

# Culture, Geographies or Accounting Regimes: Which Are Drivers for Risk-Taking in European and Asian Banks?

Ana Isabel Lopes

**Abstract** Our goal is achieved using the Hofstede's model of cultural dimensions that has become internationally recognized. A sample covering 41 countries from Europe and Asia and about 3150 bank-years observations was selected to represent low and high averse to risk characteristics. The research is conducted to investigate the influence of culture attributes of risk-taking on the reporting of some variables related to risk, identifying whether or not geographies or accounting regimes are also determinants. We use two proxies for risk-taking, namely, Provisions for Loan Losses and Risk-Weighted Assets. Our research is designed using a twofold perspective. First, we examine if the distribution of our proxies for risk taking are different between independent groups. We compare the outcomes based on groups clustered by national culture dimensions, geographies and accounting regimes. Secondly, we examine if culture is a determinant of banks that present higher or lower amounts of incurred and unexpected losses. Our findings suggest that national culture is (is not) a determinant for the probability of reporting higher or lower level of loans loss provisions (risk weighed assets). These findings are consistent for banks in different geographies (Europe vs. Asia) and subject to different accounting regimes (IFRS vs. local standards).

**Keywords** National culture • Loan loss provisions • Risk weighed assets • Banking industry

## 1 Introduction

The objective of this study is to examine the influence of national culture on the Loan Losses Provisions and Risk Weighed Assets (hereafter, RWA) reported by Banks in European and Asiatic countries, henceforward named as Eurasia, identifying also whether or not geographies or accounting regimes are also determinants.

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M.H. Bilgin, H. Danis (eds.), *Entrepreneurship, Business and Economics - Vol. 2*, Eurasian Studies in Business and Economics 3/2,

DOI 10.1007/978-3-319-27573-4\_35

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A lot of countries around the world have either fully adopted, or are considering to adopt, International Financial Accounting Standards (IFRSs). These include all member countries of the European Union and several other European and Asian countries. While many researches analyses the effect of the adoption of IFRSs excluding the impact on financial institutions, we consider that some issues must be highlighted by banks when adopting those IFRSs.

IFRSs can have a significant impact on the banking and capital markets industry. PricewaterhouseCoopers (2006) anticipates that this impact can include changes on earnings and capital volatility, on strategic and financial planning, on capital management, on credit evaluation tools, and on debt covenants, among others. One of the topics that is underlying all these impacts is the “Provision for Loan Losses”, since they can be based upon the requirements of central Banks of each country, setting the minimum provisions to be held against lending assets. At the same time, some countries apply the Basel accords (I, II and, in the future, III) to identify and fulfill some capital adequacy ratios, market liquidity tests and stress tests. To calculate capital adequacy ratios Banks need to use a risk-weight approach, from which the “Risk Weighted Assets” must be computed. The information about Provision for Loan Losses and about Risk Weighted Assets could be an easier approach to compare Banks across different geographies. Our analysis seeks particularly to determine whether culture dimensions influence these two issues between Eurasian countries.

Bank lending and risk credit have long being concern to the banking industry. The amount of loans is an important asset for banks, assuming the claim to the repaying and the receivable of the related interest. When these principles are not respected by borrowers the credit relationship is weakened and the economic and the financial performance of banks come reduced. Banking and accounting regulators are accompanying this phenomenon with attention, especially when the financial crisis started. When banks face losses on loans, they should create a provision, or impairment, on the amount of loan. The loan loss provision is thus the current period expense for loan losses recognized in that current period. It is reported in the profit or loss statement and likely influences the reported earnings of banks. The amount of loan losses provisions can be stipulated under the so-called “incurred loss model”, which is mandatory under current IFRSs for all listed banks in the European Union.

Gebhardt and Novotny-Farkas (2011) examined how the application of the IAS 39 incurred loss approach affects the loan losses provisions, considered as the main operating accrual item of (commercial) banks. They find that IAS 39 rules significantly reduce discretionary behavior, as measured by less income smoothing after IFRS adoption. They also found that the IFRS adoption effect is significantly less pronounced in stricter supervisory regimes and in countries with more dispersed ownership of banks. Currently, the debate around changes to IAS 39 and IFRS 9 is related to the change from an “incurred loss model” to an “expected credit loss model”. The change, the benefits or the cons against the transformation from one model to another are out of the scope of this research. However, because the objective is to compare the influence of culture in loan losses provisions, the type

of standards used to report financial risks are also under aware (namely, IFRSs, local GAAP or other).

While loan losses provisions (or other similar terminology) cover incurred losses, unexpected losses may jeopardize the financial strength of a bank. Banking supervisory authorities (through the so-called Basel accords) formulate broad supervisory standards and guidelines and recommend statements of best practice in banking supervision, in order to improve the quality of banking supervision worldwide. From these regulator's point of view, Tier 1 capital is the core measure of a bank's financial strength and is calculated in order to have an estimative of the effects of those unexpected losses. Tier 1 capital ratio is computed dividing the core equity capital by its total RWA. This means that banks do not assess their solvency ratios the same way ordinary non-financiers companies do, dividing equity by total assets. Instead of total assets, banks use RWA, and this amount represents assets weighted by the relevant risk weigh factor to reflect credit risk, market risk and operational risk.

Our goal in this chapter is achieved using the Hofstede's model of cultural dimensions that has become an internationally recognized standard, and collecting information about the accounting standards followed to prepare financial statements by Banks operating in Asia and Europe. A sample covering 41 Eurasian countries was selected to represent low and high averse to risk characteristics. The research is conducted to investigate the influence of culture attributes of risk-taking, of accounting regimes or geographies on the reporting of some variables related to risk.

