Joshua D. SHACKMAN
California State University Maritime Academy, Vallejo, California, USA

MEASUREMENT OF NATIONAL CULTURE: A MULTIPLE SOURCE LATENT VARIABLE APPROACH

Case Study

Keywords

National culture measurement,
Latent variable modeling,
Cross cultural research

Abstract

There has been much debate about the relative merits of the GLOBE and Hofstede measures of national culture, both in terms of the methodological approach and the conceptual support for the specific dimensions measured. In this paper we propose a multiple indicator approach using latent variable path modeling that incorporates measures from both GLOBE and Hofstede. A multiple indicator, latent variable approach allows us to use information from both GLOBE and Hofstede in measuring national culture while attenuating for measurement error inherent in both sets of measures. This approach also allows us to assess the convergent, discriminant, and criterion validity of both sets of measures. We find strong convergent and criterion validity for GLOBE and Hofstede's measures of power distance and individualism/collectivism. However, we also find a lack of discriminant validity between these two dimensions. We find little or no convergent validity between the GLOBE and Hofstede measures of uncertainty avoidance and masculinity/femininity.

INTRODUCTION

National culture is arguably one of the most difficult constructs to measure in the international business literature. It can be extremely difficult to gain access to representative samples from a large number of respondents across a large number of countries. Most attempts to measure national culture have by necessity used convenience rather than random samples of a nation's population (Taras, et al., 2012). Conducting a survey from a large sample of countries also necessitates translating the survey into a large number of different languages. Taras at al., (2009) points out that the challenges in translating national culture instruments goes far beyond linguist translation but also adjusting for many other factors such as cultural differences. All of these challenges of measuring national culture may lead to measurement error.

Hofstede's (1984) original model has been the most widely used measurement of national culture and inspired literally thousands of studies based on his model (Harris and Carr, 2008, Taras, et al., 2010). However, the Hofstede measures have been subject to criticism for potential sources of measurement error such as the lack of back translation, the use of 40-year-old data, or the reliance of a convenience sample of IBM employees (Javidan, et al., 2006; Baskerville-Morley, 2005). The more recent GLOBE model (House, et al, 2004) was designed in part to address some criticism of Hofstede has given cross-cultural researchers a choice beyond Hofstede when looking for a measure of national culture. The GLOBE model offers some attractive features for international business researchers such as a much more recent sample as well as the use of a much wider number of companies within the sample.

However, the GLOBE model is not without criticism. Criticism of this model includes their use of middle managers as a sample, and their choice of survey instrumentation (Hofstede, 2006; Hofstede, 2010). In addition, the negative correlations found between values and practices measures and the lack of a clear explanation for such negative correlations has been another issue raised regarding GLOBE (Taras, et al., 2010). GLOBE measures both values and practices for each dimension of culture for a total of 18 measures. Researchers do not have practical guidelines as to which of the 18 measures to use and whether to use practices or values or both measures. As a result, many researchers may opt for the simpler Hofstede approach in spite of the advantages offered by GLOBE.

This controversy over GLOBE versus Hofstede as well as the controversy regarding values versus practices may make the choice of measures an intimidating decision for researchers. However, in spite of these controversies and debate, there is considerable convergence between these two models. Hofstede (2010) notes the potential "synergy" (p. 1340) between both models. GLOBE cites positive correlations between their own measures of collectivism and power distance and the Hofstede measures as evidence of the validity of their approach (Carl, et al., 2004; Gelfand, et al., 2004). Hence cross-cultural researchers may benefit from a synergistic approach using measures from both sources. This paper presents a unified approach to use these synergies to minimize inherent measurement error problems in national culture research.

Due to the difficulties in measuring national culture, measurement error may be large regardless of which model or methodology is used. Thus we propose a multi-indicator approach using latent variable path modeling for measuring national culture. This allows us to incorporate valuable information from both GLOBE and Hofstede studies, but also allows us to attenuate for measurement error in both sets of measures. We present researchers with the option of using both the GLOBE and Hofstede measures in one single scale. This multi-item, latent variable approach is prescribed when measurement error is likely to be present in any one indicator (Treir and Jackman, 2008).

