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NATIONAL CULTURE AND BANK RISK-TAKING: CROSS-COUNTRY STUDY USING GLOBE FRAMEWORK

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I hereby declare that I have compiled the paper independently

and all works, important standpoints and data by other authors

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The document length is 7005 words from the introduction to the end of conclusion.

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ABSTRACT

Since the late 1990's, national culture became a viable research topic in economics and finance and was shown to be associated with economic growth and multiple phenomena in corporate finance. Previous studies in corporate finance that link national culture and bank risk-taking find that there is a positive association between the national culture dimension of individualism-collectivism and bank risk. However, the studies that predominately come from behavioral finance tradition report a negative association between individualism and individual-level risk-taking behavior. Using a different proxy of the cultural dimension of individualism-collectivism but following the methodology of previous studies in corporate finance as closely as possible, I test the association between national culture and bank risk on the sample of 355 commercial listed banks over 2001-2006 period. My results are in line with the results found in behavioral studies.

Keywords: National culture, collectivism, GLOBE, bank risk-taking

INTRODUCTION

Research on the effects of national culture in economics and finance has seen a large increase not just in interest but in importance. The reason for this is not self-explanatory but it can be seen as a logical alternative to the traditional economic theories. The role of national culture and its large increased interest especially in corporate finance and banking literature is partly because of what happened during the financial crisis of 2007-2009. While, traditionally the impact of the financial crisis had on the global economy and different banking regulations and risk–taking behavior would be explained by traditional and conventional methods, researchers started searching for additional and supporting evidence from other streams of studies. It was found out that not that many studies had been done on what kind of impact national culture and its dimensions have.

This paper is inspired by the literature that focuses and studies the role that national culture and what its dimensions have on corporate and bank risk–taking behavior. The notable and most recent streams of literature in this paper that research the effects of national culture and corporate risk-taking behavior and bank risk-taking behavior come from Li et. al (2013); Kanagaretnam et. al (2014) and Ashraf et. al (2016). The literature uses a similar sample of banks, uses national culture dimensions from Hofstede's cultural framework Hofstede (1980) and apply similar quantitative methodology and they arrive in a similar conclusion that banks in countries that score high on the individualism index and low on the uncertainty avoidance index display higher levels of risk-taking when risk is measured using an accounting based risk measure. In other words, there is a positive association between the national culture dimension of individualism and bank risk-taking behavior.

Other streams of literature from behavioral finance studies such as Hsee and Weber (1999) focused on risk-taking behavior of individuals and found that the association between individualism and risk-taking behavior is negative and the results to be in conjunction with their cushion hypothesis instead. The author's personal research on determining the link between the national culture dimension of individualism and bank risk-taking behavior, found that the association between individualism and bank risk-taking behavior to be negative. Because of this contradiction, I review

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and examine previous theoretical literature that focuses on this problem and build upon the found results.

The aim of this paper is to focus on a completely different sample of banks and to use a comparable proxy for culture, GLOBE, and its national culture dimensions of collectivism, namely in-group collectivism and institutional collectivism to test whether the association between GLOBE collectivism and bank risk-taking behavior is positive. GLOBE and Hofstede measure the national culture dimension of individualism-collectivism in a different way, but it is comparable to that of Hofstede's. It can be said that GLOBE measures individualism-collectivism dimension of national culture from different ends.

As such, I hypothesize that the link between in-group collectivism and institutional collectivism to be positive with the sample of commercial listed banks. I test the hypothesis on a global sample of 355 commercial listed banks.

The calculations are done using a quantitative approach, namely ordinary least square regressions with three different measures of risk, accounting–based, market–based and standard deviation of ROA to calculate and interpret the data. To control for the regressions, this paper largely follows the methodology of Kanagaretnam et. al (2014) and Ashraf et. al (2016) as accurately as possible in deciding the bank–level, and country–level control variables. In total 12 models were made.

The empirical analysis supports my hypothesis of GLOBE collectivism having a positive association with bank risk–taking but only for some models. In–group collectivism for practices and institutional collectivism for practices show a statistically significant positive sign in the few models that measure risk with an accounting–based or market–based measure of risk. While the other models show no statistical significance for the variables of collectivism, I cannot rule the association to be positive. My results are contradictory to those of Li et. al (2013); Kanagaretnam et. al (2014); and Ashraf et. al (2016) and are more in line with the results from behavioral studies, suggesting further specific research needs to be done.

This paper addresses some gaps and builds upon the previous literature done one the effects of national culture and bank risk–taking behavior by differentiating the sample of banks and using a comparable framework for culture. With this paper I hope to contribute to the growing number of literatures regarding national culture and its effect in corporate decision making.

The rest of the paper is organized as follows. Sections 1 and 2 introduces national culture and its different frameworks and dimensions and the previous literature linking national culture to corporate and bank risk–taking behavior and shows the hypothesis development. Section 3 shows the methodology, data and variables. Section 4 reports the empirical results and concludes the main findings.

1. LITERATURE REVIEW

1.1. National culture

National culture is usually seen as the shared values, assumptions, beliefs, expectations and set of norms held by individuals within the nation. There is a clear and rising trend in all fields of economic studies, especially in corporate and behavioral finance studies in using national culture as a variable or as a part of an explanation to either support existing traditional economic theories or to study new. To understand the certain impact that dimensions of national culture have on an economic scale, and in this study's case, how certain dimensions of national culture from a different cultural framework affects bank risk-taking in commercial listed banks, we must understand the background, ideas and scientific research done on the subject.

