

Asian Journal of Economics and Banking

ISSN 2615-9821

http://ajeb.buh.edu.vn/Home



Social Existence Determines Consciousness: How the Economy Matters for Cultural Changes? A Study of Selected Asian Countries

Nguyen Tran Xuan Linh^{1†}

 1 Ho Chi Minh city Industry and Trade College, Ho Chi Minh City, Vietnam

Article Info

Received: 04/02/2020 Accepted: 16/3/2020 Available online: In Press

Keywords

Asian Culture, Bayesian Analysis, Economic Determinism, Hofstede's Cultural Dimensions

JEL classification

A13, C11, C82

Abstract

Based on economic determinism and Hofstede's cultural dimensions theory, applying the Bayesian approach throughout the study, the paper confirms the nonlinear relationship between economic performance and cultural changes. First, the results of this paper are different from the previous studies, i.e., individualism and economic performance have a positive relationship; masculinity (MAS) and uncertainty avoidance index (UAI) first decrease, and then increase with economic development. The possible explanation for this is based on the cultural features of the studied Asian countries. In addition, the study found evidence that the English language and economic openness draw Eastern cultural values near to the Western culture, but there are some conservative straits of the Asian culture that hinder the convergence to the Western culture.

[†]Corresponding author: Nguyen Tran Xuan Linh, Ho Chi Minh city Industry and Trade College, Ho Chi Minh City, Vietnam. Email address: xuanlinh86@gmail.com

1 INTRODUCTION

Culture and economy are two factors that closely interact with each other. Economic development creates the material foundation to enrich cultural values and build new values for a country; in turn, these cultural values become a spiritual foundation to foster economic growth. Thus, many studies were carried out to explore the relationship between economic growth and culture change. Most researchers have reported that there is a correlation between cultural values and economic development (see [33], [7], [22], [24], [18], [36], [40], [3], [5], [16]). However, there are several studies that show the correlation between economic development and cultural values is very weak (see [51], [38]). This proves that the results on this relationship are controversial. In addition, most studies used datasets with samples of countries around the world, but there are few studies that have been conducted in Asian countries (for example, see [45], see [46]), where cultural features are quite conservative. In this study, the author supports the hypothesis that economic development brings about changes in cultural values. By employing Hofstede's cultural dimensions framework and using the data of gross domestic product (GDP) per capita obtained from World Development Indicators of World Bank, the author analyzes the impact of economic development on cultural values in the countries of this region. Significant differences from previous studies have been noted, including that GDP per capita and individualism (IDV) have a positive correlation, GDP per capita decreases uncertainty avoidance index (UAI) and masculinity (MAS), but after GDP per capita reaches a certain value, UAI and MAS increase. In addition, the study also addresses the impact of the English language and economic openness on national cultural values. The results show that both of these factors increase the absorption of Western culture in Asian countries and also hinder this absorption process.

2 THEORETICAL FRAMEWORK AND HYPOTHESES

Hofstede's Cultural Dimensions Theory Hofstede's cultural dimensions theory was developed by Hofstede from an IBM human resource survey carried out worldwide from 1967 to 1973. By using factor analysis, Hofstede discovered the cultural differences that exist between countries in the world. At first, Hofstede's cultural dimensions framework had four dimensions: power distance-PDI, individualism-IDV, uncertainty avoidance index-UAI, and masculinity-MAS. In 1991, long-term orientation or LTO was added as the fifth dimension to Hofstede's cultural dimensions theory. This dimension describes the relationship between the past and the current and future actions/challenges. Hofstede's cultural dimensions theory was completed in 2010 after the sixth dimension, indulgence vs. restraint (IND), was added. The IND dimension interprets the degree of freedom that societal norms give to citizens in fulfilling their human desires.

Hofstede's cultural dimensions the-

ory has proven its role and gradually become the analytical framework for national communications. Trompenaars [47] and Smith, Peterson, & Schwartz [37] affirmed that Hofstede's cultural dimensions theory is more accurate than other scales in measuring cultural value. Sojerd & Chris [39] conclude that Hofstede's cultural dimensions theory has a significant influence on cross-cultural studies. Therefore, the author used Hofstede's cultural dimensions as the basis for further analysis.

The Relationship between Economic Performance and Cultural Values

Weber [49] claimed that Protestant religious ethics facilitated the development of capitalism because it encourages savings, hard work, and the accumulation of human capital. Hofstede [20] confirmed that GNP per capita and cultural values are closely related. Fraker et al. [13], using a sample of 18 and 20 countries in two phases, affirmed that cultural values play an important role in economic performance. Andersen et al. [2] and Becker & Woessman [6] also shared the opinion that cultural values have an impact on economic development. Contrary to this view, and according to Marx's economic determinism, the mode of production of material life determines the social, political, and intellectual life in general. Therefore, the economy has a decisive influence on culture. Based on this doctrine, Tang & Koves [42] found evidence of a nonlinear relationship between national assets-which are measured by GDP per capita-and cultural dimensions in Hofstede's theoretical framework.