An extensive literature also used Hofstede's culture dimensions to examine its influence on business environments, namely, on development of accounting systems (Gray 1988; Salter and Niswander 1995), on earnings management in industry except banking (Nabar and Thai 2007; Han et al. 2010), on earnings management in banking industry (Kanagaretnam et al. 2011), on accounting conservatism (Schultz and Lopez 2001; Douplik and Riccio 2006; Tsakumis 2007; Salter et al. 2013; Kanagaretnam et al. 2014) and on risk-taking (Kanagaretnam et al. 2014), among others. A recent survey accompanied in 2008 (May) by PricewaterhouseCoopers and the Economist Intelligence Unit on the factors that created conditions for the recent Banking crises (PricewaterhouseCoopers 2008) also reveals that around 73 % of survey participants identified "culture and excessive risk-taking" as their major causes.

Our chapter is most closely related to Kanagaretnam et al. (2011, 2014), since we also focus on the banking industry because usually this industry is excluded from other studies (Nabar and Thai 2007; Han et al. 2010) and because loan loss accounting in this industry is a proper setting to observe the preferences of managers for conservative accounting (Nichols et al. 2009). We use two dimensions of national culture identified by Hofstede (2001), namely, individualism (IND) and uncertainty avoidance (UA) to relate with accounting conservatism and risk-taking. These two dimensions were used by Han et al. (2010) and Kanagaretnam et al. (2014). Prior research also used Hofstede's dimensions of culture in accounting (Schultz et al. 1993; Kachelmeier and Shehata 1997), in economics

(Gorodnichenko and Roland 2011), in finance (Chui et al. 2010), among others authors and business areas.

Our chapter offer some advances. First, we examine the effects of culture on risk measures only in post-IFRS adoption period, avoiding bias from each company changing accounting regimes over time. Second, we use a sample comprising a set of countries from Europe and from Asia, which permits to identify whether different effects of culture exists between local standards versus IFRS standards between different countries. Altogether, our chapter able us to identify the influence of culture on risk taking measures within different geographies and different accounting regimes, adding new contributes to the literature.

We use two approaches. First, we focus on Provisions for Loan Losses as an estimative of expected loan losses. The Provisions for Loan Losses reflect management's estimate of the incurred loan losses that must be recognized on the profit or loss statement. Since these estimates measure fluctuations in the recognized credit losses during the period, we want to identify the effect of national cultural on loan losses provisions.

Second, we focus on risk-weighted assets as an estimative for unexpected losses. The report issued by the High-level Expert Group (HLEG) on reforming the structure of the EU banking sector (HLEG 2012) argues that risk weighed assets calculated by individual banks' internal models can be significantly different for similar risks. Accordingly, "The current levels of RWAs based on banks' internal models and historical loss data tend to be quite low compared to the losses incurred in past real estate-driven crises" (HLEG 2012). The Expert group considers that "the problems due to the possibly very low levels of RWA and varying model outcomes across banks would need to be addressed by supervisors and coordinated European effort to foster greater consistency of model outcomes and to impose more conservative parameters where needed" (HLEG 2012). An important concern about current methods of determining RWA is that they leave room for individual banks to "optimize" capital requirements by underestimating their risks and thus being permitted to hold lower capital (Das and Sy 2012). Even under the recommendations under Basel accords it can be possible that banks with similar loans and similar capital present different solvency ratios. Even after revisions to Basel accords the situation is not completely comparable. The Capital Requirements Directive issued by European Union required that countries in Europe implement the Basel II guidelines by the time of the crisis (Das and Sy 2012). However in Asian countries there are still a lot of banks following Basel I and others Basel II. Because of these regulatory differences, Das and Sy (2012) and Le Leslé and Avramova (2012) found that Risk Weight Assets were higher in Asian and lower in European banks.

The rest of the chapter proceeds as follows. In Sect. 2 we discuss the arguments for which culture dimensions, accounting regimes or geographies can influence accounting conservatism and risk-taking in the banking industry and present the hypotheses. In Sect. 3 we present the results and Sect. 5 concludes.

## 2 National Culture, Accounting Regimes and Geographies on Loan Losses Provisions and Risk-Weighted Assets, and Hypothesis Development

Hofstede's cultural dimension theory, published in 2001, offers a framework for cross-cultural comparisons that has been widely used in several fields as a paradigm for research. Each country is scored using a scale of roughly 0–100 for each dimension. The higher the score, the more that dimension is exhibited in society (Hofstede 2001).

Prior works applying this theory to earnings management, conservatism accounting and risk taken (Han et al. 2010; Kanagaretnam et al. 2011, 2014) found consistent results for Individualism (IDV) and Uncertainty/Avoidance Index (UAI), demonstrating that individualism and uncertainty avoidance dimensions of national culture affect risk-taking. We will also use these two dimensions.

According to theory, IDV measures the degree to which individuals are integrated into groups (without political meaning). Countries with high scores for IDV dimension usually foster contractual relationships that are based on the principles of exchange, value independence and self-sufficiency place self-interests above collective interests, enjoy challenges and expect rewards for hard work, and accept confrontation as an attribute (Hofstede 2001). With low scores for IDV, countries behave according to social norms that are designed to maintain social harmony among members of an in-group, and consider implications of their actions for wider collective and share resources, being prepared to sacrifice personal interest for collective interests (Hofstede 2001). Kanagaretnam et al. (2014) argue that risk-taking incentives are likely greater in High IND societies where worry for other stakeholders' welfare is likely to be low.