In the literatures of national culture affecting decision making in business, research done in corporate and bank risk-taking behavior Li et. al (2013); Kanagaretnam et. al (2014); Ashraf et. al (2016) or research done on the effect of power distance (PDI) and individualism (IND) on service quality expectations in banking, Dash et. al (2009), have found support and results for certain dimensions of national culture from Hofstede's cultural framework, those mainly of individualism and uncertainty avoidance (UAI) to stand out the most.

The author's previous research on a similar topic regarding national culture studied the impact of individualism in bank risk-taking behavior concluded that while the effect of individualism in bank risk-taking behavior is negative which is confronting against the findings of Kanagaretnam et. al (2014); Ashraf et. al (2016) and is more in line with behavioral finance studies done by Hsee and Weber (1999), its impact is still meaningful and while the research shows that the effects are direct, it implies that more research on the topic must be done. It is important to note that the author's previous research examined the proposed hypothesis of individualism negatively affecting bank risk-taking behavior which is the opposite of the strand of previous literature, individualism affecting bank risk-taking behavior positively, by using a completely different sample of banks

and less control variables that are present in Li et. al (2013); Kanagaretnam et. al (2014); Ashraf et. al (2016) and in this paper.

1.1.1. Hofstede's cultural dimensions

For many years now the scientific community has largely accepted the extensive research done by Professor Geert Hofstede on defining national culture and its dimensions. The Hofstede cultural framework or Hofstede model is one of the most comprehensive studies of how values in the workplace are influenced by culture. Hofstede Insight (2019). Hofstede defines culture in one of his publications as the collective programming of the mind that distinguishes the members of one group or category of people from others. Hofstede (2011).

In the late 1960's Geert Hofstede started working at IBM and at the same time began analyzing the data from a companywide personnel survey exercise. The initial cross-cultural data collected around 1970 by the IBM corporation among its employees in more than 50 countries worldwide represented probably the largest matched-sample cross-national database available anywhere at that time. Hofstede (2011). Hofstede (2011) writes: "The four basic problem areas defined by Inkeles and Levinson (1969) and empirically supported in the IBM data represent dimensions of national cultures. A dimension is an aspect of a culture that can be measured relative to other cultures." That period of pioneering discovery yielded the book Culture's Consequences. Hofstede (2011). With all the research done Hofstede finally finished the first version of the cultural dimension model, or the Hofstede Cultural Framework which at the time consisted of four different dimensions of national culture. Individualism vs. collectivism, uncertainty avoidance index, power distance index and masculinity vs. femininity. The model has gone through several iterations and today it consists of six dimensions. In the 2000s, research by Bulgarian scholar Michael Minkov using data from the World Values Survey (Minkov, 2007) allowed a new calculation of the fifth, and the addition of a sixth dimension Hofstede, Hofstede & Minkov (2010); Hofstede (2011). The fifth and sixth dimensions are Long Term versus Short Term Orientation and Indulgence versus restraint.

In studies of risk-taking certain dimensions of national culture stand out the most: Individualism vs. collectivism and uncertainty avoidance. Hofstede (2011), defines individualism as: "The degree to which people in a society are integrated into groups. On the individualist side we find cultures in which the ties between individuals are loose: everyone is expected to look after

him/herself and his/her immediate family." And its counterpart, collectivism as: "A preference for a tightly-knit framework in society in which individuals can expect their relatives or members of a particular ingroup to look after them in exchange for unquestioning loyalty. A society's position on this dimension is reflected in whether people's self-image is defined in terms of "I" or "we." (Hofstede Insight). Hofstede (2011), addresses that the issue with these dimensions are extremely fundamental regarding all societies in the world.

A second dimension of culture that often plays a role in risk-taking literature is uncertainty avoidance. Hofstede (2011). writes: "Uncertainty Avoidance is not the same as risk avoidance; it deals with a society's tolerance for ambiguity. It indicates to what extent a culture programs its members to feel either uncomfortable or comfortable in unstructured situations. Unstructured situations are novel, unknown, surprising, and different from usual. Uncertainty avoiding cultures try to minimize the possibility of such situations by strict behavioral codes, laws and rules, disapproval of deviant opinions, and a belief in absolute Truth; 'there can only be one Truth and we have it'.

1.1.2. GLOBE

One of the main problems this paper focuses on is can we get similar results as Kanagaretnam et. al (2014); Ashraf et. al (2016) by applying a different proxy for culture, namely GLOBE. Project global leadership and organizational behavior effectiveness or GLOBE is a multiyear, multiphase investigation of leadership effectiveness across cultures. Project GLOBE began in 1991 by the principal investigator Robert J. House when questions emerged regarding the universality (i.e., global applicability) of charismatic leadership. For the seminal GLOBE book, a team of over 170 cross-cultural researchers House et al., (2004) were involved in the collection and analysis of data from approximately 17,000 managers from 951 organizations in 62 societies throughout the world. Through this information, Project GLOBE describes how each society scores on nine dimensions of culture and six global factors of leadership behavior. De Luque et. al (2014). At first House focused on leadership, but soon the study branched out into other aspects of national and organizational cultures. Hofstede (2011). The GLOBE cultural dimensions are built on top previous cultural research done by Hofstede

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Researchers in project GLOBE defined culture as "shared motives, values, beliefs, identities, and interpretations or meanings of significant events that result from common experiences of members of collectives and are transmitted across age generations." House et al. (2001). This definition targeted cultural values (desired behavior) and practices (actual behavior) and this definition allows culture to be examined at both the organizational and societal levels of analysis. De Luque et. al (2014). This is probably one of the reasons why the number of cultural dimensions were extended to nine from the original five or six. The GLOBE researchers had a base foundation from Hofstede's cultural framework. For the culture dimensions, questions items were prompted by the four dimensions of culture by Hofstede (1980) (power distance, uncertainty avoidance, masculinity–femininity, and individualism–collectivism) and three additional dimensions: performance, humane, and future orientation. De Luque et. al (2014). Pilot studies were conducted to identify factor structures for the culture scales (at the societal and organizational levels) and for the leadership scales House et. al (2004) and from the results from these studies nine dimensions of culture were developed. Also influenced by seminal research on collectivism Triandis (1990), GLOBE discovered two dimensions of this construct: in-group collectivism and institutional collectivism. De Luque et. al (2014). Uncertainty avoidance is also one of the nine dimensions in the GLOBE framework.

