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Cultural Dimensions and Sustainable Stock Exchanges Returns in the Asian Region

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Abstract:
Research aims: The aim of this paper is to examine the effect of four cultural dimensions such as power distance index (PDI), individualism (IDV), uncertainty avoidance index (UAI), and long-term orientation (LTO) on the sustainable investment return in Asian sustainable stock exchanges.
Design/Methodology/Approach: Quantitative research method was applied for this research. Monthly sustainable stock indices from seven Asian countries for the period 2015-2019 were considered. This research employed the Ordinary Least Square (OLS) regression and Feasible Generalized Least Square (FGLS) regression with id and time fixed effect.
Research findings: The outcomes of our empirical investigation underlined the fact that: (i) an increase in power distance (PDI) would increase the market returns in the Asian region; (ii) individualism (IDV) had a positive and significant impact on the market returns, and the increase of individualism in the Asian countries would lead to the higher sustainable stock returns; (iii) increase in the uncertainty of avoidance (UAI) by investors in the Asian region would lead to the higher stock returns; (iv) the long term orientation (LTO) had a significant and positive impact on market returns. It showed that if the investor had a long-term orientation on the sustainable stock exchange in the Asian region, it would lead to increased stock returns.
Theoretical contribution/Originality: This research's theoretical contribution is to present the causal relations of cultural differences on the sustainable investment return in the Asian region.
Practitioner/Policy implication: This research's implication is to increase the concern of individual investors, portfolio managers, and investment companies regarding the cultural dimension effect on sustainable investment.
Research limitation/Implication: The limitations still exist in this research, such as: (1) limited data for sustainable stock indices in the Asian region; (2) this research mainly focused on four cultural dimensions instead of six dimensions in Hofstede's model; (3) the future research should include the control variables and some other financial variables related with the sustainable investment.
Keywords: Cultural Dimensions; Sustainable Investment; Stock Market Returns; Feasible Generalized Least Square (FGLS)

Introduction

In general, investment is always influenced by market conditions, the country's economic conditions, macroeconomic conditions, the political situation, and the security of a country.

However, in a more in-depth analysis, it turns out that a country's culture is also a factor that influences investors' habits in determining the investment they will choose (Afego, 2018; Arisanti & Oktavendi, 2020; Lee, Switzer, & Wang, 2019). Investors' habits in acting when investing will also affect the value of investments in the market. The dispositions to factors such as financial criteria, impact investing, and positive Socially Responsible Investing (SRI) screenings are observed to be noteworthy in this relationship. Expanding mindfulness by advancing the social impact investment portfolio's social properties will adjust SRI and impact investment. Notably, the risk tolerance attitude positively affects the willingness to pay for an SRI portfolio. From the controls, education and income are essential factors for greater willingness to pay and indicate that involvement seems to influence the SRI investors' willingness to pay positively (Apostolakis, Kraanen, & van Dijk, 2016; Darsono, Muqorobin, & Yudhi, 2016).

National culture plays a crucial role in the decision-making process and the investment decision-making process. Beckmann, Menkhoff, and Suto (2008) found that cultural variations are most beneficial in understanding country differences that cannot be clarified by solely economic principles based on Hofstede's four cultural dimensions. In this research, the cultural dimension context was adopted from Hofstede's discovery of the six cultural dimensions of various countries in the world. The cultural dimensions' theory of Hofstede, Hofstede, and Minkov (2010) provides the fundamental framework for understanding cross-cultural differences in decision-making. Using the factor analysis framework, the theory elucidates the effect process of a society's community on the attitudes, norms, values, and actions of its members. It categorizes systematic differences in national cultures into six dimensions: power distance, individualism, masculinity, uncertainty avoidance, long-term orientation, and indulgence (Hofstede et al., 2010).