In addition to providing researchers with a practical tool for combining information from GLOBE Hofstede, the process of using a latent variable approach further allows us to examine various comparative properties of the measures. For example, Hofstede (2006) proposes that the GLOBE data measures five factors that correspond directly with his five dimensions. Carl, et al., (2004) and Gelfand, et al. (2004) also point out that some GLOBE measures such as in-group collectivism practices or power distance practices correlate highly with Hofstede's measures. Hence it may be the case that, in spite of different time periods and methodologies, both GLOBE and Hofstede are measuring the same underlying latent construct. Using a latent variable approach our first research question is:

1. What is the convergent validity of a combined GLOBE/Hofstede measurement scales of collectivism, power distance, masculinity, and uncertainty avoidance?

In addition to prior observed correlations between GLOBE and Hofstede measures, another issue in national culture measurement is that some of the dimensions have been found to have high correlations with each other. For example, Hofstede (1984) notes a high correlation between his power distance and collectivism measures. This is consistent with a similar result found by Steenkamp (2001). Besides the empirical correlation between power distance and collectivism in Hofstede (1984) there are also conceptual links between these two constructs. Triandis (1995) has broken down

collectivism into horizontal and vertical components. Some have argued that power distance may fit into the vertical aspect of collectivism, and may be part of the collectivism construct (Schermerhorn & Bond, 1997). Hence it is not clear if the dimensions of national culture identified by GLOBE and Hofstede are necessarily distinct. Hence using our latent variable approach, we address our second research question:

2. What is the discriminant validity of the GLOBE/Hofstede measurement scales of collectivism, power distance, masculinity, and uncertainty avoidance?

Finally, a valid measurement scale should be correlated with other variables based on existing theory. Hostede (1984, 2001) proposes a number of variables that his dimensions of national culture should be correlated with. We examine the validity of the combined GLOBE/Hofstede latent variable approach by including several of the variables suggested by Hofstede as dependent variables in our path model. This allows us to address our third research question:

3. What is the criterion validity of the GLOBE/Hofstede measurement scales of collectivism, power distance, masculinity, and uncertainty avoidance?

GLOBE AND HOFSTEDE

Hofstede (1984) introduced one of the more widely used measures of national culture and covers 64 countries. The sample size consisted of IBM employees, and the data was collected in the late 1960s and early 1970s. The four dimensions include uncertainty avoidance, individualism, power distance, and masculinity. These sets of measures have become widely used, with Hofstede becoming one of the most cited scholars in all of social science (Sondergaard, 1994).

Nonetheless, criticisms of Hofstede's measures include several potential sources of measurement error such as his sample of only IBM employees, lack of back translation of survey questions, and the fact that the data was collected over three decades ago (Javidan, et al., 2006; Gooderham & Nordhaug, 2002). The GLOBE Research Project's measures of national culture were developed in part to address these criticisms of Hofstede while maintaining many of the main conceptual focus on Hofstede's original four dimensions. GLOBE uses data collected from a wide variety of organizations in the finance, food, and telecommunications during the mid-1990s.

GLOBE extends Hofstede's four dimensions in several ways. First, GLOBE measures each dimension two different ways: 1) practices -

individual's assessment of how the culture actually is in their society, and 2) values - how individuals think culture should be in their society. For individualism/collectivism, they also measure this dimension in terms of how individuals assess their both their society and their family for a total of four different individualism/collectivism measures. For masculinity/femininity they break this dimension down into narrower constructs including assertiveness and gender egalitarianism. Overall they end of up with 18 total measures of national culture as opposed to five in the Hofstede model.

While there has been intense debate over the relative merits of the GLOBE and Hofstede measures, there are a couple of reasons why a latent variable approach using both measures may be appropriate. First, problems in measuring national culture are inherent regardless of the model or methodology used. Both GLOBE and Hofstede use convenience rather than random samples, as collecting a random sample representative of a single country let alone a large sample of countries is a highly daunting task. While GLOBE did cross-translate their survey instruments, measuring national culture in a large number of different languages is of course highly challenging. Also, regardless of the time when the data was collected there may be time-specific events such as wars or economic conditions that might impact the results. For these reasons, measurement error could be large for all currently used measures of national culture. Hence a latent variable approach can be useful in reducing the measurement error associated with any measure of national culture.