House et. al (2004) defines institutional collectivism as the extent that organizational and societal institutional practices foster and reward the collective distribution of resources and collective action and in-group collectivism as the extent that individuals express pride, loyalty, and cohesiveness with their organizations or with their families and uncertainty avoidance as the extent that organizational or societal members want to avoid uncertainty in their environment by relying on established social norms, rituals, and bureaucratic practices.

It is important to note that while GLOBE does not have values for individualism in the same manner as it is in the Hofstede model, in-group collectivism and institutional collectivism most accurately represent Hofstede's dimensions of individualism versus collectivism. We can see these dimensions from GLOBE as opposite from Hofstede's dimension of individualism. Countries that are listed high on the individualism scale are most likely to score low on the collectivism scale, and so while GLOBE does not directly measure individualism, we can look at the dimensions that represents collectivism from GLOBE.

2. NATIONAL CULTURE AND RISK-TAKING

In this part of the paper I will be focusing on the contradictions between corporate finance and behavioral decision making literature and research on similar topics i.e. my previous research that studies the link between individualism as a determinant for bank risk-taking behavior and other studies that have linked national culture and bank risk-taking behavior on both corporate and on individual levels.

2.1. Corporate finance

Notable and recent studies on the subject of national culture affecting bank risk-taking and corporate risk-taking behavior were done by Li et. al (2013); Kanagaretnam et. al (2014) and Ashraf et. al (2016).

Li et. al (2013) investigates the role of national culture in corporate risk-taking and argues that culture influences corporate risk-taking both through its effect on managerial decision-making and through its effect on a country's formal institutions. The sample in the study is a multi-level, with firms from 35 countries at a country-level and at a firm level over 7000 firms. The cultural dimensions are from Hofstede (1980, 2001) and Schwartz (1994, 2004).

Li et. al (2013) finds that that the influence of culture is conditioned on the extent of managerial discretion as measured by earnings discretion and firm size. The study recognizes three significant dimensions of culture: individualism, uncertainty avoidance and harmony, and demonstrates how these cultural values matter in risk-taking behavior when controlling for formal institutions and economic development across countries. Li et. al (2013). Li et. al (2013) hypothesize that there is a positive relation between national individualism and corporate risk-taking, a negative relation between national uncertainty avoidance and corporate risk-taking, and a negative relation between national harmony and corporate risk-taking. "Due to the influences of both managerial autonomy and self-enhancement, we expect that individualism is positively related to corporate risk-taking."

Li et. al (2013). Li et. al (2013) concludes that individualism is positively and significantly associated with, whereas uncertainty avoidance and harmony are negatively and significantly associated with, corporate risk-taking. While the latter (uncertainty avoidance and harmony) are not relevant in my study, it is in general important to point out that the effects of all have been recognized and most notably the direct and indirect effects of individualism. The study also finds two ways how culture affects corporate risk-taking: First, directly on risky corporate decision-making; and second, indirectly through formal institutional development, which in turn influences risky corporate decision-making. Li et. al (2013).

In the case of bank risk-taking behavior Ashraf et. al (2016), using a multinational sample of private banks from 75 different countries and the period being pre-crisis, 2001-2007 and using both Hofstede's dimensions of national culture and some from House et. al (2004), the study focuses on how the effect that national culture influences bank risk-taking behavior directly by conditioning the decision-making of human participants. Ashraf et. al (2016).

Although the main focus of the study was the direct effects of national culture on bank risk-taking, Ashraf et. al (2016) found that previous literature to some extent has also explored indirect effects of national culture on corporate and bank risk-taking. 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. Ashraf et. al (2016). Because of this, Ashraf et al. (2016) control the models for indirect effects of national culture on bank risk-taking by employing regulatory, legal institutional and economic and financial development variables. Ashraf et. al (2016) 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. The study also accounts and confirms similar results when using alternate cultural dimensions from House et. al (2004) and using a different proxy for bank risk-taking. The results from Ashraf. et al (2016) are consistent with the findings of the studies previously done on national culture and corporate risk-taking. Li et. al (2013); Mihet (2013); Kanagaretnam et. al (2014).

Another similar research from corporate finance done by Kanagaretnam et. al (2014) is on the influence of national culture on accounting conservatism and general risk-taking behavior in the banking industry. In the study Kanagaretnam et. al (2014) hypothesize that cultural factors

influence the level of accounting conservatism and risk-taking in banks and in particular Kanagaretnam et. al (2014) predict that banks high in individualism societies take more risk and report less conservative earnings whereas banks in high uncertainty avoidance societies take less risk and report more conservative earnings. The main question the study addresses is how the two important dimensions of national culture influence bank risk-taking behavior and bank accounting conservatism. The empirical results indicate that banks in low IND and high UA societies report earnings more conservatively than banks in high IND and low UA societies. Additionally, Kanagaretnam et. al (2014). find that banks in low IND and high UA cultures exhibit lower levels of risk-taking as reflected in three accounting-based risk variables: volatility of net interest margin, volatility of earnings, and z-score. The study also finds that differences in national culture are related to differences in bank financial reporting properties, risk-taking and financial distress.

