information sharing among creditors, are significant determinants of bank risk-taking behavior.

However, cross-country differences in bank risk-taking are likely to be due to differences in national cultures, in addition to the differences in banking industry regulations and legal institutional factors. For example, Licht *et al.* (2005) point out that legal institutions explain only a small part of the universe of corporate governance regimes and emphasize the need to incorporate culture into the analysis of corporate governance. In addition, regulatory and legal factors are a form of more formal institutions. And, because bank risk-taking largely remains at the discretion of banks, a nation's regulatory and legal institutions can only partially regulate bank risk-taking leaving ample room for culture, which represents a more informal social institution. Culture's relevance with bank risk-taking is further supported by a survey that was conducted in May 2008 by the PricewaterhouseCoopers on the factors that paved the way for the global financial crisis, in which 73 percent of survey participants put the blame of the crisis on "culture and excessive risk-taking" (Kanagaretnam *et al.* 2011). Given the important role of national culture for corporate governance and given the critical importance of the banking industry to national economies, we examine the effects of national culture on bank risk-taking behavior in this paper.

Culture is generally defined as a set of norms, beliefs, expected behaviors and shared values that serves as guiding principles in people's lives (Schwartz 1994; Hofstede 2001). By guiding human behavior, cultural values reflect what a society/group considers to be acceptable or unacceptable, legitimate or illegitimate, good or bad, ,or ethical or unethical (Hofstede 2001). Prior literature finds that national culture may exert its influence on corporate firms' different practices, directly, by conditioning the decision making attitude of managers or, indirectly, by affecting formal institutions and level of economic and finanical development. For direct effects, there is well developed argument in literature that embedded culture affects human decision making (Bhimani (1999) and studies such as Birnberg and Snodgrass (1988) and Snodgrass (1984) as cited in Bhimani (1999)). Conistent with this view, recent studies find that prevailing culture of individuals has significant influence over corporate decision-making and risk-taking of a business being operated by these individuals (Tse *et al.* 1988; Hilary & Hui 2009; Graham *et al.* 2013). For indirect effects, national culture as level-1 informal/social institution, first, conditions all lower level formal institutions such as rule of law, regulatory effectiveness, creditor rights; and level of economic and financial development (Williamson 2000; Stulz & Williamson 2003; Licht *et al.* 2005; Guiso *et al.* 2006; Licht *et al.* 2007; Aggarwal & Goodell 2009). And these formal instituions, and economic and financial development then act as opportunities or threats for the firms, and, in response, firms take more or less risk (Houston *et al.* 2010; Li *et al.* 2013; Mihet 2013).

We employ four dimensions of national culture identified by Hofstede (Hofstede 1980, 2001; Hofstede *et al.* 2010) and an international sample of 1,981 banks from 75 countries over the

period 2001-2007 to analyze the direct effects of national cultural differences on bank risk-taking, after controlling for indirect cultural effects.

This paper is not the first to study the influence of national culture on firm risk-taking. The extant literature has studied the relation between national culture and firm risk-taking, but has mostly excluded financial firms (Li *et al.* 2013; Mihet 2013). For example, Li *et al.* (2013) show that aggressive risk-taking activities by manufacturing firms are more likely in countries with low uncertainty avoidance and high individualism. One exception is Kanagaretnam *et al.* (2014), who relate two dimensions of national culture, uncertainty avoidance and individualism, to accounting conservatism and risk-taking practices of financial firms.

Our study is innovative in several ways. For example, to best of our knowledge our study is the first to relate four dimensions, uncertainty avoidance, individualism vs. collectivism, masculinity vs. femininity and power distance, of national culture identified by Hofstede with financial firms' risk-taking behavior. Further, we first time use comparable four dimensions (uncertainty avoidance, in-group collectivism (inverse of individualism), assertiveness (masculinity) and power distance) from the cultural framework of House *et al.* (2004) for the corporate firms' risk-taking behavior research.

Most notably, we find that bank risk-taking is higher in countries having high individualism, low uncertainty avoidance and low power distance cultural values. We confirm these results by using alternate measure of bank risk-taking, with comparable four dimensions from House *et al.* (2004)'s framework of national culture, and with alternate sample compositions.

Our study contributes to literature in at least three ways: First, it contributes to currently spreading national culture and finance literature, especially to that in banking (Kanagaretnam *et al.* 2011; Zheng *et al.* 2013; Kanagaretnam *et al.* 2014; Zheng & Ashraf 2014), by emphasizing national culture's relevance to bank risk-taking. Second, it adds to extant bank risk-taking literature, especially to that examining determinants of bank risk-taking in cross-country settings (Laeven & Levine 2009; Houston *et al.* 2010; Kanagaretnam *et al.* 2014; Williams 2014). Third, it adds to new but spreading literature that recognizes country-level factors as significant determinants of bank practices (Houston *et al.* 2010; Kanagaretnam *et al.* 2011; Cole & Turk 2013; Kanagaretnam *et al.* 2014; Zheng & Ashraf 2014; Ashraf & Zheng 2015).

The rest of the paper proceeds as follows. Section 2 reviews related bank risk-taking literature. Section 3 introduces data and variables. Section 4 hypothesizes direct and indirect effects of national culture on bank risk-taking. Section 5 reports empirical analysis. Final section concludes.

2. Literature on bank risk-taking behavior

Our paper builds on the strand of literature examining bank risk-taking in an international setting. In this respect, studies that examine effects of banking regulations and legal institutions on bank risk-taking have expanded recently.

For banking regulations, extant literature examines the effects of country-level minimum capital requirements, explicit deposit insurance and activity restrictions on bank risk-taking behavior. For minimum capital requirements, in the after global financial crisis (2007-2009) scenario, there is consensus that bank owners should have higher capital levels as a percentage of total assets in banks to promote banking sector stability. Consistent with this view, some recent studies find empirical evidence that country-level more stringent capital requirements promote individual bank stability (Laeven & Levine 2009; Hoque *et al.* 2015). For explicit deposit insurance, existing literature largely finds that existence of explicit deposit insurance scheme in a country

increases bank risk-taking. For example, Demirgüç-Kunt and Detragiache (2002) argue that explicit deposit insurance reduces depositors' discipline on banks and increases moral hazard problems in banks. They find empirical evidence that banks have more risk in countries which have explicit deposit insurance schemes. Later studies also largely recognize bank risk increasing role of deposit insurance (Anginer *et al.* 2014; Hoque *et al.* 2015). For activity restrictions, research findings are mixed, however (Barth *et al.* 2004; Laeven & Levine 2009; Klomp & Haan 2012). For example, Barth *et al.* (2004) find negative relation between activity restrictions and bank stability. They argue that lower activity restrictions by allowing banks to diversify their incomes across several sources enhance their stability. On the other hand, Laeven and Levine (2009) find that marginal effect of higher activity restrictions on bank risk-taking varies from negative to positive depending upon the power of largest bank shareholder. While, Klomp and Haan (2012) find that higher activity restrictions for banking industry as a whole reduce individual bank liquidity and market risks especially for high risk banks. Despite these above findings, some recent studies report that bank regulations such as based on Basel core principles do not have significant influence on bank risk-taking behavior (Demirgüç-Kunt & Detragiache 2011).

For legal institutions, law and finance literature, at macro-level, recognizes that legal institutions such as common legal origin, better creditor rights, and information sharing among creditors about debtors' creditworthiness encourage lenders to higher lending by enforcing their rights if borrowers default (La Porta *et al.* 2001; Djankov *et al.* 2007). Some studies relate these institutions to bank risk-taking at micro-level. For example, Cole and Turk (2013) find that banks in common law countries allocate a significantly larger portion of their assets to risky loans than the banks in civil law countries. In another study, Houston *et al.* (2010) find that banks in better creditor rights countries take more risk, while banks in countries which have explicit information sharing mechanism take less risk.

Despite above international studies, cross-country differences in bank risk-taking behavior are likely to be due to differences in national cultures and existing literature largely has not tested the effects of cultural values on bank risk-taking by adopting Hofstede and House *et al.* (2004)'s national cultural frameworks. In this paper, we fill this important research gap by examining direct effects of national culture on bank risk-taking in an international setting after controlling for the effects of banking regulations and legal institutions.

3. Data and variables

The data used in this study is compiled from six main sources:

1. Bank-level accounting data from *Bankscope* database;
2. Four cultural dimensions from Hofstede's national culture framework;
3. Comparable four cultural dimensions from House *et al.* (2004)'s national culture framework;
4. Bank supervision and regulations dataset of Barth *et al.* (2013);
5. World Development Indicators (WDI) of World Bank;
6. World Governance Indicators of Kaufmann *et al.* (2010).

3.1 Measurement of national culture

Following recent literature on national culture and corporate risk-taking (Li *et al.* 2013; Mihet 2013), we use national cultural framework of Hofstede (Hofstede 1980, 2001; Hofstede *et al.* 2010) for our main analysis. However, we also employ comparable dimensions from national cultural framework of House *et al.* (2004) for robustness tests.