Previous literature has shown that investors in different countries adhered to behavioral biases and were driven by shared cultural values in their countries (Afego, 2018). Indeed, investors in different cultures reacted differently to information shock and had differing perception biases in decision-making (Maghyereh & Awartani, 2018). Therefore, a culture will definitely be very influential for an investor in determining their investment (Abdussalam & Ryan, 2011; Grinblatt & Keloharju, 2001; Zheng, 2015). There are many measures of cultural aspects and their influences. However, Hofstede's theory of cultural dimensions (2010), such as Power Distance Index (PDI), Individualism (IDV), Masculinity (MAS), Uncertainty Avoidance Index (UAI), Indulgence (IVR), and Long-Term Orientation (LTO), is the popular framework for studies of cultural communication and individual behavior (Chang & Lin, 2015; Laitinen & Suvas, 2016). It shows the effects of social culture on members' values and how these values relate to investor behavior in the market. However, Asian economies' cultures focus on collectivism and maintaining individual identities, distinguishing them from Western cultures with diversity and integration. Thus, the question of how culture-driven influences impact investor behavior needs to be clarified further, especially in Asian countries.

This research aims to investigate the influence of four cultural dimensions on the sustainable investment return in Asian sustainable stock exchanges by applying

Hofstede's theory (2010) and other authors. In the previous literature, many studies have examined the influence of culture on the conventional stock market, while research on the influence of national culture on sustainable investment is still rarely done, especially related to sustainable stock exchanges in the Asian region, which incidentally is still rising (Ortas, Burritt, & Moneva, 2013). In sustainable investment, investors will attach great importance to the three main aspects that must be achieved in their investments. First, the investment must have a good impact on the environment. Second, those investments do not violate ethics or norms and positively impact the social community. Third, investments will also positively impact sustainable economic growth (Adam & Shauki, 2014; Tseng, Tan, Jeng, Lin, Negash, & Darsono, 2019). Profit in the form of money is not the primary goal in sustainable investment, but the good impact that will result from the investment itself. Not all investors have this idea, depending on their intentions and awareness of the investments they choose (Escrig-Olmedo, Rivera-Lirio, Muñoz-Torres, & Fernández-Izquierdo, 2017; Oberndorfer, Schmidt, Wagner, & Ziegler, 2013).

This research makes several contributions to the developing field of cultural finance and conventional finance literature, which addresses and investigates the presence, interactions, and roots of international capital market anomalies: First, the theoretical contribution to proving that cultural dimensions of Hofstede can affect the sustainable investment return. Further, this research also contributes to investment managers, corporate investors, and retail investors to get sight of good investment and market investment to invest in sustainable stock exchanges.

Literature Review and Hypotheses Development

Hofstede's (2010) theory of cultural dimensions describes some characteristics and qualities of constructing a country's culture. There are six cultural dimensions known today. Initially, only four cultural dimensions were proposed in Hofstede et al. (2010), comprising power distance, individualism, masculinity, and uncertainty avoidance. Power distance is defined as the degree to which the less capable individuals of organizations and institutions acknowledge and anticipate the unequal dissemination of power. Power distance implies more consultative or majority rule culture. It can be a measurement committed to capturing the way society handles disparities among them. Individualism is described as the degree to which people are coordinates into groups; particularly, people highlight individual accomplishments and personal rights in individualistic social orders. Individuals act transcendently as members of a deep-rooted and cohesive group or organization in collectivist social orders. Masculinity is a dimension that makes an obvious distinction between gender roles. Uncertainty avoidance tells how society can tolerate uncertainty and ambiguity. People with high uncertainty avoidance attempt to prevent unexpected events, and those with low uncertainty avoidance are more tolerant of unstructured and dynamic circumstances.

In addition to Hofstede's previous work, long-term orientation and indulgence were added as the other cultural dimensions. Long-term orientation deals with a society's

states of mind toward their claim past, whereas taking care of current and coming challenges. It captures the cultivating of excellencies oriented for future outcomes, in specific, perseverance and thrift. Its inverse character, short-term orientation, shows the fostering of ethics related to the past and present. As opposed to restrained control, indulgence is characterized as the degree to which individuals attempt to control their wants and driving forces based on how they were raised. Hammerich (2019) explained that the now six cultural dimensions to be the fundamental qualities of specific cultures belonged to a country, rather than individuals. The dimensions measure the leaning of preferences in one state of occurrence over another, for instance, individualism and collectivism, masculinity and femininity, long-term and short-term orientation, indulgence and restraint, as well as high and low value in power distance and uncertainty avoidance. Therefore, it makes the scores of the dimensions relative to other cultures and not absolute values.