All of three studies by Li et. al (2013); Kanagaretnam et. al (2014); Ashraf et. al (2016) recognize the direct and indirect effects that national culture has on corporate risk-taking and on bank risk-taking. All three studies also recognize important dimensions national culture, individualism and uncertainty avoidance also having a significant affect in risk-taking behavior. In corporate literature a positive link was found between individualism and corporate risk-taking and bank risk-taking. Important to note is that Kanagaretnam et. al (2013); Ashraf et. al (2016) also received similar results when using similar measures of risk.

2.2. Individual level risk-taking

A study done by Hsee and Weber (1999) done on differences in choice-inferred risk preferences between American and Chinese students explored what type of systematic cross-national differences are there and at the time there were no previous empirical studies that had examined cross-national predictions of risk preference. Hsee and Weber (1999). The study answers whether people in different nations differ in risk preferences.

The first study in the research yielded two noteworthy findings: (a) the Chinese were significantly more risk-seeking than the Americans, and (b) both the Americans and the Chinese predicted the opposite. Hsee and Weber (1999). Hsee and Weber (1999) used two main hypotheses derived from earlier empirical studies, the risk-as-value and risk-as-feelings hypotheses. Hsee and Weber (1997); Hsee and Weber (1999). The results did not fully support either of the two proposed

hypotheses. The main finding of the study was that the Chinese students exhibited a greater risk-seeking tendency than the Americans. Hsee and Weber (1999). One of the explanations for the results are derived from cultural differences, as America is more individualistic and China more collectivistic and that explanation is more in line with Hsee and Weber (1999)'s 'cushion hypothesis.' According to this theory people in a collectivist culture tend to treat ingroup members (those within their social network) and outgroup members (those outside their social network) more differently than people in an individualistic culture. Hsee and Weber (1999).

2.3 Hypothesis development

The empirical studies concerning the link between national culture and risk-taking behavior in both corporate finance and behavioral study literature by Hsee and Weber (1999); Li et. Al (2013); Kanagaretnam et. al (2014); Ashraf et. al (2016) that this study largely builds upon, generally recognized two notable dimensions of national culture, individualism and uncertainty avoidance to have direct and significant effect on risk-taking behavior. Studies from corporate finance Li et. al (2013); found that individualism has a positive and significant association with corporate risk-taking while Kanagaretnam et. al (2014); Ashraf et. al (2016) also find a positive link between individualism and bank risk-taking behavior. The author's previous research regarding a similar problem where the study focused on determining individualism as a determinant for bank risk-taking behavior, results were more in line with Hsee and Weber (1999)'s cushion theory.

The coherence with these studies is the use of Hofstede's cultural dimensions and in case of papers that study bank risk-taking, the use of private banks. Different banks have a bit different business models where bank risk is affected by different factors. Therefore, to ensure comparability I am using a well-defined sample of banks: A global sample of commercially listed banks and a comparable proxy for culture, GLOBE, to test do I get a positive link between collectivism and bank risk-taking when using national culture dimensions of institutional collectivism and in-group collectivism. As such, I hypothesize that the link between institutional collectivism and in-group collectivism to be positive with listed banks.

H1: There is a positive association between GLOBE collectivism and bank risk-taking in a sample of commercial listed banks.

3. METHODOLOGY

3.1 Data

The first step was to decide on the sample and what type of data will be used. This paper follows similar methodology to those of Kanagaretnam et. al (2014) and Ashraf et. al (2016) and my previous research Borg (2018) for comparability sake. I believe the methodological choices that are present in the previous literature are sufficient enough to interpret and calculate the data in this paper. Contrary to what the previous literature uses as a sample, private banks, this paper focuses on a sample of global commercial listed banks over 2001-2006 retrieved from Eikon.

The initial sample of banks was originally 417 but after controlling for different bank-level and country level controls of which some data is not available or incomplete, the sample size narrowed down to 355. This paper follows previous literature when deciding on different control variables. Some of them are the same but a few more are added for more robust results. This paper uses a quantitative analysis method, namely ordinary least squares regression to calculate and interpret the data. I end up with 12 regression models in total defined by the three measures of risk but with different proxies for culture: Institutional collectivism for values and practices and in-group collectivism for values and practices, four in total.

3.2 Bank-risk measures

This paper uses three different measures of bank risk. Typically, i.e. Kanagaretnam et. al (2013) and Ashraf et. al (2016) the measures of risk have been indicated by either accounting or market - based risk measures. In this paper the risk measures are indicated as accounting-based z-score (Log_Zs), market-based z-score (Log_Mkt) and standard deviation of ROA (std_ROA).

3.3 Accounting–based z–score

Following the methodology of Kanagaretnam et. al (2013) and Ashraf et. al (2016) to calculate accounting based z-score (Log_Zs), it is calculated as z-score = (ROA + CAR)/std(ROA), where ROA is equal to return on assets before loan loss provisions and taxes for each bank averaged over a certain sample period, CAR is equal to equity to total assets ratio averaged over a certain sample period and(stdROA) is equal to standard deviation of annual return on assets before loan loss provisions and taxes calculated over a certain sample period. Ashraf et. al (2016). Following Ashraf et. al (2016) as z-score is a highly skewed risk measure, therefore the log of z–score is multiplied with –1 meaning that higher values of z–score represents higher bank risk-taking.

3.4 Market–based z–score

Market based z-score in this paper is calculated following Crouzille et. al (2004), Lepetit et. al (2008), and Prabha and Whilborg (2014).