The second reason for a latent variable approach is the possible overlap in measurement of national culture dimensions. Even with Hofstede's original four dimensions, high correlation was found between power distance and individualism/collectivism (Hofstede, 1984; Steenkamp, 2001). Several of the GLOBE dimensions have high correlations with each other (Hanges & Dickson, 2004). There also been high correlations reported between some of the GLOBE and Hofstede dimensions (Carl, et al., 2004; Gelfand, et al., 2004). GLOBE's 18 total measures may be intimidating to some researchers as compared to Hofstede's simpler four-dimension approach. A latent variable approach can be used to reduce the dimensionality of the data, and simplify it to a smaller number of dimensions have genuine empirical discriminant validity.

METHODOLOGY

Common latent variable modeling techniques include covariance based structural equation modeling (SEM) as well as partial least squares path modeling (PLS). We choose PLS because of the reduced sample size requirement, as SEM generally

requires a minimum sample size of 100 and preferably 200 (Loehlin, 2004) which would be difficult if not impossible to achieve when using the country as the unit of analysis. The numbers of countries used by both GLOBE and Hofstede is only slightly greater than 60 which ruled out the use of SEM. PLS differs from SEM in its use of principle component analysis rather than maximum likelihood factor analysis, and its emphasis on maximizing the r-squared (explained variance) of the dependent variables rather than using the covariance structure of the model (Chin, 1998). PLS has been used in previous international business studies (Shi, et al., 2010, Fey, et al., 2009, Acedo and Jones, 2007).

The overlap between GLOBE and Hofstede is 49 countries. We choose not to include the measures of Schwartz (1994) or Trompenaars (1993) in this study because of a low overlap of countries with GLOBE and Hofstede, which would bring our sample size down to the low 20s. We also exclude long-term orientation because of the small number of countries include in the Hofstede measure of this dimension.

For individualism/collectivism, we start use four different measures from GLOBE including institutional collectivism and in-group collectivism which are in turn measured both as practices and as values. We also invert the Hofstede individualism measure so it becomes a measure of collectivism consistent with the GLOBE measures. Our collectivism scale starts out with five initial observed indicators. For masculinity/femininity, we use four GLOBE measures. This includes their assertiveness and gender egalitarianism measures, again measured both as practices and as values. We invert the gender egalitarianism measure to make it consistent with the GLOBE assertiveness measure (high values of assertiveness and low values of gender egalitarianism can be considered "masculine") and the Hofstede masculinity measure. Our masculinity scale starts out with five initial observed indicators.

We use two measures of uncertainty avoidance from GLOBE, both their practices and values measures. We also the practices and values measures of power distance from GLOBE. Thus our uncertainty avoidance and power distance scales initially consist of three items each, two GLOBE items and one Hofstede item.

Using SmartPLS software (Ringle, et al., 2005), we simultaneously test both a measurement model of the different national culture dimensions along with a structural model. To test for the criterion validity of the different measures of national culture, we include several dependent variables posited to have a relationship with national culture.

We include measures of democratic accountability and rule of law from the Political Risk Services Group and from the World Bank's Worldwide Governance Indicators, both for 2006. Hofstede and Hofstede (2005) posits that countries high in collectivism will have less of an emphasis on individual rights and democracy, hence we should expect to see a negative relationship between collectivism and democratic accountability/ rule of law. Power distance should have a similar negative relationship due to the emphasis on respect for authority (Hofstede & Hostede, 2005). We also include a measure of economic freedom from the Fraser Institute for 2006, as Hofstede (1984) suggests that societies high in collectivism and uncertainty avoidance will have more regulated economies and that masculine societies will have more market-oriented economies.

In addition to these political and economic indicators, we also include some social indicators that may be associated with masculinity. Hofstede (2001) suggests that women will be less likely to hold senior management positions in highly masculine societies. Thus we include data on the percentage of women in senior management and government positions for 42 countries from the United Nations Statistics Division. We also include two variables concerning marriage. One is the percentage of women aged 15-19 who are married which we obtained from the United Nations Statistics Division, with data from the most recently available years (2004 and earlier). We also obtained data on divorce per 1000 people from the Heritage Foundation (Nugman, 2002) and various local sources as Hofstede (2001) points out that divorce should be less likely in collectivist societies. Women's dependence on men and societal restrictions on divorce should also lead to a negative association between masculinity and divorce, and a positive association between masculinity and the percentage of young women married.