Research Hypotheses

Applying Marx's economic determinism, based on Tang & Koveos' study [42], the author proposed the following hypotheses to identify the relationship between economic performance and cultural values. Moreover, relying on the ideas of Johnson [27] and Christopher & Claudia [10], the author hypothesized about the impact of English language and economic openness on the cultural changes in the Eastern countries.

Hypothesis 1: GDP per capita growth increases the power distance index (PDI), but after GDP per capita reaches a certain value, the index decreases.

Adelman & Morris [1] and Hofstede [20] argued that the middle-class is a bridge between powered and powerless groups, thus reducing the power gap in society. Therefore, the author analyzed the relationship between economic development and cultural values by evaluating how economic development will change income disparities. Kuznets's effect [28] suggests that, with the level of development, the income gap increases initially, and then decreases. According to this theory, in the early days of development, the savings accumulation of the upper class increases the gap between the rich and the poor. But then, this gap will decrease due to government intervention with tax policies, subsidies, or even inflation (reducing the value of savings). For this reason, the author expected that economic development will increase the power distance until the GPD exceeds a certain value, after which this index will decrease.

Hypothesis 2: : GDP per capita

growth causes individualism (IDV) to decrease in the first stage of the developing process, and after GDP per capita reaches a certain value, the index will increase.

Most researchers agree that economic development is an important factor that affects individualism (see [32]). When there is a lack of human resources for economic exploitation, it is difficult to implement a task on one's own. Therefore, it would be better for people to rely on one another. Rejection by others will greatly impact survival, and so people often try to avoid this situation. Collectivism tends to dominate in difficult economic conditions. In contrast, having abundant resources will allow individuals more freedom to pursue their own interests, and hence reduce the need to rely on others. In other words, when the economy has not developed, individualism is not visible. However, when the economy develops to a certain level, people tend to pursue their own interests, as a result of which individualism appears to be embraced (see [33]).

Hypothesis 3: Per capita GDP growth increases risk avoidance (UAI), but after per capita GDP reaches a certain value, risk avoidance decreases.

Uncertainty avoidance includes the following three components: rule orientation, job stability, and stress (see [17]). Hofstede [17] evinced that, to cater to the industrialization process, farmers had to give up their land to make room for factories, which urged them to earn a stable job to ensure their survival. However, as national assets continue to increase, life improves considerably compared to what it was, and the concern about stability decreases. This may lead to the hypothesis that UAI increases at first, but after GDP per capita reaches a certain threshold, it decreases.

Hypothesis 4: Masculinity (MAS) first increases, and then it decreases with economic development. Hofstede [20] concludes that there is no correlation whatsoever between masculinity and economic development. However, many studies refute this result. The World Development Report [49] of the World Bank pointed out that countries that do not have laws to protect women and fight against discrimination are often underdeveloped countries. Research by Ata, Ljubica & Can [4] also confirmed that economic growth and gender imbalance index have an inverse correlation. Tatiana & Geethanjali [43] demonstrated that the production process has three sectors: natural resources, physical capital, and human capital. The level of these sectors changes over time with economic growth. In the early stages of development, the physical strength of man was very important for resource extraction, that is, the MAS index increased. Over time, as human capital accumulated, technology improved, and female productivity increased. So long as human capital productivity is the same for both men and women, the gender balance of power will converge to equality, and MAS will decrease.

Hypothesis 5: GDP per capita reduces long-term orientation (LTO), but after the GDP reaches a certain threshold, the LTO index increases.

According to a study by Read [34], long-term orientation has a strong correlation with national savings. This study, therefore, explains the effect of economic development on LTO through savings. By analyzing the relative advantage, Edwards [12] summarized the determinants of personal savings. He claimed that individuals in countries with developed economies tend to increase their current spending and reduce savings because they expect to gain higher income in the future; in addition, the development of the financial market makes it easier for them to access capital and hence has reduced their need to save on reserve requirements. In other words, saving tends to decrease when income increases. However, the anthropological factor also contributes to determining an individual's saving behavior, according to which, the economic achievement increases longevity in developed countries, and so individual savings have to increase to accommodate the extra expenses needed after retirement. That, in brief, means the LTO index, which is presented by individual savings, first decreases, but then increases with economic development.

Hypothesis 6: The higher the GDP per capita, the higher is the indulgence vs. restraint index (IVR)

Indulgent societies are the ones that allow relative freedom and satisfaction based on the basic and natural nature of the person. On the contrary, restrained societies restrict the satisfaction of individual needs through the imposition of rigorous moral standards. Individuals in indulgence society tend to be more optimistic, while those in restrained so-

ciety are more introverted. Sojerd & Chris [39] confirmed that individuals in society with high IVR scores tend to live in big cities. It means that indulgent people prefer to live in developed and urbanized countries. According to Hofstede et al. [21], countries with high IVR index are often developed such as those in Northern Europe. The flourishing economy has facilitated individuals in these countries to enjoy life and have fun. The intellectual standards of the people in developed countries are high. society is more free and democratic, and therefore the IVR Index in these countries is very high. This leads to hypotheses that economic growth has a positive impact on the IVR.