Motivated from Mihet (2013), we use widely used four diemsions, uncertainty avoidance index (UAI); individualism vs. collectivism (IND); masculinity vs. femininity (MAS) and power distance index (PDI), of Hofstede's framework[1]. Hofstede (1980) identified these cultural dimensions for 40 countries based on employees' surveys data which was collected from IBM subsidiaries in different countries over the period 1967-1973. Hofstede (2001) and Hofstede *et al.* (2010) have validated and extended the dataset to more countries. Each country has a score on a sclae from 0 to 100 for each of these four dimensions, and these country scores reflect the relative position of a country versus other countries, rather than being absolute values.

We offer a brief definition of four cultural dimensions. UAI is the extent to which the members of a culture feel uncomfortable with unstructured, uncertain or unknown situations and this feeling is, among other things, expressed through a need for predictability. IND measures the relation among individuals of a society. Ties among individuals remain loose in individualistic countries (high IND), while they integrate in strong in-groups from birth onwards in collectivistic countries (low IND). MAS measures the degree of cultural toughness versus tenderness in a society. In masculine societies (high MAS), social gender roles are clearly separate. Men are expected to be tough, assertive and focused on material success whereas women are assumed to be tender, modest and concerned with the quality of life. Conversely, in feminine societies (low MAS) social gender roles overlap. Masculine societies are oriented toward social recognition and ego, whereas feminine societies are more relationship-oriented. PDI measures the degree of inequality and dependence in a society. Higher values of PDI indicate the higher acceptance of unequal distribution of power and status among the members of a society and vice versa.

In contrast to Hofstede, House *et al.* (2004) measure national culture with nine dimensions. House *et al.*'s cultural dimensions are based on recent data collected over 1994-97 from middle-level managers from food-processing, financial services and telecommunication services industries. They measure culture with variables representing society values (should be) and society practices (as is) along each of the nine dimensions. However, we use four variables of House *et al.* (2004) that measure uncertainty avoidance, in-group collectivism, assertiveness and power distance society values (should be) and capture almost similar cultural values as captured by UAI, IND (inversely), MAS and PDI, respectively. Brief definitions of House *et al.* (2004)'s four dimensions are given in Appendix 1.

Data for four main dimensions of national culture is from Hofstede's framework. UAI is lowest in Singapore (8) and highest in Greece (100) for countries included in our sample. Similarly, IND is lowest in Guatemala (6) and highest in UK (89), MAS is lowest in Sweden (5) and highest in Japan (95), and PDI is lowest in Austria (11) and highest in Malaysia (100).

Data for comparable four cultural dimensions is obtained from House *et al.* (2004). Uncertainty avoidance (UA_Globe) dimension of House *et al.* (2004) is lowest in Netherlands (3.34) and highest in Morocco (5.77). Similarly, in-group collectivism (Collectivism_Globe) is lowest in Albania (4.98) and highest in El Salvador (6.28), assertiveness (Assertiveness_Globe) is lowest

[1] Hofstede (1991) introduces fifth long-term orientation dimension, while Hofstede *et al.* (2010) not only updates fifth dimension but introduces sixth indulgence vs. restraint dimension to Hofstede (1980)' four dimensions. Ramirez and Kwok (2009) argues that culture is shared but also situational and individuals use different dimensions in different situations they face. As existing organizational risk-taking studies has used four or less dimensions, therefore we also use four dimensions.

in Turkey (2.68) and highest in Japan (5.84), and power distance (PD_Globe) is lowest in Columbia (2.21) and highest in Albania (3.47).

3.2 Sample

We started our sample construction with cultural variables and other country-level control variables. Data for Hofstede's four dimensions is available for 99 countries/regions[2]. We downloaded bank-level balance sheet and income statement data for bank holding companies, commercial banks, saving banks and cooperative banks for these countries from *Bankscope* database over the period 2001-07. We choose this sample period to isolate the effects of Asian crisis of 1998 and global financial crisis of 2007-09 on bank risk-taking. Further, cultural effects on bank risk-taking behavior are expected to be more prominent in good times rather than in crisis times during which bank managers remain under-pressure and face more restrictions on their actions. To further wipe out crisis effects, we dropped four countries, Argentina, Dominican Republic, Ecuador and Uruguay, which remained under financial crisis for two or more years over the sample period as per financial crises database of Laeven and Valencia (2013). We also dropped sixteen countries due to missing data of banking regulations and legal institutions variables. We kept all those banks that have at least four years data over 2001 to 2007 period which is required to calculate bank risk-taking proxies and related bank-level control variables. We dropped four countries which do not have even one bank having four years data. This reduces sample countries to 75. In cross-sectional regressions, empirical results can be biased due to large number of banks from few specific countries. As in our sample, numbers of banks are quite larger for some sample countries as compared to the numbers of banks for other sample countries, therefore to eliminate the concern that our empirical results are not biased, we include only the top 100 banks for countries which have more than 100 hundred banks (e.g., Austria, France, Germany, Japan, Russia and Switzerland). Our final sample consists of 1,981 banks from 75 countries.

3.3 Measurement of bank risk-taking

Following recent cross-country bank risk-taking literature (Laeven & Levine 2009; Houston *et al.* 2010; Kanagaretnam *et al.* 2014), we use bank z-score as our main bank risk-taking proxy. Z-scores for each bank is calculated as z-score= (ROA+CAR)/σ(ROA), where ROA is equal to return on assets before loan loss provisions and taxes for each bank averaged over the period 2001-07, CAR is equal to equity to total assets ratio averaged over the period 2001-07, and σ(ROA) is equal to standard deviation of annual return on assets before loan loss provisions and taxes calculated over the period 2001-07. Z-score measures the number of standard deviations from mean value by which return has to fall to deplete all shareholders' capital (Boyd *et al.* 2010). Higher values of z-score indicate higher bank stability. Z-score is a highly skewed risk measure therefore following above-mentioned studies we take log of z-score and then multiply log of z-score with -1 so that higher values represent higher bank risk-taking. For brevity, we name it Z_score throughout rest of the paper. Recent support in favor of z-score as better bank insolvency risk measure comes from Lepetit and Strobel (2015). They find that logged z-score, by defining insolvency risk on the domain of all real numbers, is an attractive and unproblematic bank insolvency risk measure to use as a dependent variable in standard regression analysis.

[2] We obtained updated data for four dimensions from Hofstede's website available at http://geert-hofstede.com/dimensions.html accessed on December 22, 2014.

For robustness purposes, we also use volatility of net interest income, Std_NIM, as an alternate measure of bank risk-taking. Std_NIM equals to standard deviation of annual net interest margin values of each bank calculated over the period 2001-07.
Mean values of Z_score and Std_NIM are -3.24 and 0.94, respectively as shown in Table 1. 0.44 correlation between Z_score and Std_NIM as shown in Table 2 indicates that these two risk measures to large extent capture different aspects of bank risk-taking.

(Insert Table 1 here)
(Insert Table 2 here)

3.4 Bank-level control variables

We use three bank-level control variables, Bank_size, Bank_growth and LLP_TA, representing bank size, bank growth and level of loan loss provisions, respectively. Brief definitions of these variables are given in Appendix 1. Big or high growth banks can have different risk-taking incentives than small or low growth banks (Ashraf *et al.* 2015; Rahman *et al.* 2015). Similarly, current level of expected losses in the form of loan loss provisions can affect bank risk-taking behavior.

3.5 Banking industry-level control variables

As explained in Section 2 that banking industry regulations play an important role in bank risk-taking behavior, therefore, we use Capital_stringency, Activity_restrictions and Deposit_insurance as industry-level regulatory control variables. Data for these variables is taken from Barth *et al.* (2013)'s Banking Regulations and Supervision dataset. Capital_stringency variable reflects whether required capital for banks in a country is in-line with Basel requirements, and is sensitive to credit, market and operational risks. Besides, it reflects which type of funds can be used as capital and which type of losses is deducted for determination of capital adequacy ratios. Higher values of this variable indicate more stringent capital requirements for banks in a country and vice versa. Activity_restrictions variable measures the extent to which commercial banks in a country are restricted to involve in non-lending activities such as securities, insurance and real estate activities or owning other firms. Higher values of this variable indicate more activity restrictions on commercial banks in a country and vice versa. Deposit_insurance is a dummy variable equals to one if a country implements explicit deposit insurance system to insure deposits of households and companies with banks, and zero otherwise.
Banking industry structure can impact individual bank risk-taking significantly, therefore, we include Bank_concentration variable, data obtained from Financial Development database of World Bank, to capture the effect of industry structures on bank risk-taking. Bank_concentration is defined as 'assets of three largest banks as a percentage of total assets of all banks in a country'.

3.6 Country-level control variables

We include variables to control for country-level institutional environment and level of economic development. Creditor_rights and Information_sharing variables are obtained from Djankov *et al.* (2007). Creditor_rights index measures the legal protection granted to a creditor if debtor defaults or declares bankruptcy. Information_sharing is a dummy variable equals to one if either

a public registry or a private bureau operates in a country to assist creditors in getting creditworthiness information of a borrower, and zero otherwise. Data for Legal_common dummy variable is obtained from Professor Andrei Shleifer's Harvard web pages[3] and equals to 1 if a country has British legal origin, and 0 otherwise.