Numerous studies have documented cultural characteristics that are consequential to financial activities. In the stock market, investors prefer firms nearby that share the same cultures and language (Grinblatt & Keloharju, 2001). Religious occasions and holidays affected investors' behavior, as well as stock returns and volatility (Gavriilidis, Kallinterakis, & Tsalavoutas, 2016; Al-Khazali, Bouri, Roubaud, & Zoubi, 2017; Lai & Windawati, 2017). Cultural differences can be understood with Hall's Iceberg Model (1976) that it has a great hidden aspect like value, belief, or relationship. Further, it was framed to some cultural dimensions by Hofstede (1980) as "software of the mind" shaped by the societal value. In the global financial dataset, the cultural dimensions have been variable so far. For instance, they can predict the stock returns even if interpreting is challenging (Hammerich, 2019).

The first Hofstede's cultural dimension is power distance (PDI). It exhibits people's acceptance of hierarchical order. The different levels of power in the social structure are common and manageable for countries with a higher power distance score. In the Tehran Stock Exchange Market, Iran, the investment decisions were affected by power distance culture (Amirhosseini & Okere, 2012). Further, Lobão and Maio (2019) explored the cultural differences that cause investors' imitative behavior or herding in 39 countries. They showed high acceptance of authority order, or high PD, which was unfavorable for herding because the shareholders were more protected by good institutional quality. However, Beckmann et al. (2008) had a prior finding that the older and less experienced asset managers in the upper hierarchy were caused by higher power distance.

H₁: Power Distance Index (PDI) influences the sustainable stock exchange return.

The second is individualism (IDV). It is a prominent dimension in cultures characterized by loose ties among individuals. As the opposite of collectivism, individualistic people are more independent and detached from any collective interests. These attributes encourage investors to be more flexible and aggressive in their financial decisions, for example, by allocating more stocks and other assets to the foreign market (Anderson,

Fedenia, Hirschey, & Skiba, 2011; Beugelsdijk & Frijns, 2010). Individualism, according to Chui, Titman, and Wei (2010), had a positive impact on stock market volatility and momentum profits. In contrast, Zhan (2019) indicated a less volatile stock market for individualistic nations. It was explained that cultures with higher individualism displayed lower synchronized stock price movements, which lowered the stock market returns.

H₂: Individualism (IDV) influences the sustainable stock exchange return.

In the stock market, all decisions are accompanied by unknown threats or uncertainties. Investors can be tolerant of uncertain situations, or otherwise, they are anxious and want to avoid it. Then, it refers to one culture named uncertainty avoidance (UAI). Most findings on this dimension related to financial studies are similar. Nguyen and Truong (2013) revealed that higher prevention of uncertainties could lower the stock market's information content. Moreover, there is a linkage between risk-averse and conservatism with high UA. Trading activities then become more inflexible, slow, full of caution, and skepticism. When investors accepted more uncertainty, the stock markets were valued more importantly in that country (De Jong & Semenov, 2002).

H₃: Uncertainty of Avoidance Index (UAI) influences the sustainable stock exchange return.

Another cultural dimension of Long-Term Orientation (LTO) was added after Hofstede's preliminary work. This dimension refers to the attitude of perseverance and thrifts to manage future outcomes. Long-term-oriented people tend to deal with long-term commitment; in the stock market, investors choose long-term investment or make portfolios diversification (Anderson et al., 2011; Beugelsdijk & Frijns, 2010). Hammerich (2019) found that LTO expressed a positive relationship to the stock price effect on a global cross-sectional level. Although the cultural dimensions' values are time-invariant, LTO showed a strong predictive power for global firm-level returns. However, some studies excluded LTO from cultural analysis or could not find any significant impact on financial markets (Chui et al., 2010; Lobão and Maio, 2019; Zhan, 2019).

H₄: Long Term Orientation (LTO) influences the sustainable stock exchange return.