Finally, we include data on stock market turnover percentage from the International Monetary Fund (2005 data). Hofstede (1984) suggest that individuals in high uncertainty avoidance societies will invest more in less-risky bonds than in higher-risk stocks. Thus we should expect to see more frequent stocks trading in low uncertainty avoidance societies. As a control variable, we use 2006 World Bank per capita GDP data. GDP has been found to correlate with several dimensions of national culture (House et al., 2004, Hofstede, 1984) and may also influence some of the legal and political variables in this study (La Porta, et al., 1998).

RESULTS

Convergent Validity
In our initial measurement model, our five item collectivism index demonstrates high overall convergent validity indicating that these items are by and large all measuring the same construct. The

average variance explained is 0.54 and composite reliability is 0.85, well over the minimum threshold of 0.5 and 0.7 suggested by Acedo and Jones (2007). All of the indicators have loadings of over 0.4 (the minimum suggested by Hulland (1999)), and all but one have loadings of over 0.6. Thus we retain all five measures for our collectivism scale.

The power distance scale demonstrates strong convergent validity for two of the three indicators. The Hofstede measure and the GLOBE practices measure both have high loadings of over 0.8, but the GLOBE values measure has a loading of close to zero. The average variance explained and composite reliabilities are below the common cut-off points when including the values measure (0.49 and 0.64 respectively), but rise to 0.75 and 0.85 when the power distance values measure is excluded. Thus our final power distance scale has two items consisting of the Hofstede measure and the GLOBE power distances practices measure.

The initial masculinity scale demonstrates little convergent validity with only three of the five indicators having loadings of over 0.4. The average variance explained and composite reliability are low as well. After removing the two indicators with low loadings (the Hofstede masculinity measure and the GLOBE assertiveness practices index), the average variance explained rises to 0.48 and the composite reliability to 0.72. Thus there is some mild convergent validity between some of the GLOBE indicators, but not between the GLOBE indicators and Hofstede. In our final model we use both a three-item masculinity index using GLOBE items, as well as a separate single item index using the Hofstede masculinity measure.

The uncertainty avoidance measures shows little convergent validity, with the two GLOBE indicators appearing to be measuring opposite constructs with the practices measure having a loading of -0.88 and the values measure having a loading of 0.92. The Hofstede measure has a low loading of 0.23. We conclude that these three indicators all appear to be measuring separate or opposite constructs. In our final measurement model we use only single item indices from GLOBE and Hofstede.

Most of the other variables such as GDP and our various criterion variables are measured with single item indicators. However, our indicators of democratic accountability and rule of law are measured using two-item scales with data both from the World Bank and from the Political Risk Services Group. The convergent validity between these two sets of measures is very high, with loadings exceeding 0.9 for all items in both scales.

Table 1 summarizes our initial and final model factor loadings for the national culture dimensions. Overall we find strong evidence of convergent validity between GLOBE and Hofstede for their measures of collectivism and power distance, but not for masculinity or uncertainty avoidance.

Discriminant Validity

One test for discriminant validity of an index involves comparing the average variance explained to its correlation with other latent variables (Fornell & Larcker, 1981). If a variable has discriminant validity, the square root of the average variance explained of a latent variable should exceed its correlation between any other latent variable in the model. In simpler terms, this test is "equivalent to saying that the correlation of the construct with its measurement items should be larger than its correlation with the other constructs." (Gefen & Straub, 2005). As shown in Table 2, all of the latent variables meet this test with the possible exception of the high correlation observed between collectivism and power distance of 0.77. This exceeds the square root of the average variance explained of collectivism 0.73 indicating a lack of discriminant validity. However, this correlation is less than the square root of the average variance explained of power distance of 0.86 giving some limited evidence in favor of discriminant validity. Hence there is mixed or borderline evidence of discriminant validity between collectivism and power distance in our sample.