Banks in countries at different levels of economic development can have different risk-taking appetite. For example, banks in higher income countries can afford good risk management techniques, while not so in low income countries. Further, banks can have higher diversification opportunities in developed countries as compared to these opportunities available to banks in low income countries. Therefore, we include log of GDP per capita, Log_GDPPC, to control for the level of economic development in a country.

We obtain Rule_of_law variable from Kaufmann *et al.* (2010) to control for law enforcement tradition of a country. Use of these variables also helps to control for indirect cultural effects on bank risk-taking through institutional and economic environment.

4. Hypotheses development

4.1 Direct effects of national culture on bank risk-taking

Uncertainty in financial contracts has important implications for the financing and investing decisions (Aggarwal & Goodell 2014). Hofstede (2001) explains that members of higher UAI cultures do not accept uncertainty of future easily and become upset with it, and try to avoid uncertain situations. Contrary, members of low uncertainty-avert cultures accept uncertainty rather easily and can take more risk in uncertain situations. Although, uncertainty-avoidance is not equal to risk-aversion, however, main difference between high-UAI and low-UAI countries is that high-UAI countries might take risks, but these are limited to known risks, while low-UAI countries in general take both known and unknown risks and are more tolerant of both. For example, Kwok and Tadesse (2006) and Aggarwal and Goodell (2009) show that countries scoring high on UAI are also characterized by a relatively more risk-averse, bank-based financial system, whereas countries scoring low on UAI are characterized by a relatively less risk-averse market-based financial system. In sum, these arguments suggest that the probability for risk-taking will be lower in high UAI countries than in low UAI countries. Hence, expecting a negative association of bank risk-taking with UAI cultural dimension, we write below hypothesis:

H1: *There is a negative association between national levels of uncertainty-avoidance and bank risk-taking.*

Psychology literature consistently suggests that the members of individualistic cultures are likely to be more overconfident about the precision of their information and more prone to the self-attribution bias than the members of collectivistic cultures (Chui *et al.* 2010). Chui *et al.* (2010) argue that decisions, in more individualistic countries, are the product of an individual rather than the group, and these decisions are more likely to be driven by over-optimism and overconfidence. High IND cultures also emphasize individual achievements, autonomy and self-orientation (Hofstede 2001). In this respect, Morris *et al.* (1993) argue that autonomous and independent managers can involve in risky behaviors easily. Further, Shupp and Williams (2008) find that individuals are more risk-tolerant than groups in high-risk situations, and that individual

[3] Dataset was downloaded from the link http://scholar.harvard.edu/shleifer/publications?page=2 in June 2014.

decisions exhibit higher variance than collectivist decisions. So, we expect a positive association between IND dimension and bank risk-taking and hypothesis is:
H2: *There is a positive association between national levels of individualism and bank risk-taking.*

Higher MAS implies higher assertiveness, competitiveness and achievement in dominant cultural values. Hofstede (1980) tabulates that money and material things are considered important in masculine cultures. People prefer independence. People are self-confident and ambitious. Achievers are admired. There is space for show-off (machismo). Given these characteristics, it is expected that masculine human actors can pursue risky choices for making wealth and showing-off. Meier-Pesti and Penz (2008) find that higher masculine characteristics promote higher financial risk-taking regardless of the fact that decision-maker is male or female. Combining together these arguments, following hypothesis about the relation of masculinity and bank risk-taking can be made.
H3: *There is a positive association between national levels of masculinity and bank risk-taking.*

Thompson *et al.* (2009) argue that individuals in high power distance cultures have less autonomy and freedom in decision making that promotes conservatism in these cultures. Whereas, individuals in low power distance cultures are eager in bettering their positions and there is considerable social mobility that causes opportunity-seeking. Similarly, Shane (1993) concludes that managers in low power distance firms have the higher tendency to involve in risky behaviors for bettering the positions of their firms. Further, studying the relevance of national culture for entrepreneur risk-taking, Kreiser *et al.* (2010) finds that power distance has significant negative influence over organizational risk-taking. In a recent study, Mihet (2013) finds that high power-distant cultures have lower risk-taking in corporate firms. Based on this literature, we expect a negative relation between power distance and bank risk-taking.
H4: *There is a negative association between national levels of power distance and bank risk-taking*

4.2 Indirect effects of national culture on bank risk-taking

Based on Williamson (2000)'s institutional framework, national culture can have indirect effects on bank risk-taking through the channels of formal institutions, economic and financial development, and banking regulations. In Williamson (2000)'s institutional framework, national culture as level-1 informal/social institution, first, conditions lower level formal institutions (e.g., rule of law, regulatory effectiveness, creditor rights), level of economic and financial development, and banking regulations. And these regulations, formal instituions, and economic and financial development then act as opportunities or threats for the firms/banks, and, in response, firms/banks can take more or less risk.
For instance, some macro-level studies show that national culture conditions formal institutions, economic and financial development, and banking regulations (Licht *et al.* 2005; Guiso *et al.* 2006; Kwok & Tadesse 2006; Licht *et al.* 2007; Aggarwal & Goodell 2009; Ashraf 2015). Licht *et al.* (2005) find that corporate governance practices across borders are related to national culture. Specifically, they find that high uncertainty-avert cultures provide lower level of protection to creditors and minority corporate shareholders. In another paper, they conclude that formal institutions such as rule of law, control of corruption and democratic accountability are better in individualist cultures and are weaker in high uncertainty-avert or power-distant cultures (Licht *et al.* 2007). Similarly, some studies have related level of economic and financial development of a country to its' prevailing culture. In this regard, Guiso *et al.* (2006) find that

culture affects economic outcomes of a society by influencing their saving habits. Aggarwal and Goodell (2009) and Kwok and Tadesse (2006) find that financial systems in low uncertainty-avert countries are more financial market-based while in high uncertainty-avert countries are more banking-based. For banking regulations, Ashraf (2015) find that adoption of some of the banking regulations is related to cultural dimensions. Specifically, he finds that activity restrictions are significantly lower in higher individualism and lower power distance cultures, and existence of explicit deposit insurance system for banks' depositors is more prevalent in higher individualism cultures.

Extant literature, to some extent, has explored these indirect effects of national culture on corporate/bank risk-taking by finding that country-level creditor rights, investor protection, formal institutions such as rule of law and bankruptcy codes, and economic and financial development affect firms/banks risk-taking behavior significantly. In this direction, Acharya *et al.* (2011) find that stronger creditor's rights cause decreased risk-taking in industrial firms. Similarly, John *et al.* (2008) find that stronger investor rights in the form of better shareholder protection and accounting disclosures promote value increasing risk-taking in firms. For banking, Houston *et al.* (2010) relate country-level creditor rights and depth of credit information-sharing to bank risk-taking in a sample of banks from 69 countries. And, Laeven and Levine (2009) find that country-level banking industry regulations affect bank risk-taking, however, this effect depends on ownership concentration of the bank.

Although main focus of our study is the direct effects of national culture on bank risk-taking, however, given above literature, we control our models for indirect effects of national culture on bank risk-taking by employing regualtory, legal institutuional and economic and financial development variables.

5. Empirical analysis

5.1 Empirical model

We analyze the effect that national culture has on bank risk-taking behavior. Our dependent variables are bank risk-measures and main independent variables are four dimensions of national culture. Because, our main variables are country-level with one observation per country, therefore, to examine our hypotheses we use standard methodology used by Houston *et al.* (2010) and Laeven and Levine (2009). Both studies use cross-sectional standard ordinary least squares regressions for cross-country studies of bank risk-taking and country-level variables. We estimate following equation for our cross-sectional regressions.

$$Bank\ risk\ measures_{i,j} = \beta_0 + \beta_1 National\ cultural\ measures_j + \beta_2 Bank - level\ controls_{i,j} + \beta_3 Country - level\ banking\ industry\ controls_j + \beta_4 Country - level\ institutional\ and\ macro\ controls_j + \varepsilon_{i,j} \qquad Eq.(1)$$

Here *i* and *j* subscripts designate bank and country, respectively. *Bank risk measures* are Z_score and Std_NIM as defined in sub-section 3.3 and Appendix 1. β_0 is a constant, β_1, β_2, β_3 and β_4 are matrices of coefficients for cultural variables, bank-level control variables, country-level banking industry controls and country-level institutional and macro control variables, respectively. *National cultural measures* are four dimensions from Hofstede's national culture framework and comparable four dimensions from House *et al.* (2004)'s national culture framework, as defined

in sub-section 3.1 and Appendix 1. *Bank level controls* are Bank_size, Bank_growth and LLP_TA variables. *Country-level banking industry controls* are Capital_stringency, Activity_restrictions, Deposit_insurance and Bank_concentration variables. *Country-level institutional and macro controls* include Creditor_rights, Information_sharing, Legal_common, Log_GDPPC and Rule_of_law variables. Inclusion of *Country-level banking industry controls* and *Country-level institutional and macro controls* in empirical model controls for indirect effects of national culture on bank risk-taking behavior. We use heteroskedastic-robust standard errors to estimate the *p*-values in regressions.

5.2 Hofstede's dimensions of national culture and bank risk-taking

We regress main bank risk-taking measure, Z_score, on four dimensions of national culture of Hofstede one-by-one and collectively, including other bank-, industry- and country-level control variables, and report results in Table 3. Higher values of Z_score represent higher bank insolvency risk and vice versa.