Research Method

This research used a quantitative research method to investigate the influence of cultural dimensions on sustainable stock returns. The sustainable stock exchanges used in this research were from Asian countries selected based on Sustainability Stock Exchanges Initiatives by UNCTAD, UNEP, PRI, & Compact (2019). Based on the Sustainability Stock Exchanges Initiative, seven countries in Asian were found which had established sustainability indices such as Indonesia (JKSRI), Malaysia (FTF4GBM), Singapore (iEdge SG ESG), India (NIFTY100 ESG), Japan (JPXNK400), China – Hongkong

(HSCSUSI), and Turkey (XUSRD). The financial data of the sustainable stock exchange sample were retrieved from the Thomson Reuters Datastream. The sample started from January 2015 until December 2019. Monthly data for the Sustainability index in each country were used. Monthly data from the sustainable indices of seven Asian countries' stock markets were also utilized. The monthly logarithmic yield was calculated to obtain better statistical characteristics, as shown in the equation:

$$R_{t,i} = \text{Ln Index}_{t,i} - \text{Ln Index}_{t-1,i}$$

Where $R_{t,i}$ denotes the logarithmic yield of national stock market index *i* on the tth trading day, Index$_{t,i}$ indicates the closing price of the national stock market index *i* on the ith trading day, and Index$_{t-1}$ signifies the closing price of the national stock market index *i* on the (*t-1*)th trading day.

This research adopted the national culture indices suggested by Hofstede et al. (2010) for empirical research to examine the effect of national culture on the return of sustainable stock exchanges. Hofstede et al. (2010) used a questionnaire to examine thousands of IBM workers in 76 countries around the world and measured the six dimensions of national nature: power distance index (PDI), individualism (IDV), masculinity versus femininity (MAS), uncertainty avoidance index (UAI), indulgence versus restraint (IVR), and long-term orientation (LTO). These dimensions help understand the principles and impact of unique cultural dimensions in the workplace, company, and investors (Zhou, Cui, Wu, & Wang, 2019). Previous studies have employed cultural indexes constructed by Hofstede et al. (2010), such as Chang & Lin (2015) and Lobão & Maio (2019) who used PDI, IDV, MAS, UAI, and LTO as their research variable to represent the national culture and cultural distance, as well as Zhou et al. (2019) who utilized six of cultural dimension by Hofstede. Other studies are from Abdussalam & Ryan (2011), Amirhosseini and Okere (2012) and Laitinen and Suvas (2016), who employed four of Hofstede's dimensions of national cultures, such as PDI, IDV, MAS, and UAI.

Unlike the previous study, this research focused on four of Hofstede's indexes, which assessed in the same context and represented global disparities in the risk-taking output of companies, such as power distance (PDI), individualism (IDV), the uncertainty of avoidance (UAI), and long-term orientation (LTO) to characterize national cultures in the Asian region. The data of cultural dimensions for seven Asian countries were retrieved directly from Hofstede's (2015) website (https://geerthofstede.com/) (see Table 1). Four indexes of cultural dimension are described in more detail:

Power Distance (PDI): The power distance index is defined as "the extent to which the less powerful members of organizations and institutions (like the family) accept and expect that power is distributed unequally." In this dimension, inequality and power are perceived by the followers or the lower strata. A higher degree of the index indicates that hierarchy is clearly established and executed in society, without doubt or reason. A lower degree of the index signifies that people question authority and attempt to distribute power.

Individualism (IDV): The measurement of a preference for a loosely-knit social framework in which the care of themselves is to be expected only by individuals and their immediate families.

Uncertainty Avoidance (UAI): The measurement of uncertainty level can be accepted or avoidance by an individual in a society.

Long Term Orientation (LTO): The measurement of long-term emphasis can be seen as the quest for morality in society. In a culture with a short-term outlook, absolute truth is generally concerned.