The UAI measures the degree to which members of a society are able to cope with the uncertainty of the future without experiencing undue stress. Weak UAI is characterized, among others, by risk taking, flexibility, organizations with a relatively low degree of structure and few rules. Strong UAI is, by opposite, characterized by avoidance of risk, organizations that have clearly delineated structures, many written rules, standardized procedures, and respect for authority (Hofstede 2001). A summary of these effects is presented in Table 1, showing that geographies with a high score in IDV and a low score in UAI are more committed with risk-taking strategies.

These two dimensions of culture can be applied to our study in the following way. Kanagaretnam et al. (2014) found evidence that banks take more risk in societies where IDV is high or UA is low. Consider that the Loan Loss Provisions and Risk Weighed Assets are two measures of risk-taking. It is expected thus that banks in low IDV and high UAI societies recognize more conservative, i.e., larger, loan loss allowances than banks in high IDV and UA societies. We will test this effect in an income statement item, the loan provision expensed in each year, since every time a bank increase loan loss allowances it records an expense and net income decreases. On another hand, based on testimonies included in Das and Sy

**Table 1** The effect of individualism and uncertainty/avoidance index on risk-taking

Scores	IDV	UAI
High	More risk-taking	Less risk-taking
Low	Less risk-taking	More risk-taking

**Table 2** The relation between IDV and UAI with loan loss provisions and risk weighted assets

Scores	Loan losses provisions	Risk weight assets
IDV	Negative	Positive
UAI	Positive	Negative

(2012), European banks and banks in other countries may be diverging in their calculations of Risk Weighed Assets, being highly variable in Europe, confirmed also by one of the last reports prepared by EBA (2014). Theoretically, the higher the amount of Risk Weighed Assets, the higher the level of risk assumed as reflected in unexpected losses. Risky-behavior is typical of societies scored as low UAI when compared to less risky-taking societies, scored as high UAI. It is expected thus that banks in high IDV and low UAI societies disclose more risk weighed assets.

These two assertions can be shortened in Table 2, through a matrix crossing the expectations on the amounts reported for Loan Loss Provisions and Risk Weighed Assets with the IDV and UAI dimensions, which in turns give us an expectation of a negative or a positive relation.

Based on Hofstede theory, countries belonging to Asia and to Europe have different scores for IDV and for UAI. We want to test if these relations hold when we have a diversity of banks with different characteristics. We develop the following hypotheses in the null form:

*H1: Ceteris paribus, risk-taking strategies will be the same across different scores of culture dimensions.*

*H2: Ceteris paribus, risk-taking strategies will be the same across different geographies.*

*H3: Ceteris paribus, risk-taking strategies will be the same across accounting regimes.*

Our variables for risk taking strategies are (1) the variable LLP, which is the percentage of the amount of loans loss provisions over the total amount of loans by bank-year, and (2) the variable RWA which is measured as the percentage of Risk Weighed Assets over the total assets of the bank.

Then, we employ a second strand of research, examining the consequences of IDV and UAI on higher versus lower LLP and higher versus lower RWA. Based on the evidence of the studies discussed below, we expect that banks in countries with low IDV and high UAI, are more likely to present higher LLP. Based on theory it should be expected the opposite relationship for the effect on RWA. However, RWA are directly related with minimum capital ratios that banks should present. They adjust the amount of each loan for an estimative of how risky it is, and it could

be not accurate due to the difficulties involved in this estimation and to the motivations to distort it. Therefore, we predict the following:

*H4a: Ceteris paribus, Banks in higher risk-taking societies are more likely to report lower loan losses provision than Banks with lower risky behavior.*

*H4b: Ceteris paribus, Banks in higher risk-taking societies are more likely to disclose higher risk weighed assets than with lower risky behavior.*

### 3 Research Design

In this part of the analysis we want to examine if the scores for IDV and for UAI are similar or different between independent groups and compare the outcomes. Our null hypotheses are that risk-taking strategies measure by LLP and RWA are the same across different scores of culture dimensions (H1), geographies (H2) or accounting regimes (H3).

#### 3.1 *The Effect of Culture on Loan Losses Provisions and Risk Weighed Assets*

We want to examine if culture is a determinant of banks that present higher or lower amounts of LLP and RWA. We test hypothesis 3 (H3) using a binary logistic estimation where the binary dependent variable (RISK) is a dummy variable takes on the value 1 if the bank presents: (1) a LLP higher than the median and 0 otherwise; (2) a RWA higher than the median and 0 otherwise.

Our main test variable is the culture dimension, and we will IDV and UAI as proxies for risk-taking strategies behavior. Our rationale for using these variables is based on prior research suggesting that culture dimension affects bank financial reporting properties, risk-taking, and financial distress (Kanagaretnam et al. 2014).

We predict that if banks are in countries with low (high) IDV and high (low) UAI, they are more likely to present higher (lower) LLP (RWA). We also include some variables of control, one of which is non-performing loans (NPL). Banks need to identify and report non-performing loans. A NPL is a loan that is in **default** or close to being in default. Many loans become non-performing after being in default for 90 days, but this can depend on the contract terms, and there is no unique definition widely used. If a bank has NPL, it shall recognize loan losses provisions (LLP) according to the rules of accounting regimes or supervisory regulators. Listed Banks in European Union are required to apply the International Financial Reporting Standards (IFRS), which contains specific guideline on how to estimate the impairment of financial assets and, consequently, the amount of LLP given the amount of NPL. European and Asian Banks can avoid the growth of LLP if they

reduce the amount of non-performing loans. By other hand, the higher the amount of those NPL, the higher the risk-taking of each bank, given its decision to grant (or not) credit to other parties after analyzing the probability of default of each borrower.