(Insert Table 3 here)

5.2.1 Baseline model

Model 1 is baseline model and includes control variables only. For bank-level controls, negative and significant coefficients on Bank_size show that big banks take less risk. One possible explanation is that big banks, by having higher diversification in assets, have more stable earnings streams and have low risk. Positive and significant coefficients on Bank_growth and LLP_TA variables show that banks having higher growth opportunities and more loan loss provisions take more risk. These results are largely consistent with the findings of earlier studies (Laeven & Levine 2009; Houston *et al.* 2010; Kanagaretnam *et al.* 2014).

For country-level controls, negative and significant coefficients on Capital_stringency and Activity_restrictions show that banking regulations in the form of more stringent capital requirements on the base of Basel principles and more restrictions on banks to not involve in non-lending activities promote individual bank stability, respectively. Positive and significant results of Deposit_insurance variable are consistent with literature which reports that existence of explicit deposit insurance generates moral hazard problems and encourage banks to take more risk in good times (Demirgüç-Kunt & Detragiache 2002; Anginer *et al.* 2014; Hoque *et al.* 2015). Negative and significant coefficient estimates of Log_GDPPC and Rule_of_law variables indicate that bank risk-taking is lower in developed and better governed countries, respectively.

These results of baseline model are largely consistent with expectation and validate our model for further analysis.

5.2.2 Effects of national culture on bank risk-taking

Coefficients of four dimensions of national culture in Models 2 to 6 capture direct effects of national culture on bank risk-taking. As shown, the coefficients on UAI and PDI dimensions of national culture are negative and on IND dimension is positive when each dimension is included in regression one-by-one, and these results are significant at the $p < 0.05$ level. These results show that bank risk-taking is significantly higher in countries which have low uncertainty avoidance, high individualism and low power distance dominant cultural values, and are consistent with our hypotheses H-1, H-2 and H-4, respectively. However, we do not find support for hypothesis H-3 as the coefficient of MAS dimension in Model 3 is insignificant. This result

shows that masculinity cultural dimension do not have significant direct effect on bank risk-taking behavior.

The economic significance of results of national cultural dimensions on bank risk-taking is noteworthy. For example, a one standard deviation change in UAI (21.66) is associated with a change in Z_score of -0.065 (-0.003 * 21.66) where the mean Z_score is -3.24 in Model 2. Similarly, a one standard deviation changes in IND (21.86) and PDI (20.67) are associated with changes in Z_score of 0.109 (0.005 * 21.86) and -0.062 (-0.003 * 20.67) in Models 3 and 5, respectively.

Results remain same when we include all four dimensions in Model 6 simultaneously; that is UAI and PDI enters negative and significant (at 10 % level) and IND enters positive and significant.

Together, these results show that three (out of four) dimensions of national culture have significant direct influence on bank risk-taking even after controlling for national-level banking regulations, legal institutions and level of economic development.

As explained in Sub-section 4.2 that national culture might have indirect effects on bank risk-taking through the channels of formal institutions, economic and financial development, and banking regultions. Results of Models 2 to 5 in Table 3 simultaneously report these indirect effects of national culture on bank risk-taking. Four of the control variables (Activity_restrictions, Deposit_insurance, Log_GDPPC and Rule_of_law) which are influenced by national culture as discussed in Sub-section 4.2 enter significant even after including cultural dimensions. Significant coefficients of Activity_restrictions variable show that banks have significantly higher risk in lower activity restrictions countries. Positive results of Deposit_insurance show that existence of explicit deposit insurance system increases bank risk-taking. Significant results of Log_GDPPC and Rule_of_law variables indicate that bank risk-taking is lower in developed and better governed countries, respectively. These results of country-level controls confirm some indirect effects of national culture on bank risk-taking behavior through the channels of formal institutions and economic and financial development.

5.3 Robustness tests

We check robustness of our main results of Table 3 in several ways: using alternate cultural dimensions from House *et al.* (2004)'s framework of national culture, using alternative proxy for bank risk-taking, and for endogeneity issues in main results.

5.3.1 House et al.'s dimensions of national culture and bank risk-taking

As a robustness test, we replace Hofstede's four cultural dimensions with more recent House *et al.* (2004)'s four comparable variables measuring almost same society-level value constructs as measured by Hofstede. Inclusion of these variables confirms that our above results are not biased due to omitted variables, a common problem in cross-sectional regressions. For these tests, sample reduces to banks from 46 countries because House *et al.* (2004)'s cultural variables are only available for 46 countries out of 75 countries included in our main analysis.

Correlation between UAI and UA_Globe is 0.34, between IND and Collectivism_Globe is 0.04, between MAS and Assertiveness_Globe is 0.23, and between PDI and PD_Globe is 0.14. As these correlations are not strong enough, therefore, these dimensions provide good alternate for each other for robustness tests. We expect negative coefficients on UAI_Globe, Collectivism_Globe (equivalent to inverse of IND), and PD_Globe dimensions, whereas positive

coefficient on Assertiveness_Globe (some aspect of cultural masculinity). Estimated results of House *et al.* (2004)'s four cultural variables with bank z-scores are reported in Table 4.

(Insert Table 4 here)

Negative and significant coefficients of UAI_Globe, Collectivism_Globe and PD_Globe are consistent with hypotheses H-1, H-2 and H-4, and the results of Table 3 for Hofstede's three dimensions of UAI, IND and PDI, respectively. Again, negative and significant coefficients of Assertiveness_Globe are not consistent with hypothesis H-3 which predicts positive association between cultural assertiveness/masculinity and bank risk-taking. However, in contrast to insignificant results of MAS in Table 3, the coefficients of Assertiveness_Globe are negative and significant showing that higher cultural assertiveness decreases bank risk-taking.
In sum, these results confirm our hypotheses H-1, H-2 and H-4, but not H-3. Further, these results are largely consistent with the results observed above using Hofstede's four cultural dimensions.

5.3.2 Alternate bank risk-taking measure and cultural effects

We use standard deviation of net interest margins (Std_NIM) of each bank as an alternate proxy of bank risk-taking. Std_NIM is calculated over the sample period of 2001-2007. Std_NIM measures variation in interest incomes and thus specifically captures bank risk-taking in lending activities.
We first regress Std_NIM on Hofstede *et al.* (2010)'s four dimensions and report results in Table 5. As shown results remain same as previously found with main risk measure Z_score; that is, UAI and PDI enters negative and significant, IND enters positive and significant, and coefficient of MAS again enters insignificant.
Next, we regress Std_NIM on House *et al.* (2004)'s four dimensions and report results in Table 6. Three dimensions enter in expected directions; UAI_Globe, Collectivism_Globe and PD_Globe all show negative and significant coefficients. Again negative and significant result of Assertiveness_Globe is not consistent with our hypothesis H-3, but it is consistent with its negative association with Z_score as observed previously.

(Insert Table 5 here)

(Insert Table 6 here)

5.3.3 Endogeneity

So far, in above results, we find that three dimensions of national culture, uncertainty avoidance, individualism and power distance, have significant association with bank risk-taking behavior. However, one concern with our cross-sectional analysis is that our results might be biased due to endogeneity. The three most common sources of endogeneity are reverse causality, omitted variable and measurement error.
Regarding the first case, reverse causality is less of a concern than in pure cross- country analysis because we are examining the impact of country-level cultural variables on the bank-level risk taking behavior. As a matter of fact, the chronological order of events also leads us to think that reverse causality is less of a concern. For example, Hofstede collected the data to derive his cultural dimensions during 1968-1972 that is a time-period well before than the sample period of this study. Further, cultural change in the form of changes in values is very slow. For example, Hofstede *et al.* (2010) posit that "national value systems should be considered given facts, as

hard as a country's geographical position or its weather." Similarly, Williamson (2000) also argues that the frequency of cultural changes ranges between 100 and 1,000 years. Consequently, it is highly unlikely that values and beliefs of individuals were shaped by the practices of the banks in a society.

For other two sources of endogeneity, it is possible that bank risk-taking or effects of cultural dimensions may be due to some other factor that we fail to control (i.e. omitted variable), or that some of our independent variables have measurement errors. To account for these endogeneity concerns, we conduct some robustness tests using instrumental variable (IV) approach. The goal is to use a variable that is correlated with the endogenous independent variables (e.g. cultural dimensions of UAI, IND and PDI) but that do not have a direct impact on dependent bank risk-taking variables; that is, the instrument must satisfy the conditions of exogeneity and relevance (Roberts & Whited 2012).

In the literature, different studies have used different country characteristics as instruments for national cultural dimensions: historical prevalence of infectious diseases across geopolitical regions (Murray & Schaller 2010; Boubakri & Saffar 2015), grammatical features of languages (Licht *et al.* 2007; Lecq *et al.* 2013; Shao *et al.* 2013) and religion (Kwok & Tadesse 2006). Below is a detail of variables which we use as instruments for cultural dimensions.