Table 1 Cultural Dimension Index of Seven Asian Countries

Countries	Power Distance	Individualism	Uncertainty Avoidance	Long Term Orientation
Indonesia	78	14	48	62
Malaysia	100	26	36	41
Singapore	74	20	8	72
Thailand	64	20	64	32
Vietnam	70	20	30	57
India	77	48	40	51
Japan	54	46	92	88
Hongkong	68	25	29	61
Turkey	66	37	85	46

Sources: Hofstede Website

In order to determine the effect of cultural dimension on sustainable stock return model based on the static panel data model, four estimations, namely Ordinary Least Squares (OLS), Feasible Generalized Least Squares Regression (FGLS), id Fixed Effects (within) Regression, and FGLS Regression with time fixed effect were employed to this study. The FGLS estimator is an Ordinary Least Square estimator of a transformed isomorphic model that provides the best linear unbiased estimator (BLUE) under heteroscedasticity (Tongkong & Jantarakolica, 2020; Zhang, Liu, Wang, & Li, 2017).

The regression model of this research consisted of Sustainable Stock Exchanges return ($SSER_{it}$) as the dependent variable and four time-invariant cultural dimensions of Hofstede: power distance (PDI_i), individualism (IDV_i), uncertainty avoidance (UAI_i), and long-term orientation (LTO_i), while ui is idiosyncratic for the error term. Furthermore, Ordinary Least Square (OLS) with fixed-effect and Generalized Least Squares (GLS) with fixed effect regression were utilized, which were less sensitive to the outliers to capture the influence of four cultural dimensions on seven sustainable stock exchanges in Asia. A panel regression model was considered:

$$\text{Ln } SSER_{i,t} = \beta_0 + \beta_1 \ln PDI_i + \beta_2 \ln IDV_i + \beta_3 \ln UAI_i + \beta_4 \ln LTO_i + \beta_5 Z_i + u_i$$

Where, the Z_i is unobserved time-invariant heterogeneities across the entities i = 1,…,n. It aimed to estimate β_1 to β_4, the effect on Y_i of a change in X_i holding constant Z_i. Letting $\alpha_i = \beta_0 + \beta_5 Z_i$, so that the model was obtained.

$$\text{Ln SSER}_{i,t} = \alpha_i + \beta_1 \ln PDI_i + \beta_2 \ln IDV_i + \beta_3 \ln UAI_i + \beta_4 \ln LTO_i + u_i.$$

The Asian regions have individual specific intercepts i = 1,…,n, where each can be understood as the fixed-effect of entity i. Therefore, fixed-effect regression is more efficient than estimating regression models.

$$\text{Ln SSER}_{i,t} = \beta_0 + \beta_1 \ln PDI_i + \beta_2 \ln IDV_i + \beta_3 \ln UAI_i + \beta_4 \ln LTO_i + \gamma_2 D_{2i} + \gamma_3 D_{3i} + \cdots + \gamma_n D_{ni} + u_{it}.$$

This model has n different intercepts, one for each entity. It is an equivalent representation of the fixed-effects model. Moreover, feasible GLS with fixed-effect was applied for estimating the unknown parameters when there is a certain degree of correlation between the residuals in an OLS regression model to deal with the heteroscedasticity and autocorrelation issues.

Result and Discussion

This research collected panel data from 2015 to 2019 from the Thomson Reuter database, Bloomberg database, and Yahoo Finance for the sustainable stock exchange data. According to the Sustainable Stock Exchanges Initiative by United Nations (UN), seven Asian regions have already had sustainable stock indices. The panel data included seven sustainable stock indices from Asian countries and a time series from 2015 to 2019.

Figure 1 shows the monthly sustainable stock indices price from seven countries in the Asian region for five years. The model for each sustainable stock market is depicted in Figure 1. This figure provides some interesting, stylized facts. From 2015 to 2016, all of the sustainable stock markets in the Asian region were crashed. They fell substantially with the interlinked drops in commodities, such as oil, copper, and most Asian currencies. Four markets experienced the lowest downturn, such as FTF4GBM Malaysia, which dropped from 1000 points to 850 points, iEdge Singapore from 1050 points to 800 points, HSCUSI Hongkong from 15 to 10 points, and JPNK400 that dropped from 1500 points to 1100 points. Three other markets also bore the market crash but not fell significantly. Between 2018 and 2019, the sustainable stock markets in the Asian region took a turn down after experiencing the longest bull run from 2017. It happened because of the uncertainty import tariff caused by the trade war between the United States of America and China (Blau, 2017; Jang, 2017).