In addition to per capita income, the author also considered the effects of English language and economic openness on Hofstede's cultural dimensions.

Economic openness is measured through total import-export value against GDP. Christopher & Claudia [10] used data related to national economic openness and cultural scores from the World Value Survey to assess the impact of economic openness on the cultural values of countries. This research demonstrated that there is a strong correlation of economic openness to national culture. Indeed, economic openness has created a mechanism of cultural exposure, which facilitates Asian countries in accessing the values of Western culture.

According to Ibrahim [22], English has become a global language, with 380 million speaking it as the first language, 200 million people who speak English as the second language, and billions of people are in the process of learning Therefore, the English lan-English. guage is an important communication tool for people from different language backgrounds. According to Johnson [27], the English language is seen as a force that is detrimental to cultural diversity. Johnson [27] argued that a person who learns another language must also accept the culture of that language. Therefore, countries that consider English as the second language will tend to absorb and blend the Western culture into their own culture.

In summary, the economic openness and the English language factors make people in Asian countries explore other cultures, specifically the Western culture. Thanks to the development of the economy, Western culture appears overwhelming compared to other economies. According to a survey by Hofstede et al. [21], Western culture has relatively low PDI, UAI, and MAS, while IDV, LTO, and IVR are quite high. Therefore, the author assumes that economic openness and English language factors reduce PDI, UAI, MAS, but increase IDV, LTO, and IVR.

Based on the hypotheses proposed in

Section 2, there are six models:

$$\begin{split} PDI &= \alpha_0 + \alpha_1 logGDPer \\ + \alpha_2 logGDPer^2 + \alpha_3 Eng + \alpha_4 OpE + \varepsilon_1 \\ IDV &= \beta_0 + \beta_1 logGDPer \\ + \beta_2 logGDPer^2 + \beta_3 Eng + \beta_4 OpE + \varepsilon_2 \\ UAI &= \gamma_0 + \gamma_1 logGDPer \\ + \gamma_2 logGDPer^2 + \gamma_3 Eng + \gamma_4 OpE + \varepsilon_3 \\ MAS &= \delta_0 + \delta_1 logGDPer \\ + \delta_2 logGDPer^2 + \delta_3 Eng + \delta_4 OpE + \varepsilon_4 \\ LTO &= \lambda_0 + \lambda_1 logGDPer \\ + \lambda_2 logGDPer^2 + \lambda_3 Eng + \lambda_4 OpE + \varepsilon_5 \\ IVR &= \rho_0 + \rho_1 logGDPer \\ + \rho_2 logGDPer^2 + \rho_3 Eng + \rho_4 OpE + \varepsilon_6 \end{split}$$

where PDI, IDV, UAI, MAS, LTO, and IVR are dependent variables and explain Hofstede's cultural dimensions. The independent variables in the model are GDPer, Eng, and OpE, respectively, explaining GDP per capita, English language, and economic openness.

3 DATA AND METHODOLOGY

3.1 Data

Data on GDP per capita and economic openness of 24 Asian countries, averaged over the period 1990-1994, were taken from the World Development Indicators of the World Bank [50]. Because cultural dimensions of Hofstede's theory are normalized on a scale of 0 to 120, the average GDP per capita is converted into a logarithm to standardize the highly skewed economic variable in order to make it more amenable to statistical inference. Cultural dimensions are quoted from the Hofstede Insights website [19], in which the first 4 scales have 24 countries, the 5th scale (LTO) has only 21 countries, and the 6th scale (IVR) has only 18 countries.

Countries that lacked LTO and IVR dimensions were excluded when assessing the impact of factors on these two indicators. This sample has six countries that are influenced by Confucianism: China, Hong Kong, Japan, Korea, Singapore, and Vietnam. Eleven countries with a majority Muslim population are included in the sample: Bangladesh, Indonesia, Malaysia, Iran, Saudi Arabia, Lebanon, Iraq, Jordan, Turkey, Pakistan, and Kuwait. A total of four countries that have the majority of Buddhists are included: Thailand, Bhutan, Nepal, and Sri Lanka. One country that has Hinduism as the dominant religion, that is, India, and one country that has Judaism as the state religion, that is, Israel, are also included. These countries have a long-standing tradition and a very conservative culture. In addition, one country in the sample has the majority of the Christian population, that is, the Philippines.

3.2 Research Method

Based on the literature review, the research done in this area was primarily conducted using the frequentist ap-However, the interpretation proach. of results and the forecasting by this method have not been accurate in many cases (see [8], [31], [45]). Some of the studies in this area, for example, Thach et al. [46] and Thach [45], were based on the Bayesian approach. The authors used sensitivity analysis to select the most appropriate priors in these studies. The analytical results suggest that the weakly informative distributions assigned to the model parameters and to the variance may be appropriate priors for objectivity, in particular, because there is no previous studies of the same nature.