We use the grammatical rule that whether a language has single or multiple second-person singular pronouns (e.g., *you* in English, *du* and *Sie* in German, *usted* and *tú* in Spanish) to instrument for uncertainty avoidance. Kashima and Kashima (1998) find that numbers of personal pronouns in different languages are correlated with cultural dimensions. For uncertainty avoidance, they find robust evidence that uncertainty avoidance is higher in countries in which languages have multiple second-person singular pronouns as compared to the countries in which languages have only single second-person singular pronoun. They link this finding between numbers of multiple second-person pronouns and uncertainty avoidance through the channel of stress. While Hofstede (1980) argues that one characteristic of higher uncertainty avoidance cultures is feeling of higher stress in individuals of these cultures, Kashima and Kashima (1998) suggest that their finding might be due to higher decisional stress which speakers of multiple second-person pronoun languages observe in social interactions when choosing between an appropriate second-person pronoun. At the same time, we expect that this single versus multiple second-person pronouns language rule has no direct effect on bank risk-taking behavior, satisfying the exogeneity requirement of an instrument.

Following Boubakri and Saffar (2015), we instrument individualism with Murray and Schaller (2010)'s overall index of the historical prevalence of infectious diseases across geopolitical regions. While investigating determinants of cross-cultural differences, one stream of research argues that regional variation in the prevalence of infectious diseases may have played an important role in the origin of many different kinds of cross-cultural differences such as individualism vs. collectivism (Fincher *et al.* 2008). Fincher *et al.* (2008) suggest that individuals of collectivist cultures are more wary of contact with strangers (or outgroup members), and are less likely to eat unusual foods. By doing so, collectivism serves as a defense against diseases prevalence, and is more likely to emerge in societies that historically suffered a greater prevalence of different diseases (e.g., pathogens). At the same time, the tendency of prevalence of infectious diseases is unlikely to have a direct effect on bank risk-taking over our sample period, satisfying the exogeneity requirement of an instrument.

Following Lecq *et al.* (2013), we instrument power distance with grammatical rule that whether a language has single or multiple second-person singular pronouns. Kashima and Kashima (1998)

argue that individuals in languages with multiple second-person pronouns have a higher conception of relationships based on social distance as compared to the individuals in languages with only one second-person pronoun. They find evidence suggesting that countries with multiple second-person pronouns have higher scores on power distance cultural dimension[4]. At the same time, we expect that this single versus multiple second-person pronouns language rule has no direct effect on bank risk-taking behavior, satisfying the exogeneity requirement of an instrument.

Table 7 reports instrumental variables analysis results. In first stage regressions (i.e., Models 1, 3 and 5), each of the three cultural dimensions is regressed on instrumental variable including other control variables in each model. As shown, the results of the first stage regressions in Model 1 and Model 5 confirm that the countries having languages with multiple second-person pronouns have higher levels of uncertainty avoidance and power distance cultural values. And the result of Model 3 confirms that the higher levels of historical prevalence of diseases is negatively related to the individualism dimension of national culture. Second stage regression results in Models 2, 4 and 6 show that the fitted values of three cultural dimensions enter in the expected directions with bank risk-taking variable; that is, fitted values of uncertainty avoidance and power distance are negatively related with bank z-scores while fitted values of individualism are positively related with bank z-scores. These results dispel the concerns that endogeneity is behind our above results.

(Insert Table 7 here)

5.4 Cumulative cultural effects on bank risk-taking

Together our above analysis provides robust evidence that bank risk-taking is significantly higher in low UAI, low PDI and high IND countries. These results are consistent with the findings of previous studies on national culture and corporate risk-taking (Li *et al.* 2013; Mihet 2013; Kanagaretnam *et al.* 2014). Opposite to our prediction of positive association between MAS/Assertiveness_Globe and bank risk-taking, we either do not find significant results when using MAS dimension of Hofstede or find negative association when using Assertiveness_Globe variable of House *et al.* (2004). Positive relation of MAS with corporate risk-taking is also less supported in literature (Kreiser *et al.* 2010; Mihet 2013). For example, Kreiser *et al.* (2010) relate MAS to entrepreneur risk-taking in a sample of firms from 6 countries and do not find significant results. Similarly, Mihet (2013) uses a sample of 50,000 firms from 400 industries of 50 countries and does not find robust results between MAS and corporate risk-taking.

Although our above analysis provides robust evidence that bank risk-taking is significantly higher in high IND, low UAI and low PDI countries, however by using four dimensions it is difficult to conclude that national cultures of which set of countries promote higher bank risk-taking. Therefore, we generate cumulative national culture variable based on IND, UAI and PDI to have an idea that which national cultures promote higher bank risk-taking. As results for MAS are not significant in above analysis, so we do not use MAS to generate cumulative national culture variable. For this purpose, first we generate Inv_UAI and Inv_PDI by subtracting UAI

[4] Although relationship between multiple second-person pronouns language rule and power distance cultural dimension is fragile (Kashima & Kashima 1998; Davis & Abdurazokzoda 2015), however in absence of any other valid instrument for power distance cultural dimension we check robustness of our results using this language rule as instrumental variable.

and PDI from 100 (i.e., Inv_UAI=100-UAI and Inv_PDI=100-PDI), so that higher values of Inv_UAI and Inv_PDI represent low uncertainty avoidance and low power distance, respectively. Then, we sum IND, Inv_UAI and Inv_PDI to generate cumulative cultural variable, IND+Inv_UAI+Inv_PDI.

We regress both of our bank risk-taking proxies, Z_score and Std_NIM, on IND+Inv_UAI+Inv_PDI including other bank-, banking industry- and country-level control variables and report results in Table 8. As shown, cumulative cultural variable, IND+Inv_UAI+Inv_PDI, enters positive and significant in both Models showing that the higher the values of cumulative national culture variable, the higher is the bank risk-taking.

(Insert Table 8 here)

Next, to further show the risk-taking grouping of sample countries, we divide our 75 sample countries into three sub-groups based on the rank of our cumulative national culture variable, as shown in Table 6. Based on our above findings, we name first sub-group as countries having national cultures that encourage lower level of bank risk-taking, second sub-group as countries having national cultures that encourage medium level of bank risk-taking and third sub-group as countries having national cultures that encourage higher level of bank risk-taking.

(Insert Table 9 here)

Conflict for cultural effects may occur for countries which have high IND while at the same time have high UAI and high PDI cultural values. We find three countries, Belgium, France and Poland, in our sample which have above mean IND while at the same time have above mean UAI and PDI cultural values. In addition, Italy and Hungary have high IND and at the same time have very high UAI cultural values. What is the net cultural effect on bank risk-taking for these countries is difficult to predict.

6. Conclusion and suggestions

Recent financial crisis has encouraged new research on bank risk-taking behavior. In this regard, literature which considers country-level factors as significant determinants of bank risk-taking has expanded. In this paper, we contribute to this strand of literature by carrying out an empirical study on how different dimensions of national culture influence bank risk-taking. As institutional theory (Williamson 2000) suggests that culture influences economic outcomes over and above formal institutions (constitutions, laws, regulations, and property rights) by conditioning the decision making of human participants in a specific way, therefore we hypothesize direct effects of national culture on bank risk-taking behavior.

Analyzing a sample of banks from 75 countries during the pre-crisis period 2001-07 and measuring national culture by Hofstede's framework of national culture, we find robust evidence that three dimensions of national culture (uncertainty avoidance, individualism and power distance) have significant direct effects on bank risk-taking. Specifically, findings suggest that bank risk-taking is significantly higher in high individualism, low uncertainty-avoidance, and low power distance countries. We confirm these results using alternate cultural dimensions from House *et al.* (2004)'s framework of national culture, using alternative proxy for bank risk-taking, and using instrumental variables analysis for endogeneity issues in main results.

Findings of this study have important implications for accounting & finance research, bank regulators and multinational banks. The findings are relevant to the finance and accounting scholars who study financial markets in international settings. Our results, that intangible factors such as national culture matter in high-stakes bank risk-taking decisions even in increasingly globalized market economies with sophisticated professional managers, add to understanding by

suggesting that cultural values lead to decisions that may deviate in systematic and geographically predictable ways. We suggest to future cross-country firm/bank risk-taking research to control for national cultural effects. In this direction, future studies may use cumulative national culture variable (IND+Inv_UAI+Inv_PDI) to proxy for national cultural effects.

Finally, our study also has important implications for multinational banks which open subsidiaries in other countries and operate through standardized operating procedures at head office level. As our findings show that national culture of a country strongly influences risk-taking behavior of banks operating in that country, we suggest to multinational banks to fine-tune their strategies at subsidiary-level keeping in view the national cultural characteristics of individuals of the country in which that subsidiary operates.

Future research may focus on whether national culture has indirect effects on bank risk-taking through banking regulations. Other potential questions for future research are ‘whether national culture of home country or host country is more important for risk-taking behavior of affiliates of multinational banks which are operating in countries other than the countries of their corporate head offices’ and ‘whether national culture predicts the probability of financial crisis occurrence in a country’.