Another set of controls are included. Since large banks are more closely observed by both regulators and analysts (Paananen et al. 2012), we include variables that are Bank-specific, namely size (*SIZE*), profitability (*RET*), and bank solvency (*SOLV*). We also add a number of variables that are Country-specific that also were used by Kanagaretnam et al. (2014), namely, creditor rights (*CR*), Information sharing index (*IS*), and law enforcement index (*ENF*).

We take these variables into a model that is specified using binary logistic approach as follows:

$$\begin{aligned} \text{logit}[p(RISK)] &= \log \left[ \frac{p(RISK)}{1 - p(RISK)} \right] \\ &= \beta_0 + \beta_1 CULT + \beta_2 Proxy\_R + \beta_3 IFRS \\ &\quad + \beta_4 Proxy\_R * CULT * IFRS + \beta_5 B_{level} + \beta_6 C_{level} \\ &\quad + \beta_7 YEAR + \varepsilon \end{aligned} \quad (1)$$

where *Risk* is measured in two different separates approaches: (1) as 1, if the percentage of Loan Losses Provisions over total loans (*LLP*) is above the median of all countries, and 0 otherwise, which is the first approach; and (2) as 1 if the percentage of Risk Weighed Assets over total assets (*RWA*) is above the median of all countries, and 0 otherwise, which is the second approach. *CULT* is the score for *IDV* and *UAI*, and will be tested separately, considering that *IDV* and *UAI* can be substitutes by each other instead of complementary. *Proxy\_R* is used as a determinant for the likelihood of reporting *LLP* or disclose *RWA*. Firstly, *Proxy\_R* is *NPL*, i.e., the percentage of Non-Performing Loans over total Loans. Then, *Proxy\_R* is *DT*, is the percentage of total deposits over total assets.  $B_{level}$  is the vector with bank-level characterizes (*SIZE*, *SOLV* and *RET*) to control for cross-sectional differences in the sample that may influence the relationship between national culture and accounting-based bank risks measures.  $C_{level}$  is represents the vector with country characteristics (*CR*, *IS*, and *ENF*). *YEAR* is included for control for data from different years.

The sign and the significance of the coefficients  $\beta_1$  and  $\beta_4$  on the variable *CULT* and interactions of *CULT* with *RISK\_R* and *IFRS* are our focus of interest. According with Hofstede dimensions' theory (see Table 2), and consistent with prior findings, we expect negative (positive) coefficients when *CULT* is *IDV* and a positive (negative) coefficient in *CULT* is *UAI*, being *LLP* (*RWA*) is used as a measure of risk, being these relations augmented when *CULT* is interacted with the other variables.

All the variables are defined in Table 3. All bank-level variables are measured at the fiscal year end.



**Table 3** Definition of variables

Variables	Definitions
<b>Dependent</b>	
LLP	Loan Loss Provisions: the amount of provisions at the end of the year divided by market capitalization
RWA	Risk Weighed Assets: the amount of risk weighed assets at the end of the year divided by total assets
<b>Independent</b>	
IDV	Score for individualism from Hofstede (2001)
UAI	Score for uncertainty/avoidance index from Hofstede (2001)
NPL	Begging Balance of Non-Performing Loans divided by market capitalization
TD	Total deposits: Deposits percentage of total deposits over total assets
IFRS	1 if bank-year is applying IFRS; 0 otherwise
EUROPE	1 for European countries and 0 for Asian countries
<b>Controls</b>	
<i>Bank specific</i>	
Size	Log of total assets
LEV	Total debt divided by total assets at the end of the year
AUD	1 if the bank is audited by a Big4; 0 otherwise
XLIST	1 if the bank is listed in more than one stock exchange; 0 otherwise
<i>Macro and country specific</i>	
CR	Index aggregating creditor rights, ranging from 0 to 4, used by Kanagaretnam et al. (2014) and originally from La Porta, Lopez-de-Silenes, Shleifer and Vish (1998) and updated in Djankov, McLiesh, and Shleifer (2007)
IS	Information sharing index equaling 1 if either a public registry or a private bureau operates in the country and 0 otherwise, used by Kanagaretnam et al. (2014) and originally from Djankov et al. (2007)
ENFORCE	Law enforcement index ranging from 0 (lower) to 10 (greater law enforcement), used by Kanagaretnam et al. (2014) and originally from the Economic Freedom of the World: 2010 Annual Report

### 3.2 The Sample

Using Thomson Reuters Database (Datastream™), we extract data on all European and Asian listed banks for which there is Worlscope data. These two large geographies are of main concern because of the interests and development of economies such as China, Russian Federation, and European Union, with a diversity of countries that can be distinguished by different type of societies. The culture dimension measures, IDV and UAI, were obtained on Hofstede's cultural database in the Hofstede Centre website (<http://geert-hofstede.com/>). Other country-level institutional variables are obtained from Kanagaretnam et al. (2014).