Figure 1 Sustainable Stock Exchanges Price in 7 Asian Countries period 2015-2019

Table 2 Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
LnSSER	336	6,523253	2,096979	2,366498	9,695891
LnPDI	336	4,298065	0,1860928	3,988984	4,60517
LnIDV	336	3,367274	0,4490784	2,639057	3,871201
LnUAI	336	3,697913	0,8070194	2,079442	4,521789
LnLTO	336	4,059196	0,2635735	3,713572	4,477337

Based on Table 2, the mean of sustainable stock exchange return in this research was 65.23%, with a standard deviation of 20.96% during the research period. This research's four cultural dimensions had a mean of 4.29 for PDI, 3.36 for IDV, 3.69 for UAI, and 4.05 for LTO. Each variable's standard deviation was PDI 0.18, IDV 0.44, UAI 0.807, and LTO 0.26, respectively.

In this research, the OLS regression, FGLS regression, FGLS regression with id fixed effect, and FGLS regression with time fixed effect were employed to get robust findings to capture the influence of four cultural dimensions on sustainable stock exchanges return in the Asian region consisting of seven sustainable indices from Asian countries.

Table 3 Regression Results

R-squared	0.9984
Root MSE	0.09383
F(59, 276)	8641.61
Prob > F	0
Number of obs	336

It can be seen from Table 3 that the R-squared was 0.9984, and the adjusted Root MSE was 0.09383. The F-statistic value was 8641.61, and the corresponding P-value was approximately zero, indicating that the model had a good degree of fit.

Table 4 OLS Regression and FGLS Regression Result

	OLS Regression				FGLS Regression			
LnSSE	Coef.	Std. Err.	t	P>t	Coef.	Std. Err.	z	P>z
LnPDI	19.949***	0.073	273.070	0.000	20.037***	0.260	77.130	0.000
LnIDV	4.177***	0.025	165.350	0.000	4.239***	0.093	45.600	0.000
LnUAI	0.987***	0.010	103.640	0.000	0.980***	0.034	29.050	0.000
LnLTO	15.341***	0.045	337.490	0.000	15.377***	0.162	94.880	0.000
_cons	-159.204	0.540	-295.040	0.000	-159.879	1.914	-83.530	0.000
F(4, 331)	32597.03				Wald chi2(4)		10230.61	
Prob > F	0.0000				Prob > chi2		0.0000	

In the first step of the analysis, the model was processed by ordinary least square (OLS) regression. Table 4 presents the OLS regression model results for four cultural dimensions variables on sustainable stock returns for January 2015 – December 2019. The power distance index (PDI), individualism (IDV), the uncertainty of avoidance index (UAI), and long-term orientation (LTO) were statistically significant as their p-values were below any acceptable significance level at 0.01. The results revealed that Asian

sustainable stock returns were significantly and positively affected by four cultural dimensions.

However, the Wooldridge test for autocorrelation in panel data indicated at least first-order autocorrelation in the sample at statistic 5% significance, and the Modified Wald test for GroupWise heteroscedasticity also showed that there was heteroscedasticity in the estimated results, with 1% level of significance. All tested results are shown in Table 4.

Table 5 Autocorrelation and Heteroscedasticity Test Results

Tests	Results	
Wooldridge test for autocorrelation with H_0: no first-order autocorrelation	F(1,5) = 12.949	Prob > F = 0.0156
Modified Wald test for GroupWise heteroskedasticity with H_0: sigma(i)^2 = sigma^2 for all i	Chi2 (6) = 373.39	Prob > Chi2 = 0.0000

Due to the estimation problems, it was difficult to explicitly conclude the dependent variables' influence on the model's independent variables. It required changing and combining different estimation ways to review the final results. It is vital to include country-specific characteristics in the estimate (see Table 5). By using cross-country, time-series panel data, and the fixed-effect feasible generalized least square (FGLS) technique, the researchers examined the effect of four cultural dimensions on the sustainable investment returns across countries and different market conditions. FGLS has several advantages over OLS. In a panel data regression model, the unobserved country-specific effects are a part of the error term, increasing the possibility of a correlation between the error term and the explanatory variables, thereby resulting in biased coefficient estimators. FGLS can solve this econometric problem.