Formula 1. Reversed natural log of market-based z-score

$$Log\_Mkt = \ln\left(\sum_1^n \left(\frac{Avrt \times it + 1}{\sigma Ret \times it} \times \frac{1}{n}\right)\right) \times (-1) \tag{1}$$

where *Avrt* – corresponds to an average of daily stock returns for stock *i, i* – stock, *σRet* – the standard deviation of daily stock returns for a stock during the given year, *t* – the given year, *n* – is the length of a sample period. As it is with this z-score it is highly skewed, so a natural logarithm is applied. To ensure straightforward interpretation I multiply the log-transformed z-score values by –1. This ensures that higher values of z-score indicate higher levels of bank stability.

3.5 Additional measurement of risk

The third measure of risk, std_ROA, following Ashraf et. al (2016), is calculated as the standard deviation of annual values of return on assets before loan loss provisions and taxes over the period 2001–2006. ROA is return on assets. A log transformation was applied to this variable as std_ROA is highly skewed.

3.6 Measures of culture

The significant measures of cultures that were recognized in Hsee and Weber (1999); Li et. al (2013); Kanagaretnam et. al (2013) and Ashraf et. al (2016) was a dimension of individualism-collectivism retrieved from Hofstede's cultural framework. This paper uses a comparable proxy for national culture, GLOBE collectivism. GLOBE measures the cultural dimension of individualism-collectivism in a different way; however, the results are comparable to Hofsdede's. For instance, the correlation between Hofstede's measure of individualism and GLOBE measure of in-group collectivism is negative 0.73 (negative correlation simply implies that Hofstede and GLOBE measures individualism-collectivism dimension of national culture from different ends). In this paper I use all available measures of GLOBE collectivism, in-group collectivism (Coll_IG_V, Coll_IG_P) and Institutional collectivism (Coll_IS_V, Coll_IS_P) as values that represent cultural values (desired behavior, V) and practices (actual behavior, P).

3.7 Regression specification

Table 1. Descriptive statistics

Variable	N	Mean	Median	St.Dev.	Min	Max
Log_Mkt	355	0,66	0,62	0,29	0,18	1,76
Log_ZS	355	-3,27	-3,29	0,78	-5,91	-0,95
std_ROA	355	0,00	0,00	0,00	0,00	0,03
Coll_IG_P	355	4,86	4,63	0,69	3,53	6,36
Coll_IG_V	355	5,59	5,67	0,29	4,94	6,25
Coll_IS_P	355	4,44	4,38	0,48	3,25	5,22
Coll_IS_V	355	4,50	4,19	0,49	3,89	5,62
Bank_C	355	0,50	0,43	0,21	0,27	1,00
BA_GR	355	0,08	0,07	0,11	-0,08	0,55
LLP_TA	355	0,52	0,38	0,45	0,00	2,69
Log_TA	355	16,00	15,80	1,84	11,10	20,90
Cap_str	355	3,47	3,33	1,10	1,00	6,33
DEP_Ins	355	0,77	1,00	0,39	0,00	1,00
Restr	355	0,58	0,60	0,16	0,10	0,90
Cred_r	355	0,44	0,50	0,20	0,00	1,00
IS	355	0,97	1,00	0,17	0,00	1,00
LEG_OR	355	0,42	0,00	0,49	0,00	1,00
LOG_GDP	355	10,20	10,50	0,77	8,00	11,10
Rule_Law	355	0,76	0,83	0,18	0,18	1,00

Each model in section 4, tables 2–4 represents one regression that includes a measure of risk as the dependent variable, bank-level control variables and country-level control variables. Following the methodology of previous studies, notable bank control-variables are ones that represent bank growth, BA_GR, bank concentration, BA_C, loan loss provisions, LLP_TA and Log_TA which is a natural log of a bank's total assets that measures firm or bank size. Bank industry-level control variables measuring capital stringency, Cap_str, creditor rights, Cred_r, deposit insurance, Dep_Ins, information sharing, IS and restrictions on banking activies, Restr, are retrieved from Barth et. al (2013)'s work: Banking Regulations and Supervision. Rule_Law is from Kaufmann et. al (2010)'s work on worldwide governance indicators and legal origin, Leg_OR is a dummy variable measuring legal origin, retrieved from Djankov et. al (2007). Appendix A. Provides a detailed description of each control variable. In total 12 regressions were calculated, and the results are formulated in tables 2–4 of the text. Note that LLP_TA is multiplied by 100 in the data for more straightforward interpretation.

4. EMPIRICAL ANALYSIS AND RESULTS

I regress and analyze what effects the dimensions of national culture from the GLOBE framework, in-group collectivism and institutional collectivism has on bank risk-taking behavior when using a sample of commercial listed banks using three different measures of risk, accounting–based z–score (Models 1–4), market–based z–score (Models 5–8) and standard deviation of ROA (Models 9–12) using ordinary least squares regressions, while controlling for bank-level and country-level control variables and report these results.