Appendix 1: Variable definitions and data sources

Variable	Definition	Data Source
Dependent variables		
Z_score	Equals -1*[log [(ROA+CAR)/ σ(ROA)]], where ROA and CAR are return on assets before loan loss provisions and taxes and equity to total assets ratios, respectively, both averaged over the period 2001–07. σ(ROA) is the standard deviation of annual values of return on assets before loan loss provisions and taxes over the period 2001–07. Higher values of Z_score imply more risk.	Bankscope database
Std_NIM	Equals standard deviation of annual net interest income to total earning assets ratio over the period 2001-07. Higher values of Std_NIM imply more risk.	
Independent Cultural variables		
UAI	Uncertainty avoidance index	Hofstede (2001)
IND	Individualism vs. collectivism index	
MAS	Masculinity vs. femininity index	
PD	Power distance index	
UAI_Globe	Higher values indicate more stress on orderliness, consistency and more use of detailed instructions to tell people what they are expected to do.	House *et al.* (2004)
Collectivism_Globe	Higher values indicate more pride in group performance rather than individuals.	
Assertiveness_Globe	Higher values indicate more toughness and assertiveness in society values.	
PD_Globe	Higher values indicate society values of expecting followers to obey leaders without question and concentration of power at the top.	
Independent Control variables		
1- Bank-level		
Bank_size	Equals natural logarithm of total assets averaged over 2001–07.	Bankscope database
Bank_growth	Equals annual total assets growth rate of a bank averaged over 2001–07.	
LLP_TA	Equals loan loss provisions to total assets ratio averaged over 2001-07.	
2- Country-level		
Bank_concentration	Assets of three largest banks as a percentage of assets of all commercial banks in a country averaged over 2001-07.	Global financial development database, World Bank
Capital_stringency	Capital stringency variable measures whether regulatory capital requirements for banks in a country are in line with Basel accords. Index ranges from 0 to 10 where higher values indicate more stringent capital requirements for banks in a country.	Barth *et al.* (2013)
Activity_restrictions	This variable reflects the extent to which banks in a country are restricted to participate in securities, insurance, real estate activities or owning other firms. Variable ranges from 4 to 16 where higher values indicate higher restrictiveness.	
Deposit_insurance	Dummy variable equals 1 if a country has explicit deposit insurance and 0 otherwise.	
Legal_common	Dummy variable equals 1 if legal origin of a country is British and 0 otherwise.	
Creditor_rights	A measure of legal rights of creditors against debtor in case of reorganization or liquidation. The index ranges from 0 (weak creditor rights) to 4 (strong creditor rights).	Djankov *et al.* (2007)
Information_sharing	Dummy variable equals 1 if either a public credit registry or a private credit bureau operates in a country and 0 otherwise.	Djankov *et al.* (2007)
Log_GDPPC	Equals logarithm of GDP per capita (current US$) of each country averaged over 2001-07.	World Development Indicators, World Bank
Rule_of_law	Measures the extent to which agents have confidence in and abide by the rules of society, the quality of contract enforcement, the police, and the courts, and the likelihood of crime and violence.	Kaufmann *et al.* (2010)
Multiple_2P_Pronouns	A dummy variable equals 1 if a language has multiple second person singular pronouns and equals 0 if a language has only single second person singular pronoun.	Kashima and Kashima (1998)
Diseases Prevalence Index	An overall index of the historical prevalence of nine diseases within different geopolitical regions worldwide. The nine diseases coded include malaria, leprosy, leishmanias, schistosomes, trypanosomes, typhus, filariae, dengue, and tuberculosis. A 4-point coding scheme was employed: 0 = completely absent or never reported, 1 = rarely reported, 2 = sporadically or moderately reported, 3 = present at severe levels or epidemic levels at least once. All nine disease prevalence ratings were standardized by converting them to z scores. The overall index was computed as the mean of z scores for nine diseases. The mean of the overall index is approximately 0; positive scores indicate disease prevalence that is higher than the mean, and negative scores indicate disease prevalence that is lower than the mean.	Murray and Schaller (2010)

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Table 1 Summary statistics

Variables	Countries	Observations	Mean	S.D.	Min	Max
Z_score	75	1,974	-3.24	0.87	-6.44	1.38
Std_NIM	75	1,981	0.94	1.42	0.00	11.44
UAI	75	75	65.16	21.66	8	100
IND	75	75	38.16	21.86	6	89
MAS	75	75	47.92	18.62	5	95
PDI	75	75	64.01	20.67	11	100
Bank_size	75	1,981	14.24	2.20	9.44	20.36
Bank_growth	75	1,981	18.75	20.33	-40.98	137.52
LLP_TA	75	1,981	0.52	0.69	-1.19	5.61
Bank_concentration	75	75	68.01	17.66	31.33	99.68
Activity_restrictions	75	75	10.16	2.35	4.43	15.57
Capital_stringency	75	75	5.83	1.61	2.00	9.43
Deposit_insurance	75	75	0.72	0.45	0	1
Log_GDPPC	75	75	8.54	1.57	5.01	10.94
GDP_Growth	75	75	0.05	0.02	0.01	0.11
Legal_common	75	75	0.29	0.46	0	1
Creditor_rights	75	75	2.03	1.08	0	4
Information_sharing	75	75	0.88	0.33	0	1
Rule_of_law	75	75	0.32	0.93	-1.33	1.94

Note: This table reports summary statistics for following 75 countries (banks) included in this study:
Albania (4), Austria (100), Bangladesh (12), Belgium (37), Brazil (96), Bulgaria (15), Burkina Faso (7), Canada (21), Chile (1), China (40), Colombia (18), Costa Rica (41), Croatia (25), Czech Republic (14), Denmark (65), Egypt (20), El Salvador (10), Ethiopia (6), Finland (6), France (100), Germany (100), Ghana (3), Greece (13), Guatemala (1), Honduras (11), Hong Kong (28), Hungary (15), India (60), Indonesia (50), Ireland (6), Israel (10), Italy (22), Jamaica (5), Japan (100), Jordan (10), Kenya (22), Kuwait (8), Latvia (17), Lebanon (20), Lithuania (8), Malawi (4), Malaysia (9), Mexico (35), Morocco (5), Mozambique (5), Namibia (3), Netherlands (23), Nigeria (6), Norway (45), Pakistan (17), Panama (47), Peru (14), Philippines (17), Poland (24), Portugal (5), Republic of Korea (2), Romania (21), Russian Federation (100), Saudi Arabia (11), Senegal (8), Singapore (6), Slovenia (11), South Africa (16), Spain (47), Sri Lanka (1), Sweden (77), Switzerland (100), Syria (1), Taiwan (12), Thailand (17), Turkey (13), United Arab Emirates (20), United Kingdom (62), United Republic of Tanzania (3), Venezuela (37).

Table 2 Correlations between bank-level variables

	Variables	(1)	(2)	(3)	(4)	(5)
(1)	Z_score	1.00				
(2)	Std_NIM	0.44	1.00			
(3)	Bank_size	-0.19	-0.31	1.00		
(4)	Bank_growth	0.27	0.38	-0.23	1.00	
(5)	LLP_TA	0.27	0.31	-0.15	0.13	1.00

Note: This table reports Pearson correlation coefficients between each pair of bank-level variables. All correlations are significant at 5% level.

Table 3 National culture and bank risk-taking: Z_score and Hofstede's cultural dimensions

Variables	Z_score					
	(1)	(2)	(3)	(4)	(5)	(6)
UAI		**-0.003*** **				**-0.002** **
		(0.008)				**(0.044)**
IND			**0.005*** **			**0.004*** **
			(0.001)			**(0.007)**
MAS				**-0.000**		**-0.000**
				(0.658)		**(0.905)**
PDI					**-0.003** **	**-0.002***
					(0.011)	**(0.078)**
Bank_size	-0.016*	-0.013	-0.014*	-0.015*	-0.012	-0.009
	(0.056)	(0.126)	(0.096)	(0.091)	(0.172)	(0.323)
Bank_growth	0.004***	0.004***	0.004***	0.004***	0.004***	0.004***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
LLP_TA	0.157***	0.160***	0.162***	0.157***	0.148***	0.158***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Bank_concentration	0.002	0.000	0.001	0.001	0.001	0.000
	(0.251)	(0.766)	(0.278)	(0.331)	(0.332)	(0.740)
Activity_restrictions	-0.022**	-0.025***	-0.017*	-0.022**	-0.026***	-0.018**
	(0.018)	(0.008)	(0.091)	(0.017)	(0.006)	(0.047)
Capital_stringency	-0.041***	-0.037***	-0.039***	-0.041***	-0.046***	-0.040***
	(0.002)	(0.005)	(0.003)	(0.002)	(0.001)	(0.003)
Deposit_insurance	0.123**	0.097*	0.061	0.125**	0.103*	0.042
	(0.020)	(0.070)	(0.269)	(0.018)	(0.053)	(0.457)
Log_GDPPC	-0.135***	-0.115***	-0.137***	-0.135***	-0.125***	-0.116***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Legal_common	0.040	-0.012	0.018	0.041	0.051	-0.006
	(0.453)	(0.831)	(0.735)	(0.442)	(0.335)	(0.921)
Creditor_rights	-0.004	-0.016	0.003	-0.004	-0.013	-0.012
	(0.788)	(0.341)	(0.866)	(0.813)	(0.442)	(0.484)
Information_sharing	0.006	0.007	0.047	0.012	-0.018	0.026
	(0.933)	(0.914)	(0.480)	(0.861)	(0.789)	(0.704)
Rule_of_law	-0.194***	-0.225***	-0.260***	-0.194***	-0.268***	-0.320***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	-1.551***	-1.466***	-1.862***	-1.539***	-1.333***	-1.592***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Banks	1,974	1,974	1,974	1,974	1,974	1,974
Countries	75	75	75	75	75	75
R-squared	0.254	0.256	0.258	0.254	0.256	0.260

Note: Dependent variable is Z_score in all Models, where higher values of Z_score represent higher bank risk-taking and lower values represent lower bank risk-taking. Four dimensions of national culture (UAI, IND, MAS and PDI) from Hofstede's national culture framework are main explanatory variables and other bank-level and country-level variables are used as control variables. Detailed definitions of variables are given in Appendix 1. All Models are estimated using OLS regressions. *P*-values are computed by the heteroskedastic-robust standard errors and are presented in parenthesis. ***, **,* represent statistical significance at 1%, 5%, and 10% levels respectively.