We start out with 43 countries, but we exclude Ukraine and Cyprus because these two countries are missing in the Hofstede's cultures measures. For the remaining, we download all the bank-years between 2005 and 2012, which yielded a population of 594 banks and 4159 bank-years observations. 126 banks and

**Table 4** Sample description

Country	IDV	UAI	CR	IS	ENFORCE	Asia (1) or Europe (0)	No. of banks	No. of bank-year obs.
Austria	55	70	3	1	6.7	0	<b>7</b>	<b>55</b>
Belgium	75	94	2	1	5.6	0	<b>3</b>	<b>23</b>
Bangladesh	20	60	2	1	1.15	1	<b>7</b>	<b>27</b>
Bulgaria	30	85	2	1	4.77	0	<b>4</b>	<b>16</b>
China	20	30	2	0	6.73	1	<b>20</b>	<b>107</b>
Croatia	33	80	3	0	5.4	0	<b>6</b>	<b>22</b>
Czech Republic	58	74	3	0	3.54	0	<b>1</b>	<b>8</b>
Denmark	74	23	3	1	6.19	0	<b>19</b>	<b>114</b>
Finland	63	59	1	1	8.06	0	<b>3</b>	<b>19</b>
France	71	86	0	1	6.91	0	<b>22</b>	<b>136</b>
Germany	67	65	3	1	6.62	0	<b>6</b>	<b>47</b>
Greece	35	100	1	1	4.13	0	<b>8</b>	<b>62</b>
Hong Kong	25	29	4	1	7.69	1	<b>7</b>	<b>56</b>
Hungary	80	82	1	1	7.15	0	<b>1</b>	<b>6</b>
India	48	40	2	0	2.59	1	<b>39</b>	<b>268</b>
Ireland	70	35	1	1	4.95	0	<b>2</b>	<b>16</b>
Israel	54	81	3	1	3.46	1	<b>9</b>	<b>59</b>
Italy	76	75	2	1	3.18	0	<b>17</b>	<b>137</b>
Japan	46	92	2	1	6.37	1	<b>81</b>	<b>610</b>
Lithuania	60	65	2	1	7.45	0	<b>7</b>	<b>13</b>
Malaysia	26	36	3	1	4.27	1	<b>10</b>	<b>80</b>
Malta	59	96				0	<b>1</b>	<b>2</b>
Netherlands	80	53	3	1	5.11	0	<b>1</b>	<b>8</b>
Norway	69	50	2	1	7.53	0	<b>14</b>	<b>83</b>
Pakistan	14	70	1	1	3.55	1	<b>20</b>	<b>138</b>
Philippines	32	44	1	1	3.42	1	<b>15</b>	<b>102</b>
Poland	60	93	1	0	4.27	0	<b>15</b>	<b>111</b>
Portugal	27	99	1	1	5.25	0	<b>4</b>	<b>28</b>
Russian Fed.	39	95	2	0	7.53	1	<b>16</b>	<b>90</b>
Serbia	25	92	2	0	3.95	0	<b>5</b>	<b>28</b>
Singapore	20	8	3	0	8.48	1	<b>4</b>	<b>24</b>
Slovakia	52	51	2	1	4.64	0	<b>3</b>	<b>22</b>
Slovenia	27	88	3	1	3.87	0	<b>2</b>	<b>14</b>
Spain	51	86	2	1	5.54	0	<b>8</b>	<b>47</b>
Sweden	71	29	1	1	4.73	0	<b>4</b>	<b>32</b>
Switzerland	68	58	1	1	6.03	0	<b>27</b>	<b>198</b>
Taiwan	17	69	2	1	5.55	1	<b>20</b>	<b>146</b>
Thailand	20	64	2	0	6.11	1	<b>11</b>	<b>81</b>
United Kingdom	89	35	4	1	6	0	<b>12</b>	<b>73</b>
Vietnam	20	30	1	1	6.36	1	<b>7</b>	<b>42</b>
Total							<b>468</b>	<b>3150</b>

The bold values are statistically significant

884 bank-years were dropped due to lack of information on the Database for all the variables we need. We also removed all the observations with studentized residuals higher than |2|. Because of this, Luxembourg was excluded. Our final sample consists of a maximum of 3150 bank-years observations for 468 banks, split between 15 Asian countries with 1836 bank-years observations and 24 European countries with 1134 bank-years observations.

Table 4 displays information with the list of countries included in the sample and a set of institutional variables assigned to them. The second and third columns show the measures for our two dimensions of culture, IDV and UAI. The meaning of each one of these scores is included in Table 3.

## 4 Results

### 4.1 Summary Description of the Sample

Figure 1 draws a scatter placing all the countries included in the sample in a quadrant that enable the comparison between different countries considering the pair of values for IDV and UAI. United Kingdom is positioned as a country with high IDV and low UAI when compared to Serbia, with low IDV and high UAI. A test for the correlation between IDV and UAI (not tabulated) reveals that there is a negating relationship between them (significant at 10 % level), meaning that countries with higher(lower) measures for IDV are likely to present lower (higher) measures for UAI.

