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## THE ROLE OF CULTURE AND GOVERNMENT ADAPTABILITY IN DETERMINING COUNTRIES' ECONOMIC PERFORMANCE

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**ABSTRACT.** This study is an addition to the body of research about the relationship between culture, governance, and national economic performance. Specifically, it focuses on the mediating role of government in the relationship between national culture and Gross Domestic Product growth. We utilize the GLOBE study's eight cultural dimensions and the World Economic Forum's Government Adaptability Index to conduct a cross-sectional analysis in fifty-seven countries. Our results indicate that institutionally collectivist and future oriented societies are more likely to have governments that are adaptable to economic and technological changes and, thus, have a greater capacity to stimulate the output per capita growth. Additionally, the results suggest that cultural dimensions are related to each other, and these relationships may improve national economic performance. The findings provide valuable insights into policy decision-making and leadership.

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## Introduction

The purpose of this study is to empirically estimate the relationship between culture, governance, and economic performance. The first attempts to explore the impact of cultural values on economic output were made as early as in the beginning of the 20<sup>th</sup> century, when Max Weber (1905; 1930) argued that the Protestant ethic was a main factor explaining national differences in economic performance at the initial stages of industrialization. In *The Wealth and*

*Poverty of Nations* David Landes (1998) suggested that cultural beliefs and values can be linked to economic evidence and thereby explain the variations in macroeconomic performance. However, until very recently, most economic models have either excluded cultural values as contributing factors of economic growth or treated them as residual elements (Beugelsdijk & Maseland, 2010). This is because culture is highly subjective and difficult to define and measure. In fact, there are numerous definitions of culture, depending on discipline and methodological perspectives (Beugelsdijk & Maseland, 2010; Geertz, 1973; Kroeber & Kluckhohn, 1985; Rosaldo, 2006).

In this study, we use Gellner's (1992) theoretical framework that treats culture as a "shared set of ideas, held to be valid simply because they constituted the joint conceptual banks of custom of an ongoing community" (p. 18) and Hofstede's (2001) definition that views culture as "the collective programming of the mind that distinguishes the members of one group or category of people from another" (p. 9). Culture is institutionalized in values, attitudes and behaviors that are carried on from one generation to the next (Hofstede, 1980). These definitions imply that culture influences not only social norms but also economic behavior (Beugelsdijk & Maseland, 2010; Gorodnichenko & Roland, 2017).

The empirical study of relationship between culture and economic outcomes has taken off recently (Adkisson & McFerrin, 2014; Banai, 2012; Gorodnichenko & Roland, 2017; Shostya & Banai, 2017; Spranz et al., 2012), once the cross-national measurement of cultural dimensions was made available (Hofstede, 1980; House et al., 2004; Schwartz, 1994). Yet, tensions about methodological issues, such as endogeneity, omitted variable bias, and other validity issues have initiated a fierce debate among scholars (Beugelsdijk & Maseland, 2010). Our paper is a contribution to this debate. We follow on Greif's (1994, 2006) seminal work on the relationship between institutions and economic development and adopt Griffiths and Zammuto's (2005) integrative conceptual framework that draws on both the culture and political economy literature to explain variations in national economic competitiveness, and Gorodnichenko and Roland's (2017) empirically supported argument that culture is one of determinants of long-run growth. Unlike Greif (2006), Adkisson and McFerrin (2014), and Gorodnichenko and Roland (2017) who investigated only one or two aspects of culture, we utilize a much broader spectrum of cultural dimensions, estimating their direct and indirect effects on a specific formal institution – government adaptability. By definition, "institutional adaptability" deals with adaptive capacity facilitated by formal and informal institutions to enable actors to "resolve problems and bottlenecks of the society through time" (North, 1990, p. 80). Adaptability is characteristic of government structure and function and is a significant factor in improving national economic performance. The more adaptable the government is to changes in technology and economic conditions, and the greater the government's capacity is to ensure an environment conducive to business, the more economically competitive the country is on the global stage. Thus, as a formal institution, government adaptability is a desirable target of investigation and the analysis of its determinants and the measure of its impact on national economic performance is valuable.