Based on this research framework, the author used the Bayes factor and Bayes test model to choose the most appropriate priors. In addition, we also performed the Gelman-Rubin diagnostic test to inspect the convergence of the MCMC chain. To check how replicated data fit observed data, the author applies the posterior predictive p-value test.

To do that, three simulations with three different priors will be performed. Prior information for the simulation in this study is used in flat prior, Zellner's g-prior, and normal prior. These priors are often used when prior information is not available.

Simulation 1 (for the first model presenting the relationship between PDI and GDP per capita, Eng, OpE) is as given below

$$PDI \sim (\mu, \sigma^2)$$

Prior distributions:

$$\alpha_{LogGDP} \sim 1(flat)$$

$$\alpha_{LogGDP^2} \sim 1(flat)$$

$$\alpha_{Eng} \sim 1(flat)$$

$$\alpha_{OpE} \sim 1(flat)$$

$$\alpha_{cons} \sim 1(flat)$$

$$\sigma^2 \sim jeffreys$$

where μ is the mean of the normal distribution of PDI, α_{LogGDP} , α_{LogGDP^2} , α_{Eng} , α_{OpE} , α_{cons} are a vector of coefficients, σ^2 is the variance for the error term. Simulation 2 Likelihood model:

 $PDI \sim (\mu, \sigma^2)$

 $\begin{array}{l} \text{Prior distributions:} \\ \alpha | \sigma^2 \sim zellnersg(dimension, df, \\ priormean, \sigma^2) \\ \sigma^2 \sim Invgamma(\frac{\lambda_0}{2}, \frac{\lambda_0 \sigma_0^2}{2}) \end{array}$

where λ_0 is df (prior degree of freedom) and σ_0^2 is the residual of MS. The number of dimensions, df, prior mean, σ_0^2 and λ_0 are obtained from the ordinary least squares (OLS) regression results. Therefore, we have the following prior distributions:

 $\alpha | \sigma^2 \sim \text{zellnersg}(5, 23, 44, -6, 12, 0.392, 4)$

$$\sigma^2 \sim \text{Invgamma}(11.5, 4255)$$

Simulation 3 Likelihood model:

$$PDI \sim (\mu, \sigma^2)$$

Prior distributions:

 $\alpha \sim N(1, 100)$ $\sigma^2 \sim \text{Invgamma}(2.5, 2.5)$

Simulations for models depicting the relationship between different Hofstede's cultural dimensions were similarly performed.

The results of Bayesian simulations and model comparison

After running regressions of simulations 1, 2, and 3, the author performed Bayes factor analysis and Bayes test model. The analysis results are summarized in Tables 1 and 2.

In the Bayesian analysis, the chosen model is the one with the highest Log (BF). In addition, Log (ML) and DIC can be considered with priority being the largest Log (ML) and the smallest DIC. The results in Table 3 show that simulation 1 has the highest Log (ML) and Log (BF), which implies that simulation 1 is the candidate with the most advantage in three simulations. However, the advantage of this model is not superior, because the DIC value of this simulation is largest.

Table 2 shows that simulation 1 has the highest probability of posterior distribution. Therefore, the simulation 1, which has flat distribution for the parameters and Jeffreys distribution for the variance, is selected.

To test the validity of Bayesian inference, the author used convergence diagnostics. Fig.1 indicates that all parameters in these graphs are relatively reasonable. The trace plots demonstrate good mixing, and the autocorrelation plots demonstrate low autocorrelation. The histograms and kernel density plots of the coefficient depict normal distribution. The chains traverse rather quickly, and the auto-correlations die off after about 20 lags. Therefore, the visual diagnostics for the convergence of the MCMC chains illustrate the rationality.

Beside, to ensure the convergence of MCMC chains, the author used the Grubin test.

According to Gelman & Rubin [14], and Brooks & Gelman [9], Rc value for any coefficient greater than 1.2 is nonconvergent. Strictly, Rc must be less than 1.1 to be considered convergent. The results in Table 5 demonstrate that all Rc values are less than 1.1; thus, it is possible to conclude that the MCMC chains satisfy the convergence requirement.

In order to verify the suitability of

Table 1. Analysis results of the Bayesian factor

	Chain	Avg DIC	Avg log(ML)	Avg log BF
Simulation 1	3	216.9633	85.6119	1
Simulation 2	3	215.149	110.523	24.9112
Simulation 3	3	215.6623	125.254	39.6424
	~			

Source: the author's calculation

Table 2. Analysis results of the Bayes test model

	Chain	Avg Log(ML)	P(M)	P(M y)
Simulation 1	3	85.6119	0.3333	1
Simulation 2	3	110.523	0.3333	0
Simulation 3	3	125.254	0.3333	0

Source: the author's calculation



Fig. 1 Convergence test Source: the author's calculation

Table 3. Grubin test resultsNumber of chains = 3MCMC size, per chain = 10,000Max Gelman-Rubin Rc = 1.00098

PDI	Rc
LogGDP	1.00096
LogGDP2	1.000942
Eng	1.0003
OpE	1.000074
Cons	1.000981
var	1.000196

Source: the author's calculation

the Bayes model, Gelman et al. [15] proposed the smallest observation test to measure the difference between observed data and replicated data. We can make this measurement visually.