Due to the mixed results concerning discriminant validity using the average variance explained test described above, we examined the discriminant validity of power distance and collectivism using the cross-loading method. Under this method, to demonstrate discriminant validity items on a scale should load highly on its theoretically assigned factor and not highly on other factors (Gefen and Straub, 2005). However, we find that power distance items load highly on the collectivism factor and vice versa with cross loadings over 0.7. It is not clear if separate power distance and collectivism constructs are being measured by the GLOBE or Hofstede scales or if this is just one construct. As a result, in the next section we report results of the criterion validity tests using both the separate collectivism and power distance scales as well as a combined collectivism/power distance scale. The combined collectivism/power distance scale has an average variance explained of 0.54 and a composite reliability of 0.88. There is some justification for measuring collectivism and power distance as one scale, which will be discussed further in the conclusion section.

Criterion Validity: Legal, Political, and Economic Factors

Table 3 illustrates the structural model with rule of law, democratic accountability, and economic freedom as the dependent variables. These variables are included as tests for criterion validity as Hofstede (1984) makes several predictions regarding the relationship between national culture and various legal/political characteristics.

As expected, collectivism is negatively associated with democratic accountability, rule of law, and economic freedom. This association is statistically significant only for democratic accountability and rule of law. Power distance is negatively associated with all three independent variables as expected, but is statistically significant only for democratic accountability.

Neither the Hofstede nor GLOBE uncertainty avoidance measures have much explanatory power, with the only significant relationship being between the GLOBE measure and rule of law. This relationship is positive, which is contrary to Hofstede and Hofstede's (2005) assertion that citizens in high uncertainty avoidance society will be less questioning of the government and less likely to challenge government authority.

The masculinity indices both have negative coefficients for economic freedom, but the coefficient is only statistically significant for the GLOBE index. The negative coefficient is the opposite as predicted by Hofstede and Hofstede (2005) in terms of the positive association between masculinity and a performance-oriented society. Neither masculinity indices reach significance for rule of law, but both reach significance for democratic accountability. However, the coefficients have opposite signs with the GLOBE scale having a negative coefficient and Hofstede measure having a positive coefficient.

Criterion Validity: Social Factors and Risk Taking

Table 4 reports the path coefficients between the independent variables and four different dependent variables. These four dependent variables were included in separate models rather than one combined model due to the different sample sizes for each of the four variables (none had data available for all 49 countries).

The GLOBE masculinity scale is negatively associated with the percentage of women in management and government positions, which is the expected result. However, this scale is not significant for any of the other dependent variables. The Hofstede masculinity index does not reach significance for any of the four dependent variables. Collectivism has the strongest explanatory power of any of the cultural dimensions. Collectivism has a negative relationship with the percentage of women in management and government. While this coefficient is not statistically significant, the effect size is large with coefficient being -0.46. Collectivism has a positive and significant relationship with percentage of women aged 15-19 married, and a negative and significant relationship both with divorce rates and stock turnover.

Power distance is only significant for stock turnover percentage. Interestingly enough, the coefficient is positive for this model which is the opposite sign as

collectivism. In spite of the high correlation between power distance and collectivism, they appear to have opposing effects on stock trading activity. While the economic interpretation of this negative correlation is unclear, the fact that collectivism and power distance have opposite signs on at least one variable provides at least some support for discriminant validity between these two measures.

The Hofstede uncertainty avoidance measure has a negative and significant relationship with stock turnover, which is as predicted. However, this measure is not significant for any of the other dependent variables. The GLOBE measure does not reach statistical significance for any of these four dependent variables.

Alternative Specifications

Given the high correlation between the collectivism and power distance index and high cross-loadings between items in these scales, we tested alternative models with a combined collectivism/power distance index. This combined scale resulted in greater statistical significance than the collectivism scale for five of the seven dependent variables that we tested. In three cases, the statistical significance increased to the one percent level (rule of law, democratic accountability, and divorce rates).

We also compared effect size and statistical significance from using single items measures (e.g., only the Hofstede measure or only one of the GLOBE measures) of collectivism compared to using a multi-item approach. In nearly all cases both the size of the coefficient and the level of statistical significance increased when using a multi-item approach for prediction of the different dependent variables.

CONCLUSION

For our first research question we asked "What is the convergent validity of combined GLOBE/Hofstede measurement scales of collectivism, power distance, masculinity, and uncertainty avoidance?" The results of this study have shown an overall convergence of validity between the GLOBE and Hofstede measures of collectivism and power distance. In spite of an almost three decade difference in data collection time periods, different types of samples, and different questionnaires both sets of indicators appear to be measuring the same constructs of collectivism and power distance. The combined GLOBE/Hofstede collectivism and power distance scales have validity and potential for use in future studies. Cross-cultural researchers do not necessarily need to choose between GLOBE and Hofstede when measuring power distance and collectivism and can use both measures to assist in

obtaining more accurate results with reduced measurement error.