Table 2. Regression results for accounting–based z–score

	Accounting based z-score							
	Model 1		Model 2		Model 3		Model 4	
	DV: Log_ZS		DV: Log_ZS		DV: Log_ZS		DV: Log_ZS	
	Coef.	Std.Er.	Coef.	Std.Er.	Coef.	Std.Er.	Coef.	Std.Er.
const	−3.55***	(0,99)	-2.21*	(1,22)	-2.41***	(0,70)	-2.67***	(0,82)
Coll_IG_P	0.11*	(0,07)						
Coll_IG_V			-0.03	(0,15)				
Coll_IS_P					0.01	(0,07)		
Coll_IS_V							0.05	(0,07)
Bank_C	0.01	(0,24)	-0.02	(0,23)	-0.01	(0,23)	-0.02*	(0,23)
BA_GR	0,52	(0,34)	0.51	(0,34)	0.51	(0,34)	0.50	(0,34)
LLP_TA	0.57***	(0,11)	0.59***	(0,11)	0.59***	(0,11)	0.59***	(0,11)
Log_TA	0.01	(0,02)	0.01	(0,02)	0.01	(0,02)	0.01	(0,02)
Cap_str	-0.08*	(0,05)	-0.09*	(0,05)	-0.09*	(0,05)	-0.09	(0,05)
DEP_Ins	0.2*	(0,12)	0.16	(0,12)	0.16	(0,12)	0.17	(0,12)
Restr	-0.05	(0,27)	-0.07	(0,27)	-0.07	(0,27)	-0.08	(0,27)
Cred_r	0.4*	(0,23)	0.43*	(0,24)	0.43*	(0,24)	0.42*	(0,24)
IS	-0.16	(0,18)	-0.20	(0,18)	-0.22	(0,17)	-0.20	(0,17)
LEG_OR	-0.04	(0,08)	-0.03	(0,11)	-0.08	(0,09)	-0.07	(0,08)
LOG_GDP	-0.06	(0,08)	-0.10	(0,08)	-0.10	(0,08)	-0.10	(0,08)
Rule_Law	0.05	(0,30)	-0.15	(0,27)	-0.14	(0,27)	-0.04	(0,30)
N	355		355		355		355	
Adj. R2	0,19		0,19		0,19		0,19	

Note: *p<0.1; **p<0.05; ***p<0.01
Source: Author's calculations

In case of accounting based z–score in Table 2 of the paper, out of the cultural control variables, the coefficient on Coll_IG_P is positive and significant in Model 1 at p<0.1 level and that indicates a positive link between the GLOBE collectivism dimension of in-group collectivism for practices and bank risk-taking when measuring risk with an accounting based risk measure. Throughout models 1–4 collectivism always have a positive sign when the coefficients are statistically significant. Coll_IG_V coefficient on Model 2 is negative but it shows no statistical significance. Cap_str shows a negative coefficient at p<0.1 level in models 1–3. IS, LEG_OR, LOG_GPD, Bank_C and Rule_Law, show a negative sign but at no statistical significance. Rule_Law being positive only in Model 1 and Bank_C showing a negative sign in Model 4 at p<0.1. LLP_TA has a positive impact constant with all the models at a p<0.01 level of significance. Cred_r has positive impact on all models at p<0.1 level.

Table 3. Regressions results for market–based–zscore

	Market based z-score							
	Model 5		Model 6		Model 7		Model 8	
	DV: Log_Mkt		DV: Log_Mkt		DV: Log_Mkt		DV: Log_Mkt	
	Coef.	Std.Er.	Coef.	Std.Er.	Coef.	Std.Er.	Coef.	Std.Er.
const	1.20**	(0,48)	2.32***	(0,36)	1.50***	(0,38)	2.18***	(0,33)
Coll_IG_P	0.08***	(0,03)						
Coll_IG_V			-0.06	(0,04)				
Coll_IS_P					0.09***	(0,02)		
Coll_IS_V							-0.03	(0,02)
Bank_C	-0.11	(0,13)	-0.13	(0,13)	0.13	(0,12)	-0.13	(0,13)
BA_GR	0.37**	(0,11)	0.35***	(0,11)	0.37***	(0,11)	0.37***	(0,11)
LLP_TA	0.20***	(0,04)	0.21***	(0,04)	0.21***	(0,04)	0.21***	(0,04)
Log_TA	-0.03**	(0,01)	-0.03**	(0,01)	-0.03**	(0,01)	-0.03**	(0,01)
Cap_str	-0.04*	(0,02)	-0.04*	(0,02)	-0.05**	(0,02)	-0.05*	(0,02)
DEP_Ins	0.07**	(0,03)	0.04	(0,04)	0.05	(0,04)	0.03	(0,04)
Restr	0.10	(0,13)	0.09	(0,13)	0.08	(0,12)	0.09	(0,13)
Cred_r	0.14	(0,10)	0.15	(0,10)	0.15	(0,10)	0.15	(0,10)
IS	-0.22***	(0,08)	-0.23***	(0,08)	-0.27***	(0,08)	-0.27***	(0,08)
LEG_OR	0.00	(0,02)	0.00	(0,03)	0.02	(0,03)	-0.02	(0,03)
LOG_GDP	0.00	(0,04)	-0.03	(0,04)	-0.00	(0,04)	-0.02	(0,04)
Rule_Law	-0.41***	(0,08)	-0.56***	(0,09)	-0.67***	(0,10)	-0.59***	(0,10)
N	355		355		355		355	
Adj. R2	0,54		0,54		0,56		0,54	

Note: *p<0.1; **p<0.05; ***p<0.01
Source: Author's calculations

In market based z–score in Table 3 of the paper, cultural variables Coll_IG_P shows positive coefficient in Model 5 at p<0.01 level and Coll_IS_P shows a positive coefficient in Model 7 at

p<0.01 level signifying that in–group collectivism for practices and institutional collectivism for practices have a positive link with bank risk-taking when measuring risk with a market based risk measure. As is similar in Table 2, values of collectivism in Table 3 always have a positive sign when the coefficients are statistically significant. LOG_TA shows a negative sign at p<0.05 level on all models. Cap_str also shows a negative sign at p<0.1 level in models 5,6,8 and at p<0.05 in Model 7. IS, Rule_Law, LOG_GDP, and LEG_OR have a negative impact. Cap_str is consistent in models 5,6,8 at a p<0.1 level and at p<0.05 in Model 7. Rule_Law is consistent at a p<0.01 level in all models as is IS at p<0.1. Variables with a slight positive impact, BA_GR and LLP_TA both at p<0.01 level on all models. Model 5 has a positive impact with DEP_Ins at p<0.05 level