Source: author's calculation The histogram graph in Fig. 2 shows the estimation of the posterior predictive distribution for the minimum statistic of the PDI variable. The graph shows that 95% replicated minimum value ranges from 0 to 50, that is, distribution density covers the observed minimum value. That means the Bayes regression model is consistent with observed values. Besides evaluating using the histogram graph, we can also use the posterior predictive p-value to assess the degree of difference between observed data and replicated data.

Table 4 shows the posterior mean and the standard error of the minimum value of the PDI index. The observed minimum value in the sample is 13. The last column is the probability that the replicated smallest value be greater or equal to the observed value. For a wellfitting model, this value should be close to 0.5. However, according to Gelman et al. [15], this value ranges from 0.05 to 0.95, and the Bayes regression model is considered appropriate. In this study, the posterior predictive p-value of 0.88 satisfies the above condition.

The remaining simulations are implemented for each model in a similar manner. Accordingly, the simulations having flat distribution for parameters and Jeffreys distribution for variance are selected.

According to Bayes analysis results, the average acceptance value of regression models ranged from 0.3304 to 0.341. Roberts & Rosenthal [35] claimed that the acceptance rate ranges from 0.15 to 0.5, which is considered optimal. Therefore, the values are considered reasonable. In addition, the ESS value compared to the MCMC sample size is greater than 5%, and hence the regression model reaches the required efficiency level. The maximum Rubin values of the models above are less than 1.1. It can thus be concluded that the MCMC chains reach the convergence.

The results of Table 9 show that the posterior predictive p-value ranges from 0.05 to 0.95. Therefore, replicated data are in line with the observed data.

4 DISCUSSION

Figure 3 shows the relationship between GDP per capita and PDI; as Hypothesis 1 has postulated, PDI first increases, and then, after GDP per capita reaches a certain level, it will decrease. The graph shows the slight downward trend of a nonlinear line. The author assumes that GDP per capita of the Asian countries has overcome the threshold to reduce PDI. Figure 4 represents the relationship between GDP per capita and IDV. In contrast to Hypothesis 2 that individualism first decreases and then increases with economic development, our study revealed that there exists a positive correlation between individualism and economic performance, which is seen in an upward curve in the graph. Improved income helps individuals become less dependent on others, find it easier to pursue their goals of life, and increase prioritizing individualist fac-



Fig. 2 Graph of the smallest value distribution of simulation Source: the author's calculation



Fig. 3 Power distance and log average GDP per capita Source: the author's calculation



Fig. 4 Relationship between GDP per capita and IDV Source: the author's calculation

Posterior predictive summary			Number of chains $= 3$		
			MCMC sample size $= 30,000$		
Т	Mean	Std. Dev.	E(T_obs)	P(T>=T_obs)	
minsl	29.52819	14.06139	13	0.8815	

Table 4. Results of the posterior predictive p-valuePosterior predictive summaryNumber of chains = 3

Source: the author's calculation

tors in assessments of their own happiness and life satisfaction, and thus IDV increases along with the growth of GDP per capita. In contrast to Hypothesis 3, according to our findings, the level of uncertainty avoidance first decreases and then increases. Referring to Inkeles [25], we can explain that the quality of life improves with the process of industrialization and modernization, leading to the majority of the population being less worried and take more risks than before. Therefore, UAI decreases at the first stage of economic development. However, Hofstede et al. [21] also states that countries with strong UAI, such as wealthy oil-abundant nations, Korea, and Japan, are conservative societies. They maintain rigid codes of belief and behavior and hence are intolerant of unorthodox behavior and ideas.

Different from Hypothesis 4, our findings demonstrate that the level of masculinity in Asian countries first decreases, and then it increases with economic development. Duflo [11], Stotsky [41], and IMF [26] claimed that economic growth makes human rights,

Indopendent variable	Hofstede's cultural dimension						
	PDI	IDV	UAI	MAS	LTO	IVR	
LogGDP	423.855	$353,\!792$	305.874	154.121	305.874	77.364	
Log2GDP	66.288	3.4173	39.034	20.848	39.034	8.809	
Eng	129.833	11.8007	3.729	23.828	3.729	0.035	
OpE	0.144	18.8267	7.969	29.277	7.969	2.424	
_cons	84.587	51.675	636.603	333.726	636.603	130.757	
2	4.1479	154.1607	718.776	267.855	718.776	196.186	
Avg acceptance rate	0.313	0.3481	0.3294	0.3203	0.304	0.3319	
Avg efficiency min	0.2687	0.2029	0.2009	0.181	0.1629	0.1836	
Max Gelman-Rubin Rc	1.001	1.001	1.001	1.001	1.001	1	