Figure 2 shows the number of bank-years observations split into geographies (Asia and Europe) and into accounting regimes (IFRS and local standards). About

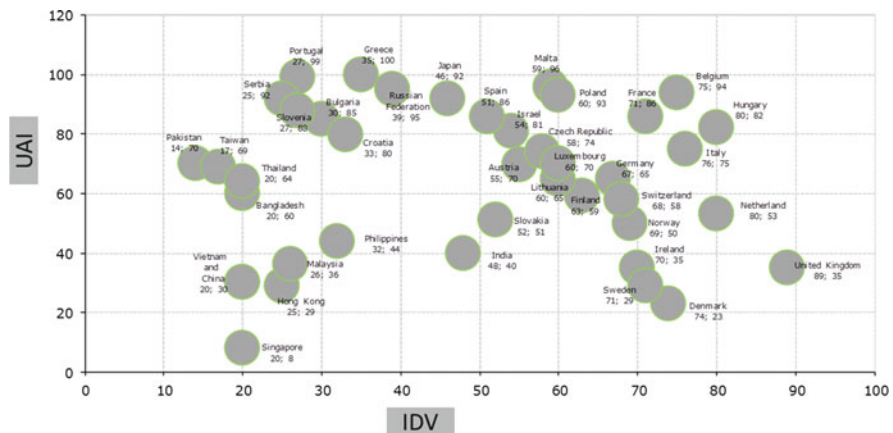
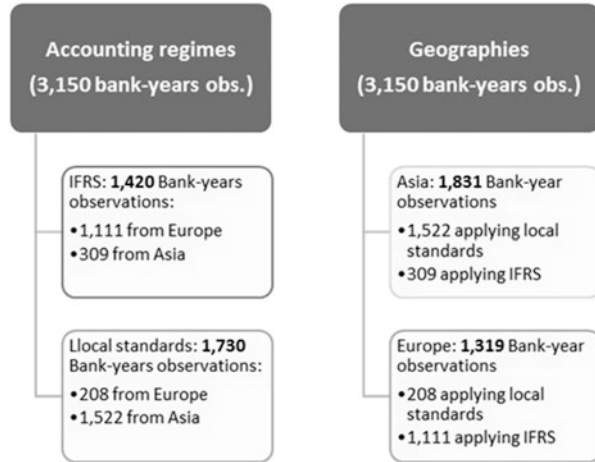


Fig. 1 Individualism (IDV) and uncertainty avoidance (UAI) by country

**Fig. 2** Number of bank-year observations split into geographies and into accounting regimes



94.5 % (n = 1730) Asian bank-years observations use local standards and around 84 % (n = 1111) European bank-years apply IFRS.

Our two dependent values are LLP and RWA. The number of firm-years presented below is for the sample in which LLP is the dependent variable. Not every bank disclosed the level of RWA from data collected from the Datastream. We download several financial statements to hand collect this value, but those banks for which data was not available in DB also didn't include this information on the financial statements. So, when RWA is used as dependent variable our sample drops to 2700 bank-years observations.

### 4.2 Testing the Culture Dimension Between Groups

Tests to the normality of our culture variables (IDV and UAI) and risk-taking variables (LLP and RWA), presented in Table 5, reveals that we cannot reject the null using Kolmogorov-Smirnov test ( $p < 0.000$ ). So, non-parametric tests applied to our hypotheses will be appropriate.

We use Kruskal-Wallis test and Mann-Whitney U test when appropriate for each one of our hypothesis. Table 6 presents the results. In the first column the hypothesis is presented and in the second the test applied to identify the outcome is indicated. Third and fourth columns shows the probability associated with the test used and the decision based on that probability, respectively.

Results showed in each one of the panels reveal that the null was rejected at a significant level of 1 % ( $p = 0.000$ ), except for the differences on RWA across European and Asian Banks for which the rejection is at 10 % level ( $p = 0.062$ ). These results suggests that Banks do not report equal amounts of LLP and do not

**Table 5** Test of normality

	Kolmogorov-Smirnov	
	Statistic	Sig. (p-value)
IDV	0.150	0.000
UAI	0.187	0.000
LLP	0.223	0.000
RWA	0.106	0.000

**Table 6** Distribution of LLP and RWA across different categories

Panel A—H1: *Ceteris paribus*, risk-taking strategies will be the same across different scores of culture dimensions

Risk-taking	Culture	Test for independent samples	Sig. (p-value)	Decision on the null hyp.
LLP	Distribution of LLP is the same across different categories of <b>IDV</b>	Kruskal-Wallis	0.000	Reject
	Distribution of LLP is the same across different categories of <b>UAI</b>	Kruskal-Wallis	0.000	Reject
RWA	Distribution of RWA is the same across different categories of <b>IDV</b>	Kruskal-Wallis	0.000	Reject
	Distribution of RWA is the same across different categories of <b>UAI</b>	Kruskal-Wallis	0.000	Reject

Panel B—H2: *Ceteris paribus*, risk-taking strategies will be the same across different geographies

Risk taking	Culture	Test for independent samples	Sig. (p-value)	Decision
LLP	Distribution of LLP is the same across <b>European</b> and Asian Banks	Mann-Whitney U	0.000	Reject
RWA	Distribution of RWA is the same across <b>European</b> and Asian Banks	Mann-Whitney U	0.062	Reject

Panel C—H3: *Ceteris paribus*, risk-taking strategies will be the same across accounting regimes

Risk taking	Culture	Test for independent samples	Sig. (p-value)	Decision
LLP	Distribution of LLP is the same across Banks applying <b>IFRSs or local standards</b>	Mann-Whitney U	0.000	Reject
RWA	Distribution of RWA is the same across Banks applying <b>IFRSs or local standards</b>	Mann-Whitney U	0.000	Reject

The bold values are statistically significant

disclosing equal levels of RWA (Panel A), and culture, geography and accounting regimes can play a role in the differences arose (Panels B and C).