Table 4. Regression results for standard deviation of ROA

	Standard deviation of ROA							
	Model 9		Model 10		Model 11		Model 12	
	DV: std_ROA		DV:std_ROA		DV: std_ROA		DV: std_ROA	
	Coef.	Std.Er.	Coef.	Std.Er.	Coef.	Std.Er.	Coef.	Std.Er.
const	0.0152***	(0,0056)	0.0212***	(0,0078)	0.0189***	(0,0044)	0.0151***	(0,0040)
Coll_IG_P	0.0004	(0,0001)						
Coll_IG_V			-0.0004	(0,0009)				
Coll_IS_P					0.0000	(0,0003)		
Coll_IS_V							0.0001	(0,0005)
Bank_C	-0.0002	(0,0015)	-0.0003	(0,0015)	-0.0003	(0,0015)	-0.0003	(0,0015)
BA_GR	0.0055	(0,0033)	0.0054	(0,0033)	0.0054	(0,0033)	0.0052	(0,0033)
LLP_TA	0.0034***	(0,0006)	0.0034***	(0,0006)	0.0034***	(0,0006)	0.0034***	(0,0005)
Log_TA	-0.0005***	(0,0002)	-0.0005***	(0,0002)	-0.0005***	(0,0002)	-0.0005***	(0,0001)
Cap_str	-0.0002	(0,0003)	-0.0002	(0,0003)	-0.0002	(0,0003)	-0.0002	(0,0003)
DEP_Ins	0.0005	(0,0005)	0.0003	(0,0005)	0.0003	(0,0005)	0.0005	(0,0006)
Restr	-0.0041**	(0,0019)	-0.0042**	(0,0020)	-0.0042**	(0,0020)	-0.0042**	(0,0019)
Cred_r	-4.5580	(0,0015)	0.0000	(0,0016)	0.0000	(0,0016)	-1.5256	(0,0015)
IS	-0.0029	(0,0019)	-0.0029	(0,0022)	-0.0031	(0,0019)	-0.0029	(0,0021)
LEG_OR	0.0002	(0,0005)	-0.0002	(0,0007)	-0.0003	(0,0005)	-0.0001	(0,0005)
LOG_GDP	0.0000	(0,0005)	-0.0001	(0,0005)	-9.99253	(0,0004)	-0.0002	(0,0005)
Rule_Law	-0.0015	(0,0016)	-0.0023	(0,0014)	-0.0022	(0,0014)	-0.0008	(0,0017)
N	355		355		355		355	
Adj. R2	0,31		0,31		0,31		0,31	

Note: *p<0.1; **p<0.05; ***p<0.01
Source: Author's calculations

Using standard deviation of ROA as a risk measure in Table 4 of the paper, results are similar to those with the previous tables. The models show no sign of a negative coefficient in all values of collectivism but again it is difficult to say for sure are they positive either since they or not statistically significant. Model 10 shows a negative sign on Coll_IG_V but the results is

meaningless as it has no statistical significance. Constant with all models in Table 4 are LLP_TA, Log_TA and Restr. LLP_TA shows a positive sign at p<0.01 level. Log_TA shows a negative sign at p<0.01 level and Restr shows a negative sign at p<0.05 level.

Results in Table 4 seem to indicate that when measuring the link between GLOBE collectivism and bank risk-taking when using standard deviation of ROA as a risk measure, the results, while positive, show now sign of statistical significance.

The sample of commercial listed banks and with similar bank–level and country–level control variables as in Kanagaretnam et. al (2014); Ashraf et. al (2016) and a comparable proxy to Hofstede's dimensions of national culture, GLOBE, the results show that the coefficients for collectivism are not statistically significant in all the models, only on some models that measure risk using accounting–based and market–based risk measures. Models using standard deviation of ROA as a risk measure from Table 4 showed no statistical significance with the values of collectivism. Because of this I cannot say that in those models that show no statistical significance, there is a positive association between the measures of collectivism and bank risk-taking behavior. However, in a few models some measures of collectivism are statistically significant and results are in line with my developed hypothesis H1. The cultural variables of interest in the calculations that show a positive and statistically significant results are in-group collectivism for practices in Model 1 at p<0.1 level of significance, in Model 5 at p<0.01 level of significance and institutional collectivism for practices in Model 7 at p<0.01 level of significance.

Findings show that there is a positive association between two GLOBE collectivism dimensions, in-group collectivism for practices (P) and institutional collectivism for practices (P), that have a statistical significance. The findings are in line with behavioral finance literature that study individual risk-taking behavior by Hsee and Weber (1999) and the author's previous research on determining that individualism has a negative association with bank risk-taking behavior Borg (2018). Because of this the expectations for the results are twofold. On one hand the results from my previous research showed the negative association with individualism and bank risk–taking and with similar control variables so it makes sense that the association would support the hypothesis in this paper and on the other hand it is surprising as only three models showed statistical significance. This result overall contradicts the results found in the most recent, notable studies in corporate and bank risk-taking behavior (Li et. al 2013; Kanagaretnam et. al 2014;

Ashraf et. al 2016) because there is no statistically significant evidence of a negative association either.