Table 5. Summary of the regression results for the selected simulation

Source: the author's calculation

Table 6.	Summary	of the	posterior	predictive	p-value
----------	---------	--------	-----------	------------	---------

The minimum statistic	Mean	Std.Dev.	$E (T_{obs})$	$P(T > = T_obs)$
minsl IDV	1.984808	9.223698	14	0.0648333
minsl MAS	12.788	11.61015	10	0.6385667
minsl UAI	0.4416824	16.30095	8	0.3507333
minsl LTO	-77.714416	19.01852	14	0.1044667
minsl IVR	6.881141	10.85694	17	0.1622333

Source: the author's calculation



Fig. 5 Relationship between GDP per capita and UAI Source: the author's calculation

including wo men's rights, more important. This explanation is appropriate for developing countries in Asia, as shown in the first half of the graph depicting a downward trend of MAS. However, rich countries in this region, such as Korea, Japan or oil-abundant countries, have conservative cultures. They have social stereotypes females, and always prefer the role of women in the family to that in the workplace. Besides, the competition within these rich countries is very fierce, especially in Korea and Japan. The people here appreciate achievement, heroism, assertiveness, and material rewards for success. For these reasons, we can understand why rich countries in this region have very high MAS.

Concerning the relationship between economic development and LTO, our result is in accordance with Hypothesis 5, that is, LTO first decreases, and then it increases. The graph in Fig. 7 indicates this.

Our empirical result is consistent with Hypothesis 6, that is, people tend to pursue their own happiness, and they have fewer social obligations and pressure when GPD per capita increases as demonstrated in Fig. 8. English language and economic openness have different effects on Hofstede's cultural dimensions. Both the English language and economic openness increase the power distance. This can be explained by the fact that people in countries using English as the second language, and in countries with high economic openness, have easier access to Western knowledge. This increases not only the competitiveness of these countries and but also the competency of their Individuals who are adaptcitizens. able find it easier to seize opportunities to acquire new knowledge from international integration. This will, in turn, help them to achieve a breakthrough in income and social status, and thus the power distance also increases in these countries. For the IDV index, the English language and economic openness have opposite effects. English has a positive influence on individualism. This is explained by the fact that countries consider English as the main communication tool, which can be easily accessible and influenced by the characteristics of Western culture that exalts individualism. In contrast, economic openness has



Fig. 6 Relationship between GDP per capita and MAS Source: the author's calculation



Fig. 7 Long-term orientation and log average GDP per capita Source: the author's calculation



Fig. 8 Indulgence Versus Restraint and average GDP per capita Source: the author's calculation

a negative effect on individualism. It is suggested that Eastern culture should give prominence to collectivism so that when economic openness increases, it will increase the pressure of competition from outside, which will prompt Asian countries to consolidate their collective strength to resist overseas rivals. The regression results show that the English language increases MAS. As analyzed earlier, the English language has increased competition between members of society. People are motivated by precise targets and material achievement, and hence MAS index increases. Also, economic openness enhances the role of women. Countries that have an economic relationship with the West place more importance on women's role because they regularly meet women leaders from gender-equality countries. Economic openness is a factor that increases the uncertainty avoidance in Asian countries. The process of globalization brings many opportunities but also risks, and this makes the cautiousness in Asians stronger. However, the English language lowers the UAI. It helps people to be exposed to opportunities to interact with Western culture, especially through literary works or movies that accentuate the adventurous nature of Western people. Economic openness increases the LTO index. Having trade relations with developed countries helps Asian countries feel important and increases their investments in science and technology, which are long-term investments. However, the English language is considered a factor reducing the LTO index. English language, in addition to mak-

ing it easier for individuals to use this language to access knowledge from the West, also influences them with materialistic lifestyles. This has caused these countries, especially emerging countries, to spend heavily on the needs of immediate enjoyment instead of long-term investments. The English language and economic openness have a positive effect on IVR. Countries that consider English as the main communication tool and those with high economic openness have more opportunities to contact and be influenced by the Western culture, which appreciates the pursuit of a hobby, satisfies passion, and relaxes social ethics. Hence, these factors increase the IVR Index.

5 CONCLUSION

The paper analyzed the impact of GDP per capita, English language, and economic openness on Hofstede's cultural dimensions in 24 selected Asian countries, and the data on them are available. The research achieved the following results. Firstly, different from the Hypotheses 2, 3, and 4, the result shows that individualism and economic performance have a positive relationship; MAS and UAI first decrease, and then they increase with economic development. Secondly, economic openness and the English language have different impacts on Hofstede's dimensional culture. In particular, with IVR, these two factors promote the integration of the Western culture, but there are also aspects that hinder this process of cultural interference such as PDI: additionally, there are situations in which these two factors have conflicting effects on Hofstede's cultural dimensions like PDI, MAS, and LTO. The difference is explained by the conservative character of Asians. In addition, Asians often have very strict ethical standards; they have social concepts about women's responsibility to the family, and they disregard women's ability to contribute to society. This also implies that planners need to have policies to reduce the social stereotypes about the invisible obligations related to women so that women can maximize their capacity and help maximize the multi-productivity of human resources, which will promote sustainable growth and improve the quality of life.