We did not find the same convergent validity between the GLOBE and Hofstede measures of uncertainty avoidance and masculinity. However, we did find some convergent validity between three of the four masculinity-related GLOBE measures. Future researchers may wish to consider this three item scale as an alternative to the single item approach used in most studies. Interestingly, we found that this three item masculinity index has high statistical significance when predicting the percentage of women employed in top management or government positions. The predictive power of this index on other gender-related phenomenon is a ripe area for future research.

Our second research question regarded the discriminant validity of the GLOBE and Hofstede measures. However, we found mixed evidence at best of discriminant validity between the GLOBE and Hofstede measures of collectivism and power distance. High correlations are found between these two constructs, and their individual items tend to cross-load highly on each other. In some cases the combined collectivism/power distance scale appears to have greater statistical and effect size significance than either scale alone. However, collectivism and power distance were shown to have opposite effects on stock turnover behavior which provides some limited evidence that these two scales are measuring different constructs.

Our results concerning the high correlation between power distance and collectivism are consistent with both Hofstede (1984) and Steenkamp (2001). We extend these prior studies to show that a correlation exists not only between the Hofstede measures of collectivism and power distance, but also between the Hofstede and GLOBE measures of these constructs. This may be evidence in favor of the notion that power distance may not be a unique construct from collectivism but rather a sub-construct such as vertical collectivism (Triandis, 1995; Schermerhorn & Bond, 1997). The results of this study certainly suggest that the power distance/collectivism connection and the possible distinction between vertical and horizontal collectivism is a highly promising area for future research. Future studies should be done to directly compare instruments measuring horizontal/vertical collectivism to instruments measuring power distance to more precisely determine the relationship between these constructs.

Our third research question regarded the criterion validity of the GLOBE and Hofstede scales. Collectivism also appears to have the greatest criterion validity of these four dimensions, with statistical significance for five of the seven selected criterion variables. Collectivism appears to have strong predictive power for several political, legal, and social variables. Collectivist societies tend to be less democratic, weaker legal protections, earlier marriages, fewer divorces, and less stock trading. This is all consistent with previous predictions of Hofstede (1984). The other cultural dimensions show at least some criterion validity, with significance for at least one of the seven criterion variables. Our results concerning the relatively higher criterion validity of collectivism is consistent a meta-analysis by Taras, et al. (2010) which finds that collectivism has a stronger effect size compared to other cultural dimensions when predicting country-level outcomes. A limitation of this analysis is that we only examined country level variables. Future research should be done to expand our approach to organization-level or individual-level outcomes.

This study has not attempted to resolve the debate as to whether GLOBE or Hofstede use the most appropriate methodology. We have also not sought to resolve the controversy regarding the use values or practices to measure national culture. However, we have shown that researchers may wish to choose "all of the above" at least when it comes to measuring collectivism and power distance. This study has shown the validity of combining items from both GLOBE and Hofstede into a single multi-item scale. We have also shown some preliminary evidence that results are more likely to be statistically significant with stronger effect size when using the multi-indicator scales rather than a single item scale. Thus researchers may gain more accurate results with greater statistical and effect size significance when using the approach outlined in this study.

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ANNEXES

Table 1: Initial and Final Measurement Model Results

CONSTRUCT/ Indicator	Initial loading	Final loading	Composite reliability	Average variance extracted
UNCERTAINTY AVOIDANCE			1	1
Uncertainty Avoidance (Hofstede)	0.228	1		
Uncertainty Avoidance Practices(GLOBE)	-0.872	1		
Uncertainty Avoidance Values(GLOBE)	0.931	N/A		
COLLECTIVISM			0.847	0.540
Collectivism (Hofstede)	0.886	0.881		
In-Group Collectivism Practices (GLOBE)	0.869	0.889		
In-Group Collectivism Values (GLOBE)	0.406	0.421		
Institutional Collectivism Practices (GLOBE)	0.708	0.706		
Institutional Collectivism Values (GLOBE)	0.678	0.680		
POWER DISTANCE			0.851	0.742
Power Distance (Hofstede)	0.915	0.926		
Power Distance Practices (GLOBE)	0.806	0.792		
Power Distance Values(GLOBE)	-0.128	N/A		
MASCULINITY			0.719	0.482
Masculinity (Hofstede)	-0.049	N/A		
Assertiveness Practices (GLOBE)	-0.346	N/A		
Assertiveness Values (GLOBE)	0.401	0.503		
Gender Egalitarianism Practices (GLOBE)	0.535	0.545		
Gender Egalitarianism Values (GLOBE)	0.946	0.947		