Another important note is that the other control variable's significance in this are overall in line with most of Kanagaretnam et. al (2014) and Ashraf et. al (2016)'s results that show the positive association with individualism with same control variables. While the significance of the said control variables are not the main focus of interest in this paper, it is interesting to see such results as it opens up a lot of probable reasons as to why the results in this paper are of the opposite for the variable of interest, collectivism. It is very difficult to say why. The methodology in this paper follows the methodology of the previous literature as closely as possible so most notable reasons could be the use of a different sample, commercial listed banks instead of private banks or the use of a completely new measure of risk, market–based z–score. The reason also might be because of the difference in the data. Ashraf et. al (2016) uses a similar but a bit different period in the sample. It could also be an issue of endogeneity, or it could be of reasons as found in the author's Borg (2018). previous research that the results from previous literature might be incomplete or biased.

CONCLUSION

Guided by the contradiction in both corporate finance literature that found the association of the national culture dimension of individualism in corporate– and bank risk–taking behavior to be positive, and behavioral finance literature that found the association to be negative when measuring risk–taking behavior in individuals, the aim of this paper is to review and examine previous theoretical and empirical literature regarding the topics of national culture and its dimensions affecting corporate and individual risk–taking behavior. The aim was also to find support for the formulated hypothesis of GLOBE collectivism having a positive association with bank risk-taking behavior and test it with a global sample of commercial listed banks and a comparable proxy for culture using a quantitative approach.

Following the methodological choices of previous literature, 12 models for the regressions are formulated, each model having a measure of risk, either accounting–based, market–based or an additional measure, standard deviation of ROA, as the dependent variable and with different bank–level and country–level control variables. The main problem was to find evidence for the association of a positive link between GLOBE collectivism and bank risk–taking behavior. The main empirical results found support for the hypothesis for some models, but the results are not fully applicable to all of the models. Only two of the GLOBE collectivism variables, in-group collectivism for practices and institutional collectivism for practices showed a sign of statistical significance. One was present in a model that used an accounting–based risk measure and the other was present in two models that used a market–based risk measure. No statistical significance was found for any values of collectivism in the latter models using standard deviation of ROA as a risk measure.

The results gathered from this paper are more in line with the behavioral finance literature while they contradict the results from corporate finance. The results from the author's previous research on a similar subject concerning individualism and bank risk–taking were also more in line with

the behavioral finance studies and because the methodological choices in this paper accurately follow those of previous literature, the results are expected yet surprising and it is hard to definitely say why. Reasons might be the use of a completely different sample of banks or the use of a new risk measure, market–based risk as a variable. These results are in no doubt intriguing to say the least. To give a definitive explanation for these contradictory conclusions are difficult to say for sure and these results cannot give a definitive answer and as such my results should be interpreted with caution. We can, however, say that there is an effect with national culture affecting bank risk–taking behavior and it hopefully opens a lot of new possibilities and ideas for extensive future research on a similar topic.

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Appendix A. Variables description

Variable	Definition	Data source
Dependent variables/Measures of risk		
Log_ZS	Equals $-1 \times$ [log [(ROA + CAR)/(stdROA)]], 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 2001–2006.	Ashraf et. al (2016)
Log_Mkt	ln ($\Sigma Avrtit+1/\sigma\text{Ret}itn1 \times 1/n) \times (-1)$, measurement of market-based z–score	Crouzille et. al (2004), Lepetit et. al (2008), Prabha and Whilborg (2014), Calculations
std_ROA	Calculated as the standard deviation of annual values of return on assets before loan loss provisions and taxes over the period 2001–2006	Ashraf et. al (2016)
Bank-level variables		
Bank_C	Bank concentration, assets of three largest banks as a share of assets of all commercial banks in sample	Financial structure Database
BA_GR	Bank growth, average growth rate of total assets over a period 2001-2006	Eikon, calculations
Log_TA	Natural log of total assets	Eikon, calculations
LLP_TA	Loan loss provision to total assets. Multiplied by 100 for more straightforward interpretation	Eikon, calculations
Country-level variables		
Cap_str	Capital stringency measures the stringency of capital requirements. Index varies from 0 to 10 and higher value refers to greater stringency.	Barth et. al (2013)

Appendix A. (continued)

Variable	Definition	Data source
DEP_Ins	Deposit insurance, dummy variable equals 1 if a country implements explicit deposit insurance system and 0 otherwise.	Barth et. al (2013)
Restr	Overall restrictions on banking activities. Measures the restrictions on securities, insurance and real estate activities. It originally ranges from 3 to 12 and higher value refers to greater restrictions, normalized to the range from 0 to 1.	World Bank
Cred_r	Creditor rights. The index originally ranges from 0 (weak) to 4 (strong), normalized to the range from 0 to 1.	Djankov et. al (2007)
IS	Information sharing, dummy variable equals 1 if either a public registry or a private bureau operates in the country, 0 otherwise.	Djankov et. al (2007)
LEG_OR	Legal origin, Dummy variable equals 1 if legal origin of a country is British and 0 otherwise	Djankov et. al (2007)
LOG_GDP	Natural log of GDP per capita, constant 2011 international USD	IMF
Rule_Law	Extent to which agents have confidence in and abide by the rules of society. Index from 0 to 1, higher value corresponds to higher level of rule of law	Kaufmann et. al (2010), Country Risk Guide (ICRG) database

Appendix. A (continued)

Variable	Definition	Data source
Cultural variables		
In-group collectivism	The degree to which individuals' express pride, loyalty, and cohesiveness in their organizations or families.	House et. al (2004)
Institutional collectivism	The degree to which organizational and societal institutional practices encourage and reward collective distribution of resources and collective action action.	House et. al (2004)