Table 4 Bank risk-taking and House *et al.*'s cultural dimensions

Variables	Z_score				
	(1)	(2)	(3)	(4)	(5)
UAI_Globe	**-0.273*** **				**-0.254*** **
	(0.000)				**(0.001)**
Collectivism_Globe		**-0.374*** **			**-0.354*** **
		(0.000)			**(0.000)**
Assertiveness_Globe			**-0.203*** **		**-0.222*** **
			(0.000)		**(0.000)**
PD_Globe				**-0.175***	**-0.350*** **
				(0.092)	**(0.003)**
Bank_size	-0.012	-0.029***	-0.000	-0.022**	-0.004
	(0.202)	(0.002)	(0.959)	(0.021)	(0.688)
Bank_growth	0.004***	0.004***	0.003***	0.004***	0.004***
	(0.000)	(0.000)	(0.003)	(0.000)	(0.001)
LLP_TA	0.154***	0.150***	0.131***	0.158***	0.125***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Bank_concentration	-0.000	0.003**	-0.001	0.002	-0.000
	(0.862)	(0.031)	(0.724)	(0.211)	(0.832)
Activity_restrictions	-0.028***	-0.019*	0.003	-0.021*	0.025**
	(0.009)	(0.071)	(0.777)	(0.058)	(0.041)
Capital_stringency	-0.046***	-0.063***	-0.067***	-0.040**	-0.055***
	(0.006)	(0.000)	(0.000)	(0.025)	(0.003)
Deposit_insurance	0.171**	0.239***	0.202***	0.279***	0.267***
	(0.013)	(0.000)	(0.003)	(0.000)	(0.000)
Log_GDPPC	-0.169***	-0.097**	-0.180***	-0.176***	-0.087**
	(0.000)	(0.020)	(0.000)	(0.000)	(0.033)
Legal_common	0.071	0.089	0.123*	0.022	0.224***
	(0.289)	(0.187)	(0.069)	(0.740)	(0.001)
Creditor_rights	0.010	0.000	0.019	0.031	-0.028
	(0.606)	(0.995)	(0.336)	(0.117)	(0.179)
Information_sharing	0.130	-0.069	0.059	0.050	0.067
	(0.126)	(0.415)	(0.471)	(0.547)	(0.460)
Rule_of_law	-0.331***	-0.267***	-0.143***	-0.192***	-0.356***
	(0.000)	(0.000)	(0.003)	(0.000)	(0.000)
Constant	0.036	0.368	-0.728	-1.833***	0.585
	(0.948)	(0.512)	(0.122)	(0.003)	(0.410)
Banks	1,565	1,565	1,565	1,565	1,565
Countries	46	46	46	46	46
R-squared	0.275	0.279	0.287	0.268	0.309

Note: Dependent variable is Z_score in all Models, where higher values of Z_score represent higher bank risk-taking and lower values represent lower bank risk-taking. Four cultural variables of House et al. (2004) (UAI_Globe, Collectivism_Globe, Assertiveness_Globe and PD_Globe) are main explanatory variables and other bank-level and country-level variables are used as control variables. Detailed definitions of variables are given in Appendix 1. All models are estimated using OLS regressions. *P*-values are computed by the heteroskedastic-robust standard errors and are presented in parenthesis. ***, **,* represent statistical significance at 1%, 5%, and 10% levels respectively.

Table 5 Alternate bank risk-taking measure and Hofstede's cultural dimensions

Variables	Std_NIM				
	(1)	(2)	(3)	(4)	(5)
UAI	**-0.004****				**-0.004****
	(0.023)				**(0.036)**
IND		**0.003***			**0.005****
		(0.094)			**(0.016)**
MAS			**0.001**		**0.001**
			(0.319)		**(0.658)**
PDI				**-0.009*****	**-0.010*****
				(0.000)	**(0.000)**
Bank_size	-0.117***	-0.121***	-0.124***	-0.108***	-0.108***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Bank_growth	0.014***	0.014***	0.014***	0.013***	0.013***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
LLP_TA	0.305***	0.299***	0.300***	0.278***	0.275***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Bank_concentration	-0.001	0.000	0.001	-0.000	-0.001
	(0.756)	(0.852)	(0.661)	(0.862)	(0.646)
Activity_restrictions	-0.065***	-0.068***	-0.061***	-0.074***	-0.089***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Capital_stringency	-0.088***	-0.093***	-0.092***	-0.104***	-0.103***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Deposit_insurance	0.482***	0.538***	0.498***	0.448***	0.485***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Log_GDPPC	0.211***	0.194***	0.194***	0.221***	0.243***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Legal_common	0.008	0.066	0.050	0.085	0.065
	(0.926)	(0.402)	(0.524)	(0.277)	(0.455)
Creditor_rights	-0.071***	-0.064***	-0.062**	-0.084***	-0.105***
	(0.006)	(0.009)	(0.011)	(0.001)	(0.000)
Information_sharing	0.662***	0.637***	0.639***	0.595***	0.538***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Rule_of_law	-0.831***	-0.767***	-0.804***	-1.012***	-0.981***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	1.254**	1.350**	1.141**	1.792***	2.216***
	(0.022)	(0.016)	(0.036)	(0.001)	(0.000)
Banks	1,981	1,981	1,981	1,981	1,981
Countries	75	75	75	75	75
R-squared	0.380	0.380	0.380	0.385	0.388

Note: Dependent variable is Std_NIM in all Models, where higher values of Std_NIM represent higher bank risk-taking and lower values represent lower bank risk-taking. Four dimensions of national culture (UAI, IND, MAS and PDI) from Hofstede's national culture framework are main explanatory variables and other bank-level and country-level variables are used as control variables. Detailed definitions of variables are given in Appendix 1. All Models are estimated using OLS regressions. *P*-values are computed by the heteroskedastic-robust standard errors and are presented in parenthesis. ***, **,* represent statistical significance at 1%, 5%, and 10% levels respectively.

Table 6 Alternate bank risk-taking measure and House *et al.*'s cultural dimensions

Variables	Std_NIM				
	(1)	(2)	(3)	(4)	(5)
UAI_Globe	**-0.582*** **				**-0.258** **
	(0.000)				**(0.025)**
Collectivism_Globe		**-0.457*** **			**-0.545*** **
		(0.000)			**(0.000)**
Assertiveness_Globe			**-0.241*** **		**-0.240*** **
			(0.000)		**(0.000)**
PD_Globe				**-0.769*** **	**-0.631*** **
				(0.000)	**(0.000)**
Bank_size	-0.130***	-0.157***	-0.123***	-0.137***	-0.121***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Bank_growth	0.014***	0.014***	0.013***	0.013***	0.013***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
LLP_TA	0.194***	0.191***	0.172***	0.194***	0.156***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Bank_concentration	-0.009***	-0.003	-0.008***	-0.006***	-0.008***
	(0.000)	(0.240)	(0.001)	(0.008)	(0.002)
Activity_restrictions	-0.083***	-0.072***	-0.045***	-0.108***	-0.056***
	(0.000)	(0.000)	(0.009)	(0.000)	(0.002)
Capital_stringency	-0.094***	-0.120***	-0.124***	-0.151***	-0.174***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Deposit_insurance	0.445***	0.577***	0.531***	0.327***	0.307***
	(0.000)	(0.000)	(0.000)	(0.003)	(0.005)
Log_GDPPC	0.237***	0.314***	0.214***	0.203***	0.334***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Legal_common	0.110	0.091	0.131	0.036	0.281***
	(0.270)	(0.366)	(0.196)	(0.716)	(0.006)
Creditor_rights	-0.009	-0.003	0.020	0.030	-0.045
	(0.768)	(0.913)	(0.503)	(0.307)	(0.141)
Information_sharing	1.278***	0.951***	1.107***	1.030***	0.997***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Rule_of_law	-1.237***	-1.028***	-0.879***	-0.912***	-1.114***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	4.135***	3.439***	2.075***	4.437***	7.824***
	(0.000)	(0.000)	(0.003)	(0.000)	(0.000)
Banks	1,571	1,571	1,571	1,571	1,571
Countries	46	46	46	46	46
R-squared	0.451	0.445	0.448	0.447	0.467

Note: Dependent variable is Std_NIM in all Models, where higher values of Std_NIM represent higher bank risk-taking and lower values represent lower bank risk-taking. Four cultural variables of House et al. (2004) (UAI_Globe, Collectivism_Globe, Assertiveness_Globe and PD_Globe) are main explanatory variables and other bank-level and country-level variables are used as control variables. Detailed definitions of variables are given in Appendix 1. All models are estimated using OLS regressions. *P*-values are computed by the heteroskedastic-robust standard errors and are presented in parenthesis. ***, **,* represent statistical significance at 1%, 5%, and 10% levels respectively.