References

- Adelman, I., & Morris, C. T. (1967). Society, politics, and economic development: A quantitative approach. *The Economic Journal*, 79(313), 160–163.
- [2] Andersen, T. B., Bentzen, J., Dalgaard, C.J., & Sharp, P. (2013). Prereformation roots of the protestant ethic. *Technical report, Competitive Ad*vantage in the Global Economy (CAGE).
- [3] Altman, M. (2001). Culture, human agency, and economic theory: Culture as a determinant of material welfare. *Journal of Socio-Economics*, 30, 379–391.
- [4] Bertay, A. C., Dordevic, L., & Sever, C. (2018). Gender Inequality and Economic Growth: Evidence from Industry-Level Data. https://www.aeaweb.org/conference/2019/preliminary/paper/N8 kTG95d
- [5] Barro, R. J. (2004). Spirit of capitalism. Harvard International Review, 25(4), 64-68.
- [6] Becker, S. O., & Woessmann, L. (2009). Was weber wrong? A human capital theory of protestant economic history. In *The Quarterly Journal of Economics*, 124(2), 531–596.
- [7] Bell, D. (1973). The coming post industrial society. New York: Basic Books.
- [8] Briggs, W. M, & Hung T. Nguyen (2019). Clarifying ASA's view on P-values in hypothesis testing. In Asian Journal of Economics and Banking, 3(2). http://www.vjol.info/index.php/DHNH/article/view/43195
- [9] Brooks, S.P., & Gelman, A. (1998). General Methods for Monitoring Convergence of Iterative Simulations. Journal of Computational and Graphical Statistics. http://www.stat.columbia.edu/ gelman/research/published/brooksgelman2.pdf

- [10] Coyne, C., & Williamson, C. (2009). Trade Openness and Culture. Working Papers 09-05 Department of Economics, West Virginia University. https://pdfs.semanticscholar.org/1ad8/ 301ff242a7f502c6b5f9cbdd565281fa0274.pdf
- [11] Duflo, E. (2012). Women Empowerment and Economic Development. *Journal* of Economic Literature, 50(4), 1051–1079.
- [12] Edwards, S. (1996). Why are Latin America's savings rates so low? An international comparative analysis. *Journal of Development Economics*, 51(1), 5–44.
- [13] Franke, R. H., Hofstede, G., & Bond, M. H. (1991). Cultural roots of economic performance: A research note. *Strategic Management Journal*, 12, 165–173.
- [14] Gelman, A., & Rubin, D.B. (1992). Inference from Iterative Simulation Using Multiple Sequences. *Statistical Science*, 7, 457–472 https://projecteuclid.org/download/pdf_1/euclid.ss/1177011136
- [15] Gelman, A., J. B. Carlin, H. S. Stern, D. B. Dunson, A. Vehtari, & D. B. Rubin (2014). Bayesian Data Analysis. 3rd ed. Boca Raton, FL: Chapman & Hall/CRC.
- [16] Guiso, L., Sapienza, P., & Zingales, L. (2003). People's opium? Religion and economic attitudes. *Journal of Monetary Economics*, 50(1), 225–282.
- [17] Hofstede, G. (1980). Culture's consequences: International differences in work-related values. Beverly Hills, CA: Sage.
- [18] Hofstede, G., & Bond, M. H. (1984). Hofstede's culture dimensions: An independent validation using Rokeach's value survey. *Journal of Cross-Cultural Psychology*, 15(4), 417–433.
- [19] Hofsted Insights (2019). Compare countries. https://www.hofstedeinsights.com/product/compare-countries/
- [20] Hofstede, G. (2001). Culture's consequences: Comparing values, behaviors, institutions, and organizations across nations. Thousand Oaks, CA: Sage Publications.
- [21] Hofstede, G, Hofstede, G.J, & Minkov, M (2010). Cultures and organizations: software of the mind: Intercultural cooperation and its importance for survival. McGraw-Hill.
- [22] Ibrahim Alfarhan (2006). English as a Global Language and the Effects on Culture and Identity. American Research Journal of English and Literature. https://www.arjonline.org/papers/arjel/v2-i1/10.pdf