Then, to ensure the accuracy and significance of each cultural dimension's coefficient, this research employed three times feasible generalized least square (FGLS) regression. Table 4 illustrates the FGLS regression model results, with the coefficients of PDI, IDV, UAI, and LTO significant at a 0.01 level of significance. The coefficients of PDI and IDV in the FGLS regression model were 20.037 and 4.239; they were higher than the results in OLS regression, with the coefficients of 19.949 and 4.177. However, the findings were still consistent with the OLS regression model and FGLS regression. Further, the panel data of sustainable stock exchange return with FGLS regression model with the id fixed-effect and FGLS regression model with time fixed effects were tested. The regression analysis results are presented in Table 5.

Based on the result of feasible GLS regression with the id fixed effect (Table 6), the coefficients of PDI, IDV, UAI, and LTO were positively significant at 0.01 level. As well as FGLS regression results with time fixed-effect, four cultural variables' coefficients were significant at a 0.01 level of significance. Thus, Table 4 and Table 5 show that all of the four cultural dimensions' coefficients were consistent, and the corresponding P-values of the variables were all less than 0.01, indicating that the variables had a significant relationship with the returns of the sustainable stock market in the Asian region.

Table 6 FGLS Regression with id and Time Fixed Effect Results

	FGLS Regression with id fixed-effect				FGLS Regression with time fixed-effect			
LnSSE	**Coef.**	**Std. Err.**	**z**	**P>t**	**Coef.**	**Std. Err.**	**z**	**P>t**
LnPDI	19.978***	0.116	172.480	0.000	19.194***	0.384	49.980	0.000
LnIDV	4.132***	0.038	107.820	0.000	4.102***	0.072	57.230	0.000
LnUAI	1.004***	0.019	53.270	0.000	0.936**	0.043	21.920	0.000
LnLTO	15.369***	0.074	208.580	0.000	15.175**	0.177	85.520	0.000
_cons	-159.312	0.857	-185.840	0.000	-154.878	2.480	-62.450	0.000
Wald chi2(59)		50429.47			Wald chi2(5)		10702.71	
Prob > chi2		0.0000			Prob > chi2		0.0000	

Note: Number of obs: 336, number of groups: 6, periods: 56

Based on the results, it showed that the increase of power distance (PDI) would lead to increasing returns of the sustainable stock market in the Asian region. Thus, when predicting sustainable stock returns, the general acceptance of hierarchical structures in the population could also foster a high return effect to some degree. It is related to the research by Amirhosseini & Okere (2012), Beckmann et al. (2008), Hammerich (2019), and Zhou et al. (2019), which found a positive impact of power distance on the stock returns. Most people in the Asian region accept that power is distributed unequally, so they heavily depend on their leader. This situation leads to the working condition of the company more stable and focuses on running their business. Countries with more power distance place more focus on seniority such that they are comparatively older for the bosses who decide strategic investment directions. It may be crucial because it is realized that age influences investment conduct, especially risk-taking, and thus may contribute to a more conservative allocation of the portfolio.

The positive influence of individualism (IDV) in the Asian region created a high return on the market because the investors were more flexible and more aggressive in investing. This finding aligns with research by Chui et al. (2010) and Nguyen & Truong (2013), which uncovered that individualism had a positive impact on market returns and momentum profit. For the investors, the market returns showed the attraction of stock investment and growth of profit. These findings are robust over the three information quality indicators and stable with the use of multiple control variables or with the use of enhanced cultural indexes. The researchers view this result as a high individualism correlated with overconfidence, self-assignment bias, and a strong desire for return. These behaviors of investors contribute to increased responses and trading of specific market information.