The rest of the paper is organized as follows. First, we describe the theory behind the study's model, starting with the definition of government adaptability, its four components, and their relation to national economic performance. Second, the theory of culture and its expected relationship to government adaptability are discussed. Third, we delineate the methodology and the data and present our empirical findings. Fourth, we present a discussion that links our results to the existing literature, outlines our contribution to the scholarly field, and offers advice to practitioners. In our concluding section we discuss the limitations of the study and suggest a trajectory for further research.

## 1. Literature review

There are several studies that investigate the relationship between various measures of governmental effectiveness and national economic performance. Altman (2013) and Ngobo and Fouda (2012) investigate the relationship between governance indices and economic growth. Gani (2011) demonstrates that increasing a country's political stability and the government's effectiveness leads to greater economic growth. Huynh and Jacho-Chavez (2009) and Méon and Weill (2005) find that countries scoring high on government accountability and the rule of law enjoy higher levels of economic growth than do countries scoring low. Some studies investigate governments' crisis-coping ability, which is the ability to adjust to the negative effects of adverse exogenous shocks (Briguglio et al., 2009).

Among different measures of government performance, government adaptability to technological and economic environment, as a formal, holistic, and forward-looking institution, is a new concept. The World Economic Forum (WEF) introduced a comprehensive measure of government adaptability only recently, under the *Institutions* pillar of the newly reformed Global Competitiveness Index 4.0 (WEF, 2019). According to this definition, the Government Adaptability Index (GAI) includes four equally weighted core components: government ensuring policy stability, government's responsiveness to change, the legal framework's adaptability to digital business models and government's long-term vision (WEF, 2019).

The first component, the assurance of policy stability, is achieved through a set of stabilization policies. These include fiscal and monetary policies, the primary role of which, in developed countries, is to maintain full employment and stabilize growth and, in developing and less developed countries, to create an environment for rapid economic growth (Mishkin, 2007; Popa & Codreanu, 2010). Other types of stabilization policies are redistributive policies that minimize income and wealth inequalities and have a potential to stimulate economic growth and raise the standard of living, especially in less developed countries (Alesina & Rodrick, 1994; Barro, 1990; Dolls, 2019; Doroodian, 1993; Krueger, 1993). In response to the Global Financial Crisis of 2007-2009, many countries have introduced or redefined prudential policies that aim specifically at the stabilization of financial markets and institutions (Banerjee et al., 2016; Gertler et al., 2012). The United States, for example, adapted a two-prong regulatory framework. This framework includes a micro-prudential policy that aims at protecting consumers in financial markets from fluctuations in the business cycle and problems created by asymmetric information. It also includes a macro-prudential policy that focuses on preventing the loss in GDP that may be caused by aggressive and risky activities of financial institutions (Shostya & Palianok, 2017).

The second component, government's responsiveness to changes, may include its reaction to technological changes, societal and demographic trends, security, and economic challenges, as well as other changes. Government adaptability was studied in the contexts of response to stakeholders such as public opinions (e.g., Caughey & Warshaw, 2017), non-governmental organizations (e.g., Zhang, 2018), media (Besley & Burgess, 2001), migration (Blaser & Landau, 2014) and others. The third component, government's legal framework's adaptability to digital business models, has been studied from various perspectives, such as regulation of digital platforms (Finck, 2018), monitoring 'green' digital economy (Stroiteleva et al., 2020) and combating tax evasion (Uyar et al., 2021) among others.

The fourth component, government's long-term vision, has been studied in the frameworks of renewable energy (Cole et al., 2017), water supply (Wilhite, 1991) and other sustainability issues (Brugmann, 1996). It is important to note that these four components of government adaptability are not independent of each other. This is demonstrated in a study about government vision of e-government (Nasi & Frosini, 2010), where government's

adaptability to digital business models and long-term vision are combined. An intensive literature review could not identify a study that investigated the relationships between cultural dimensions and government's adaptability, the focus of this study.

Although there is an increasing body of literature that supports the hypothesis that national culture has a significant influence on public policy (Daniell, 2014), the existing theoretical and empirical studies have not linked culture to government adaptability explicitly. Licht et al. (2005), for example, used regression analysis to identify relationships between governance and measures of cultural values provided by Schwartz (1994, 1999). The authors concluded that culture (variously measured) does have a strong influence on governance. Adkisson and McFerrin (2014) revealed statistically detectable relationships between the cultural and good governance indices. Their model, however, was extremely parsimonious, and involved only two broad cultural dimensions: traditional versus secular-rational and survival versus self-expression.