- [23] Inglehart R. (1977). The silent revolution: Changing values and political styles. Princeton. NJ: Princeton University Press.
- [24] Inglehart, R. (1997). Modernization and Postmodernization: Cultural, economic, and political change in 43 societies. Princeton, NJ: Princeton University Press.
- [25] Inkeles, A. (1993). Industrialization, modernization and the quality of life. International Journal of Comparative Sociology, 34(1), 1–23.
- [26] International Monetary Fund (2013). Women, Work and the Economy: Macroeconomic Gains from Gender Equity. IMF Staff Discussion Note 13/10 https://www.imf.org/external/pubs/ft/sdn/2013/sdn1310.pdf
- [27] Johnson, A. (2009). The rise of English: The language of globalization in China and the European Union. Macalester International, 22(1). https://digitalcommons.macalester.edu/cgi/viewcontent.cgi? article=1447&context=macintl
- [28] Kuznets, S. (1955).Economic growth and income in-TheAmerican Economic equality. Review. 45(1). 1-28.https://www.ucl.ac.uk/bartlett/development/sites/bartlett/files/migratedfiles/WP119_0.pdf
- [29] Tang, L., & Koveos, P. E. (2008). A framework to update Hofstede's cultural value indices: economic dynamics and institutional stability. *Journal of International Business Studies, Palgrave Macmillan, Academy of International Business*, 39(6), 1045–1063.
- [30] McClelland, D.C. (1961). The achieving society. New York: Free Press.
- [31] Nguyen H. T., Sriboonchitta S., & Thach N. N. (2019). On Quantum Probability Calculus for Modeling Economic Decisions. In: Kreinovich V., Sriboonchitta S. (eds) Structural Changes and their Econometric Modeling. TES 2019. Studies in Computational Intelligence, 808. Springer, Cham, 18–34.
- [32] Ogihara, Yuji. (2017a). Economic shifts and cultural changes in individualism: a cross-temporal perspective. Socioeconomic Environment and Human Psychology: Social, Ecological, and Cultural Perspectives, 50(1), 225–282. eds A. Uskul & S. Oishi (Oxford: Oxford University Press)
- [33] Ogihara, Yuji. (2017b). Temporal Changes in Individualism and Their Ramification in Japan: Rising Individualism and Conflicts with Persisting Collectivism. Frontier in Psychology, 8(695).

- [34] Read, R. (1993). Politics and policies of national economic growth. Unpublished doctoral dissertation, Stanford University.
- [35] Roberts, G. O., & Rosenthal, J. S. (2001). Optimal scaling for various Metropolis–Hastings algorithms. *Statistical Science*, 16, 351–367. https://projecteuclid.org/euclid.ss/1015346320
- [36] Schwartz, S. H. (1994). Beyond individualism/collectivism: New dimensions of values. Thousand Oaks, CA: Sage. https://www.researchgate. net/publication/234021883_Beyond_IndividualismCollectivism_New_ Cultural_Dimensions_of_Values
- [37] Smith, P.B., Peterson, M.F., & Schwartz, S.H. (2006). Cultural values, sources of guidance, and their relevance to managerial behavior: 47 nation study. *Journal of Cross-Cultural Psychology*, 33, 188–208.
- [38] Smith, P., & Bond, M. H. (1998). Social psychology across cultures. London: Prentice Hall.
- [39] Beugelsdijk, S., & Welzel, C. (2018). Dimensions and Dynamics of National Culture: Synthesizing Hofstede with Inglehart. *Journal of Cross-Cultural Psychology*, 1–37.
- [40] Sowell, T., (1994). Race and culture: World view. New York: Basic Books.
- [41] Stotsky, J.G. (2006). Gender and Its Relevance Macroeto Policy: Survey. IMFWorking 06/233.conomic А Paper https://www.imf.org/external/pubs/ft/wp/2006/wp06233.pdf
- [42] Tang & Koveos (2008). A framework to update Hofstede's cultural value indices: economic dynamics and institutional stability. *Journal of International Business Studies*, 39, 1045–1063.
- Т., [43] Damjanovic, & Selvaretnam, G. (2019).Economic Growth Equality. Gender Wiley Online and Evolution of Library. https://onlinelibrary.wiley.com/doi/abs/10.1111/manc.12274
- [44] Thach, N. N. (2020). How to Explain when the ES is Lower than One? A Bayesian Nonlinear Mixed-Effects Approach. Journal of Risk an Financial Management. https://www.mdpi.com/1911-8074/13/2/21
- [45] Thach, N. N. (2020). How Values Influence Economic Progress? Evidence from South and Southeast Asian Countries. ECONVN 2020. Studies in Computational Intelligence. To appear 2020.

- [46] Thach, N.N., Ngan, T.H., Linh, N.T.X., & Nam, O.V. (2020). Reconsidering Hofstede's Cultural Dimensions: A Different View on South and Southeast Asian Countries. ECONVN 2020. Studies in Computational Intelligence. To appear 2020.
- [47] Trompenaars, F. (1993). Riding the Waves of Culture: Understanding Cultural Diversity in Business. London: Economist Books.
- [48] Weber, M. (1930). The Protestant ethic and the spirit of capitalism. New York: Scribner. (Originally published 1904).
- [49] World Development Report (2012). Gender Equality and Development. World Bank.
- [50] World Development Indicators (2019). World Bank. http://datatopics.worldbank.org/world-development-indicators/
- [51] Yeh, R., & Lawrence, J. J. (1995). Individualism and Confucian dynamism: A note on Hofstede's cultural root to economic growth. *Journal of International Business Studies*, 26, 655–669.