Panels B and C shows that distribution of LLP is not equal between IFRS versus local standards, and between European and Asian Banks. Crossing with the findings presented in Panel A, we split the file in the following way to test differences in

**Table 7** Distribution of LLP on different culture dimensions by geographies and accounting regimes

Groups		Culture	Test for independent samples	Sig. (p-value)	Decision
Geographies	European Banks	Is the distribution of LLP and RWA the same across different categories of <b>IDV</b> ?	Kruskal-Wallis	0.000	Reject
		Is the distribution of LLP and RWA the same across different categories of <b>UAI</b> ?			
	Asian Banks	Is the distribution of LLP and RWA the same across different categories of <b>IDV</b> ?			
		Is the distribution of LLP and RWA the same across different categories of <b>UAI</b> ?			
Accounting regimes	Banks applying IFRSs	Is the distribution of LLP and RWA the same across different categories of <b>IDV</b> ?			
		Is the distribution of LLP and RWA the same across different categories of <b>UAI</b> ?			
	Banks applying local standards	Is the distribution of LLP and RWA the same across different categories of <b>IDV</b> ?			
		Is the distribution of LLP and RWA the same across different categories of <b>UAI</b> ?			

The bold values are statistically significant

culture: (1) separate European Banks from Asian Banks and apply the non-parametric test using cultural variables for each one of those sub-samples; and (2) the same, but separating Banks applying IFRS from Banks applying local standards.

All the prior findings are consistent. This methodology is justified because even in the same geography, countries are placed in different points when comparing IDV and UAI between them, as showed in Fig. 1. Because scores are different, we want to examine whether or not risk-taking strategies are the same across the same type of behavior assigned to dimension cultures within geography or accounting regime. Findings are presented in Table 7 Outcomes confirms prior findings, since the null is always rejected, meaning that the distribution of LLP and RWA is not the

same across different categories (higher or lower) of IDV and different categories (higher or lower) of UAI measures of cultural dimension.

### 4.3 *The Effect of Culture on Loan Losses Provisions and Risk Weighed Assets*

Descriptive statistics (panel A) and correlations (panel B) for the sample used to test the effect of culture on LLP and RWA is presented in Table 8. In panel A the mean (median) 0.0085 (0.048), 9.529 (0.970) and 0.064 (0.028) respectively for loan loss provisions to total loans, non-performing loans to total loans and risk weighed assets. The variables of culture, IDV and UAI have means (standard deviations) of 47 (20.107) and 66 (24.344), respectively. Pearson (Spearman) correlations for continuous (categorical/binary) independent variables and the dependent are showed in panel B. The proxies for risk-taken used as dependent (LLP and RWA) are correlated, as expected. However, the coefficient is low, and we do not expect problem of multicollinearity. Some of other control variables are also correlated and thus our analysis will have in attention the VIF and tolerance to detect if this problem exists.

Panel A of Table 9 shows the results when LLP is used as dependent variable, testing the effect of culture on loans loss provisions. Columns separate de findings when CULT = IDV and when CULT = UAI. The variable CULT representing IDV culture dimension is significantly negative as predicted in Hypothesis 4a ( $\beta = -0.025$ ;  $p = 0.000$ ). The variable CULT representing UAI culture dimension is positive as expected although not significant ( $\beta = 0.003$ ;  $p = 0.180$ ). The variables testing the probability of reporting LLP given non-performing loans and application of IFRS are positive as predicted in Hypotheses 4a using either IDV [NPL ( $\beta = 10.521$ ;  $p = 0.000$ ) and IFRS ( $\beta = 1.551$ ;  $p = 0.000$ )] or UAI [(NPL:  $\beta = 12.066$ ;  $p = 0.000$ ; IFRS:  $\beta = 1.145$ ;  $p = 0.000$ )] as culture dimensions measures.

Finally, the interaction between CULT variables and the other two variables (CULT\*NPL\*IFRS) is significantly negative when IDV is used ( $\beta = -0.124$ ;  $p = 0.000$ ) and positive when is used UAI ( $\beta = 0.136$ ;  $p = 0.000$ ). These findings shows that the positive effect on the probability of banks reporting higher LLP when are applying IFRS and have higher NPL is reduced (increased) when banks have lower (higher) scores of IDV (UAI). The Nagelkerke R Square is 40.7 % for CULT = IDV and 37.3 % for CULT = UAI 37.3 %.

These findings suggest evidence in supporting our Hypothesis 4a, indicating that banks in countries with low scores for IDV and high for UAI take low risky strategies and report higher level of LLP adopting a more conservative behavior.

Panel B of Table 9 shows the results when RWA is used as dependent variable, testing the effect of culture on Risk Weighed Assets. The findings are mixed. The variable CULT is negative when either IDV or UAI are used as culture dimensions,

**Table 8** Descriptive statistics and correlations

Panel A: Descriptive statistics									
	Mean	Median	Std. deviation	Minimum	Maximum				
<i>Continuous variables</i>									
LLP	0.0085	0.0048	0.01619	-0.0481	0.3971				
NPL	0.0640	0.0280	0.9180	0.0000	47.778				
TD	0.6797	0.7283	0.2090	0.0300	1.010				
RET	0.0088	0.0080	0.0174	-0.3263	0.1526				
SOLV	0.8358	0.9281	0.2475	0.0000	1.140				
RWA	9.529	8.970	12.608	-294.91	285.32				
<i>Categorical or binary variables</i>									
IDV	47	46	20.107	14	89				
UAI	66	70	24.344	8	10				
IFRS	0.460								
local	0.540								
Asia	0.581								
Europe	0.419								
CR	1.893	2.000	0.8378	0.000	4.0				
IS	0.765	1.000	0.4239	0.000	1.0				
EN	5.381	6.030	1.583	1.15	8.48				