Uncertainty avoidance (UAI) also had a positive impact on sustainable stock exchanges in seven Asian countries. Thus, increasing uncertainty avoidance would increase market returns. When investors were more emotional and uncomfortable with uncertainty and ambiguity, the market would tend to be more volatile. Because investors were worried about their investment when the shocks happened, they decided to go off from the market. It is consistent with Beckmann et al. (2008) research that found the uncertainty avoidance related to the degree of underutilized tracking error (i.e., a safety margin of

returns). According to tracking error models by Xu, Zheng, Natarajan, and Teo (2014), a higher tracking error used to increase portfolio risk should lead, on average and in the longer run, to higher returns compared to the benchmark. Thus, uncertainty avoidance may be a reason for lower returns generated by affected asset managers. There is, however, also a positive side to this cultural dimension; in order to reduce uncertainty, it seems plausible that asset managers in these societies put more effort into information research. Meanwhile, these research findings are contrary to the research by Nguyen and Truong (2013) and Zhou et al. (2019), which exposed that uncertainty avoidance had a negative impact on stock returns. Uncertainty avoidance is correlated with conservatism and low-risk selection. Conservative and risk-averse investors show a more conservative response and trade in the company-specific results.

The long-term orientation has shown a positive impact on sustainable stock returns in Asian countries. The longer investors are oriented towards investing in the sustainable stock market, the greater the returns. Hammerich (2019), with the research about price, cultural dimensions, and the cross-section of expected stock returns, discovered that long-term orientation (LTO) positively affected expected stock returns. It demonstrated some good predictive strength for global company-level returns, although the cultural dimensions' values were time-invariant only in the framework of culture dimensions and after adjusting for the investment types listed.

This research's results have essential for individual investors, portfolio managers, and investment management companies to increase their concern on the effect of cultural dimension on sustainable investment. Especially for the sustainable investment in Asian regions with different power distance cultures, individualism, uncertainty avoidance, and a long-term orientation, they can cause different market conditions, risks, and returns. However, investors must consider the sustainable stock exchanges in the Asian region that give high returns and the positive impact of the cultural dimensions.

Conclusion

This research's main contribution is to examine the four cultural dimensions adopted by Hofstede et al. (2010) on returns of sustainable stocks indices in seven Asian countries. In the literature, some studies have examined the correlation of national culture on investor behavior, investor decision, stock market volatility, stock returns, etc. However, their approaches were rarely applied to test the effect of culture on stock returns under the context of sustainable stock indices listed in the Asian region. Most of the study on sustainable investing has concentrated on the American market and the European market, which first has a sustainability ranking. Thus, an innovative approach was proposed in this paper to analyze the influencing factors of cultural dimensions on sustainable stock returns using the FGLS fixed-effect model.

Secondly, this research used the feasible generalized least square (FGLS) fixed effect model to identify sustainable stock returns' influencing factors. Empirical research found that the following cultural dimensions were significant (p<0.01), including power

distance index (PDI), individualism (IDV), the uncertainty of avoidance index (UAI), and long-term orientation (LTO). These factors were filtered as the main factors to examine the correlation between culture and sustainable stock returns. Finally, to find the robust result, empirical results were tested using ordinary least square (OLS) regression, FGLS regression, FGLS regression with id fixed effect, and FGLS regression with time fixed effect. All regression method results were shown to be consistent with the empirical analysis.

The outcomes of this empirical investigation underlined the fact that: (i) the increasing power distance would increase the market returns in the Asian region, (ii) individualism had a positive and significant impact on the market returns; the increase of individualism in Asian countries would lead to the higher sustainable stock returns, (iii) the increasing uncertainty of avoidance by investors in the Asian region would lead to the higher stock returns, and (iv) the long-term orientation had a significant and positive impact on market returns. It showed that if the investor had a long-term orientation on the sustainable stock exchange in the Asian region, it would lead to an increasing in stock returns.

This research contributes to the theoretical implication concerning cultural dimension and sustainable stock returns under the context of the Asian region. This research's results are essential for investors' and portfolio managers' practical implication in allocating their assets in the value creation of investment, especially in the Asian region. However, limitations still exist in this research, such as limited data for sustainable stock indices in the Asian region and this research mainly focused on four cultural dimensions of six dimensions in Hofstede's model. Future studies should add the control variables and some other financial variables related to sustainable investment. Future research also needs to examine sustainable stock exchanges in another region and apply a more advanced method.

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