Table 7: Instrumental variables analysis for cultural dimensions

Variables	First stage UAI (1)	Second stage Z_score (2)	First stage IND (3)	Second stage Z_score (4)	First stage PDI (5)	Second stage Z_score (6)
Fitted_UAI		-0.011***				
		(0.000)				
Fitted_IND				0.016***		
				(0.000)		
Fitted_PDI						-0.041***
						(0.000)
Log_TA	1.224***	-0.002	0.028	-0.009	1.399***	0.043**
	(0.000)	(0.847)	(0.831)	(0.331)	(0.000)	(0.012)
Growth_TA	-0.009	0.004***	-0.016	0.004***	-0.053***	0.002
	(0.604)	(0.000)	(0.250)	(0.000)	(0.001)	(0.109)
LLP_TA	1.313***	0.171***	-0.265	0.167***	-2.951***	0.036
	(0.009)	(0.000)	(0.508)	(0.000)	(0.000)	(0.389)
Bank_Concentration	-0.410***	-0.003	-0.087***	0.001	-0.058**	-0.001
	(0.000)	(0.117)	(0.000)	(0.337)	(0.012)	(0.550)
Activity_Restrictions	-1.054***	-0.036***	-1.638***	0.012	-1.287***	-0.078***
	(0.000)	(0.000)	(0.000)	(0.379)	(0.000)	(0.000)
Capital_Stringency	0.890***	-0.026*	-0.512***	-0.036***	-1.723***	-0.106***
	(0.001)	(0.075)	(0.009)	(0.007)	(0.000)	(0.000)
Deposit_Insurance	-10.027***	-0.000	12.212***	-0.090	-6.049***	-0.142*
	(0.000)	(0.999)	(0.000)	(0.227)	(0.000)	(0.096)
Log_GDPPC	4.763***	-0.052	-1.884***	-0.142***	2.767***	0.011
	(0.000)	(0.179)	(0.000)	(0.000)	(0.000)	(0.831)
Legal_Common	-9.448***	-0.173**	6.119***	-0.035	7.489***	0.235***
	(0.000)	(0.029)	(0.000)	(0.538)	(0.000)	(0.001)
Creditor_Rights	-3.673***	-0.055***	-1.923***	0.018	-2.429***	-0.116***
	(0.000)	(0.009)	(0.000)	(0.310)	(0.000)	(0.000)
Information_Sharing	-1.949	0.015	-3.744***	0.133*	-8.898***	-0.329***
	(0.139)	(0.826)	(0.000)	(0.079)	(0.000)	(0.003)
Rule_of_Law	-7.532***	-0.330***	11.933***	-0.401***	-22.399***	-1.170***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Multiple_2P_Pronouns	21.886***				5.664***	
	(0.000)				(0.000)	
Diseases Prevalence Index			-10.546***			
			(0.000)			
Constant	41.525***	-1.170***	74.976***	-2.513***	67.030***	1.142
	(0.000)	(0.004)	(0.000)	(0.000)	(0.000)	(0.143)
Observations	1,875	1,868	1,962	1,955	1,875	1,868
Countries	59	59	73	73	59	59
R-squared	0.606	0.262	0.750	0.255	0.740	0.262

Note: This Table reports two stage instrumental variable analysis. In first stage regressions (i.e., Models 1, 3 and 5) cultural variables are regressed on instrumental variables including other control variables. In second stage regressions (i.e., Models 2, 4 and 6), Z_score is regressed on fitted values of cultural variables from first stage regressions including other control variables. Dependent variable is UAI in Model 1, IND in Model 3 and PDI in Model 5. Z_score is dependent variable in Models 2, 4 and 6, where higher values of Z_score represent higher bank risk-taking and lower values represent lower bank risk-taking. Multiple_2P_Pronouns, a dummy variable equals 1 if a language has multiple second person pronouns and equals 0 if has single second person pronoun, is instrumental variable for UAI and PDI dimensions. Diseases Prevalence Index is instrumental variable for IND dimension. Fitted_UAI, Fitted_IND and Fitted_PDI are fitted cultural variables from first stage regressions. Detailed definitions

of variables are given in Appendix 1. All Models are estimated using OLS regressions. *P*-values are computed by the heteroskedastic-robust standard errors and are presented in parenthesis. ***, **,* represent statistical significance at 1%, 5%, and 10% levels respectively.

Table 8 Cumulative national cultural effects on bank risk-taking

Variables	Z_score (1)	Std_NIM (2)
IND+Inv_UAI+Inv_PDI	**0.003*** **	**0.002** **
	(0.000)	**(0.017)**
Bank_size	-0.008	-0.114***
	(0.344)	(0.000)
Bank_growth	0.004***	0.014***
	(0.000)	(0.000)
LLP_TA	0.157***	0.300***
	(0.000)	(0.000)
Bank_concentration	-0.000	-0.001
	(0.981)	(0.609)
Activity_restrictions	-0.024***	-0.064***
	(0.009)	(0.000)
Capital_stringency	-0.038***	-0.091***
	(0.003)	(0.000)
Deposit_insurance	-0.005	0.424***
	(0.933)	(0.000)
Log_GDPPC	-0.104***	0.216***
	(0.000)	(0.000)
Legal_common	-0.025	0.001
	(0.640)	(0.986)
Creditor_rights	-0.022	-0.074***
	(0.197)	(0.003)
Information_sharing	0.005	0.664***
	(0.943)	(0.000)
Rule_of_law	-0.326***	-0.912***
	(0.000)	(0.000)
Constant	-1.945***	0.874
	(0.000)	(0.121)
Banks	1,974	1,981
Countries	75	75
R-squared	0.260	0.380

Note: Dependent variable is Z_score in Model (1) and Std_NIM in Model (2), where higher values of Z_score and Std_NIM represent higher bank risk-taking and lower values represent lower bank risk-taking. IND+Inv_UAI+Inv_PDI is main explanatory variable and equals sum of IND, inverted UAI (i.e., 100-UAI) and inverted PDI (i.e., 100-PDI), where IND, UAI and PDI are three dimensions of national culture from Hofstede's national culture framework. Other bank-level and country-level variables are used as control variables. Detailed definitions of variables are given in Appendix 1. All models are estimated using OLS regressions. *P*-values are computed by the heteroskedastic-robust standard errors and are presented in parenthesis. ***, **,* represent statistical significance at 1%, 5%, and 10% levels respectively.

Table 9 Country sub-groups based on sum of IND, inverted UAI and inverted PDI

Lower bank risk-taking cultures		Medium bank risk-taking cultures		Higher bank risk-taking cultures	
Country	**IND+Inv_UAI+Inv_PDI**	**Country**	**IND+Inv_UAI+Inv_PDI**	**Country**	**IND+Inv_UAI+Inv_PDI**
GUATEMALA	12	INDONESIA	88	BELGIUM	116
PANAMA	30	PAKISTAN	89	FRANCE	117
ROMANIA	50	BURKINA FASO	90	NAMIBIA	120
SAUDI ARABIA	50	HONDURAS	90	CZECH REPUBLIC	127
RUSSIAN FEDERATION	51	MALAYSIA	90	HONG KONG	128
KUWAIT	55	TAIWAN	90	INDIA	131
UNITED ARAB EMIRATES	55	THAILAND	92	SINGAPORE	138
VENEZUELA	55	BRAZIL	93	ITALY	151
EL SALVADOR	59	COSTA RICA	94	HUNGARY	152
ALBANIA	60	PHILIPPINES	94	LITHUANIA	153
PERU	65	ETHIOPIA	95	ISRAEL	160
PORTUGAL	65	JORDAN	95	LATVIA	163
COLOMBIA	66	NIGERIA	95	GERMANY	167
MEXICO	67	SYRIAN ARAB REPUBLIC	95	SOUTH AFRICA	167
SLOVENIA	68	POLAND	99	FINLAND	171
GHANA	70	JAPAN	100	AUSTRIA	174
REPUBLIC OF KOREA	73	SENEGAL	100	SWITZERLAND	176
CHILE	74	KENYA	105	JAMAICA	181
BULGARIA	75	UNITED REPUBLIC OF TANZANIA	105	NORWAY	188
EGYPT	75	MOROCCO	108	NETHERLANDS	189
GREECE	75	SPAIN	108	CANADA	193
BANGLADESH	80	CHINA	110	IRELAND	207
CROATIA	80	MALAWI	110	SWEDEN	211
MOZAMBIQUE	86	SRI LANKA	110	UNITED KINGDOM	219
TURKEY	86	LEBANON	115	DENMARK	233

Note: IND+Inv_UAI+Inv_PDI is cumulative national culture variable and equals sum of IND, inverted UAI (i.e., 100-UAI) and inverted PDI (i.e., 100-PDI), where IND, UAI and PDI are three dimensions of national culture from Hofstede's national culture framework.