A more recent study that empirically investigated the relationship between culture and government performance was conducted by Porcher (2021). Using cross-country data, the author found that culture has a strong impact on the quality of government. This impact remains stable even after controlling differences in institutions, economic development, and geography. Yet, his study measured neither culture nor government quality directly, but relied on correlated variables. In our study, we measure these variables directly and not by their correlates. We estimate the relationships between GLOBE's (House et al., 2004) eight dimensions of culture and the four components of government adaptability. Even though data on cultural dimensions are not as recent as other data, this discrepancy does not reduce the validity of our study. This is because culture remains relatively stable over time (Hofstede, 1980) and tends to be more slowly moving than political institutions (Roland, 2004). We also estimate the effect of government adaptability and each of its components on economic performance, namely, GDP per capita. Literature indicates that some cultural dimensions have a direct effect on economic variables (Banai, 2012), while others influence formal institutions, which, in turn, affect economic performance (North, 1990). There are also interactions between cultural dimensions (Shostya & Banai, 2017). Some of these relationships are beyond the scope of this study, as our focus is on government adaptability and its interaction with culture and real GDP per capita, relationships that have not been studied before.

## **2. Methodological approach**

To evaluate empirically the theoretical relationships reported in the literature, we use data on fifty-seven countries, the list of which is determined by the original House et al. (2004) study's dataset. A list of the countries, their government adaptability scores and real GDP per capita are presented in the Appendix. Although the sample size is smaller than the entire population of more than two hundred countries, the countries in our dataset account for about 90% of the global 2019 GDP. Therefore, we believe that the sample is a good representation of the global economy. The measurements included in the study are presented next.

### **2.1. GDP and government adaptability**

We use GDP per capita as a measure of economic performance. While challenged for its validity in measuring sustainable economic growth (Bregar et al., 2008), GDP per capita is one of the most widely used comparative indicators of economic performance. Real GDP (in 2010 United States constant dollars) per capita data were obtained from the World Bank Indicators dataset for 2019. We transformed the data into a natural logarithm form to make

them more symmetric and to help make a possible non-linear relationship between the GDP per capita and explanatory variables more linear.

We use Government Adaptability Index (GAI) from the Global Competitiveness Report 2019. GAI is the average score of four equally weighted indicators that range from 0 to 100, with 100 being the ideal state (WEF, 2019). Each indicator measures a component of government adaptability as it is defined by a question in the WEF's Executive Opinion Survey. The four indicators are:

- (1) *Government ensuring policy stability* – Response to the survey question, “In your country, to what extent does the government ensure a stable policy environment for doing business?”
- (2) *Government's responsiveness to change* – Response to the survey question, “In your country, to what extent does the government respond effectively to change (e.g., technological changes, societal and demographic trends, security, and economic challenges)?”
- (3) *Legal framework's adaptability to digital business models* – Response to the survey question, “In your country, how fast the legal framework of your country is adapting to digital business models (e.g., e-commerce, sharing economy, fintech, etc.)?”
- (4) *Government long-term vision* – Response to the survey question, “In your country, to what extent does the government have a long-term vision in place?” (WEF, 2019).

Each score represents the 2018–2019 weighted average response for a given country. In 2019, the survey retained responses from 12,987 business executives in 134 countries. The average number of responses per country was 97.5 (WEF, 2019).