Panel B: Correlations

Dependent and independent continuous variables				Dependent and independent Categorical or binary variables											
	LLP	NPL	TD	SIZE	RET	SOLV	RWA	LLP	RWA	IDV	UAI	IFRS	EUROPE	CR	IS
<i>Pearson</i>															
LLP															
NPL	0.022														
TD	-0.700**	-0.190													
SIZE	-0.201**	-0.015	-0.271**												
RET	-0.194**	-0.210	-0.015	-0.042*											
SOLV	-0.025	0.008	-0.056**	0.142**	-0.074**										
RWA	0.194**	0.068**	0.015	-0.290**	0.096**	-0.040									
<i>Spearman</i>															
IDV															
UAI															
IFRS															
Europe															
CR															
IS															
ENF															

Please, see Table 3 for definition of variables

\*Correlation is significant at the 0.05 level (two-tailed)

\*\*Correlation is significant at the 0.01 level (two-tailed)

**Table 9** Results of binary logit regression assessing the effect of culture

	Predict sign	CULT = IDV		CULT = UAI	
		$\beta$	Sig.	$\beta$	Sig.
<i>Panel A: The effect of culture on loan losses provisions</i>					
Constant		1.678	0.120	0.466	0.482
CULT	-/+	-0.025	0.000	0.003	0.180
NPL	+	10.521	0.000	12.066	0.000
IFRS	+	1.551	0.000	1.145	0.000
CULT*NPL*IFRS	-/+	-0.124	0.000	0.136	0.060
Controls					
B <sub>level</sub>		Yes		Yes	
C <sub>level</sub>		Yes		Yes	
Year		Yes		Yes	
Bank-year observations					
Included in the analysis		2562		2562	
Missing cases		588		588	
Total selected		3150		3150	
Nagelkerke R Square		40.7		37.3	
<i>Panel B: The effect of culture on risk weighed assets</i>					
Constant		12.956	0.000	11.700	0.482
CULT	-/+	-0.023	0.000	-0.011	0.000
TD	+	-1.762	0.000	-1.354	0.000
IFRS	+	0.031	0.911	-1.105	0.640
CULT*TD*IFRS	-/+	0.022	0.006	0.039	0.060
Controls					
B <sub>level</sub>		Yes		Yes	
C <sub>level</sub>		Yes		Yes	
Year		Yes		Yes	
Bank-year observations					
Included in the analysis		2696		2696	
Missing cases		4		4	
Total selected		2700		2700	
Nagelkerke R Square		40.4		40.4	

Please, see Table 3 for definition of variables

which is consistent with our predictions just for UAI. Also, the interaction between CULT variables and the other two variables (CULT\*TD\*IFRS) is significantly positive when IDV is used ( $\beta = 0.022$ ;  $p = 0.000$ ) and also positive when is used UAI ( $\beta = 0.039$ ;  $p = 0.000$ ). However, these findings are not as surprisingly as they should be. It has been observed that measures of RWA vary considerably across banks subject to the advanced internal rating-based treatment of the Basel rules (Araten 2013) and the range is risk weighting between banks is “enormous”, lowering the confidence on RWA and doubting about the comparing average risk weightings at the group level between banks, namely, in Europe (Samuels 2012). The fourth

report of EBA (2014) says that overall, the documentation provided by banks to develop their report although succinct, “highlighted the banks’ use of different definitions for similar concepts. Sometimes they reflect country-specific features, but overall the definitions are bank specific” (EBA 2014).

The variable testing the probability of disclosing RWA given the percentage of total deposits on assets is negative and significant as predicted in both columns ( $\beta = -1.767$  when IDV is used;  $\beta = -1.354$  when UAI is used;  $p = 0.000$  for both) which is consistent with our expectations because the total deposits can reduce the weighed of risks on this type of assets giving a kind of financial support to the bank.

The variable testing the application of IFRSs is not significant. One plausible reason for this situation is because prior studies indicates that banks try to report the most adequate level of RWA to be in compliance with minimum requirements capital, contributing to the dependence of RWA on risk weighs of different type of assets and not standards used.

We rerun the equation again splitting the sample in two: Europe and Asian banks. Similar findings (not tabulated) were found. Some prior studies refer that the distortion on the computation of RWA is questioned (Le Leslé and Avramova 2012; Das and Sy 2012). A notice in Euroweek (2013) says that banks measures producing lower RWAs would appear to have a healthier statement of financial position, but investors and regulators have raised apprehensions that the measure can differ wildly depending on the method banks use to calculate it. We thus consider that our Hypothesis 4b is not supported and culture cannot be accepted as determinant for the probability of disclose RWA.

## 5 Conclusion

The main contribution of this research is to identify whether national culture accounting regimes and geographies are drivers of Loans loss provisions and risk weighed assets, two proxies for risk-taken in the industry banking. The study addresses this contribution using a sample of European and Asian Banks over the period 2006–2013.

Our empirical findings suggest and confirm prior results found in the unique research using national culture to justify conservatism and risk-taken. Our study notwithstanding extends prior research suggesting that in addition to bank-specific or country-specific typical determinants on banks’ risk-taken, we confirm the influence of IDV and UA in loan loss provisions, and we add the accounting regime (IFRS versus local standards). Geographies (Asia versus Europe) reveal to be a substitute for accounting regimes. However, the findings are confused and mixed when Risk-weighted assets is used as proxy of risk-taken instead of loan loss provisions. This finding stays in line with reports done by regulators in the bank-industry documenting that diversity exists in the computation of this ratio and culture, accounting regimes or geographies do not have a stable influence on its development.

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