Table 2: Discriminant Validity and Correlations of Latent Variables

	UA Hofstede	UA GLOBE	Collectivism	Power Distance	Masculinity Hofstede	Maculinity GLOBE
UA Hofstede	**1**					
UA GLOBE	-0.13	**1**				
Collectivism	-0.02	-0.58	**0.73**			
Power Distance	0.15	-0.59	0.77	**0.86**		
Masculinity Hofstede	0.06	-0.70	0.32	0.33	**1**	
Masculinity GLOBE	0.07	-0.04	0.39	0.40	-0.12	**0.69**

Note: Diagonal elements denote the square root of Average Variance Extracted (AVE) of the latent variables. Off-diagonal elements are the correlations between latent variables. If a latent variable has discriminant validity then the square root of its AVE should exceed its correlation with all other latent variables.

Table 3: Structural Model Results for Political, Legal, and Economic Factors

Explanatory variable	Standardized path coefficient to Democratic Accountability	Standardized path coefficient to Rule of Law	Standardized path coefficient to Economic Freedom
Uncertainty Avoidance (Hofstede)	-0.02 (0.18)	-0.14 (1.48)	-0.04 (0.50)

Uncertainty Avoidance (GLOBE)	-0.06 (0.28)	0.12 (0.81)	0.22 (1.36)
Collectivism (combined GLOBE and Hofstede)	-0.49* (2.04)	-0.45* (2.57)	-0.09 (0.49)
Power Distance (combined GLOBE and Hofstede)	-0.17 (0.94)	-0.18 (1.35)	-0.08 (0.55)
Masculinity (Hofstede)	0.32* (2.22)	0.11 (0.85)	-0.07 (0.48)
Masculinity (GLOBE)	-0.38* (2.90)	0.20 (1.57)	-0.27* (2.23)
GDP per Capita	-0.37† (1.78)	0.24 (1.43)	0.40* (2.39)
R-Squared	0.616	0.587	0.668
N	49	49	49

†Significant at the 10% level, *significant at the 5% level

Note: Results are from one consolidated model using SmartPLS with three dependent variables.

Table 4: Structural Model Results for Social Indicators and Stock Trading

Explanatory variable	Standardized path coefficient to women in management/government	Standardized path coefficient to %women married 15-19	Standardized path coefficient to Divorce per 1000	Stock turnover
Uncertainty Avoidance (Hofstede)	0.17 (1.53)	0.06 (0.56)	-0.12 (0.93)	-0.25* (2.05)
Uncertainty Avoidance (GLOBE)	0.19 (1.24)	-0.17 (0.61)	-0.29 (1.24)	-0.09 (0.44)
Collectivism (combined GLOBE and Hofstede)	-0.46 (1.56)	0.69** (3.2)	-0.58* (2.13)	-0.82** (4.52)
Power Distance (combined GLOBE and Hofstede)	0.23 (1.62)	-0.06 (0.41)	-0.02 (0.07)	0.46* (2.16)
Masculinity (Hofstede)	0.17 (1.53)	-0.10 (0.45)	-0.09 (0.59)	0.01 (0.08)
Masculinity (GLOBE)	-0.58** (4.54)	-0.06 (0.30)	-0.07 (0.44)	0.50 (1.12)
GDP per Capita	-0.38* (2.24)	0.02 (0.13)	0.28 (1.64)	0.16 (1.10)
R-Squared	0.553	0.482	0.520	0.597
N	42	41	45	47

†Significant at the 10% level, *significant at the 5% level **significant at the 1% level

Note: Results are from four different models, one for each dependent variable.