## **2.2. Culture dimensions**

Empirical studies of culture have been conducted intensively over the last four decades. Hofstede (1980), followed by House et al. (2004) and later by Schwartz (2008), used survey questionnaires to measure people's values in many countries of the world. Using a factor analysis procedure, they each offered a set of global values. Hofstede (1980, 2011) suggested six universal core values, namely, Individualism vs. Collectivism, high vs. low Power Distance, high vs. low Uncertainty Avoidance, Masculinity vs. Femininity, short- vs. long-term Time Orientation and Restraint vs. Indulgence. Schwartz's seven cultural values, often defined as three-polar dimensions (Schwartz, 1994), include Hierarchy vs. Egalitarianism, Mastery vs. Harmony, and Embeddedness vs. Autonomy. House et al. (2004) GLOBE study's statistical analysis yielded nine cultural dimensions that include In-Group Collectivism, Institutional Collectivism, Power Distance, Uncertainty Avoidance, Future Orientation, Performance Orientation, Humane Orientation, Assertiveness and Gender Egalitarianism. In our study, we used GLOBE's eight out of nine dimensions of culture because they are more specific, and they have been measured in more countries than the dimensions in the other two studies. Due to a bias recorded in the literature, we do not use the gender egalitarianism dimension. Studies show that this variable may not necessarily capture the true position of women in society because most of the respondents in the low middle-class countries that were part of the GLOBE study were males (Shostya & Banai, 2017). Moreover, one of the strongest correlates of gender egalitarianism is national wealth per capita (Hofstede, 2001).

The GLOBE study produces two sets of scores, one for society's practice on each dimension and the other for society's desirable value on each dimension. The societal practices mirror perceived norms, while the societal values reflect the desirable norms. In our study, we have adopted societal practices (perceived norms) rather than societal values (desirable norms). The definitions of the eight dimensions are provided below.

*Institutional collectivism* is defined by House et al. as “the degree to which individuals are integrated into groups within society” (2004, p. 29). High institutional collectivism societies tend to reward prioritizing the group’s needs over individual needs, encouraging group loyalty, and rewarding seniority. In contrast, low institutional collectivism societies encourage individual goals and reward individual contributions to success.

*In-group collectivism* is defined as “the degree to which individuals express pride, loyalty, and cohesiveness in their organizations or families” (House et al., 2004, p. 30). Triandis and Gelfand (2012) defined it as the degree to which individuals have strong ties to their small immediate groups. High in-group collectivism means that there is a strong distinction between in-groups and out-groups. In contrast, low in-group collectivism societies emphasize personal needs and attitudes and reward behavior based on self-interest and individualism.

The cultural dimension of *Uncertainty avoidance* deals with “the extent to which a society, organization, or group relies on social norms, rules, and procedures to alleviate the unpredictability of future events” (House et al., 2004, p. 30). At the organizations’ level, uncertainty avoidance can be observed in the extent of planning that companies do before they make business decisions, and the amount of innovation that these organizations support (Banai, 2012).

The cultural dimension of *power distance* focuses on “the extent to which a community accepts and endorses authority, power differences, and status privileges” (House et al., 2004, p. 513). People in high power distance societies assume that superior orders override any moral considerations that might apply in other situations, freeing them of responsibility for their actions; therefore, power is perceived as the source of social order (Banai, 2012).

The cultural dimension of *performance orientation* is defined as “the degree to which a society encourages and rewards group members for performance improvement and excellence” (House et al., 2004, p. 31). High performance orientation societies tend to value competitiveness and materialism. Low performance orientation societies emphasize societal and family relationships.

House et al. (2004, p. 30) have defined the cultural dimension of humane orientation as “the degree to which a society encourages and rewards a fair, generous and kind behavior.” In high-level humane orientation societies benevolence is rewarded and mistakes of others are tolerated. Low-level humane orientation societies are materialistic and individualistic. In high-level humane orientation societies, the state provides social and economic support for those who happen to be unable to support themselves.

The cultural dimension of *assertiveness* is defined as “the extent to which individuals in a society exert their will and opinion in their daily activities and their relationships with others” (House et al., 2004, p. 31). High assertiveness societies value competitiveness, success, and progress. They expect subordinates to take initiatives and be efficient. Low assertiveness societies value cooperation and relationships and try to ‘save face.’

*Future orientation* deals with “the amount of importance a society assigns to long-term thinking and planning for the future” (House et al., 2004, p. 31). High future orientation societies have longer-term success orientation than low future orientation societies and tend to emphasize long-term thinking and planning.

### **2.3. Control variables**

This study focuses primarily on government adaptability as a formal institution that determines the variation in global competitiveness and real GDP per capita. Therefore, we treat other institutions (political and economic) as control variables. The choice of control variables is determined by the growing consensus that institutions, especially democracy and economic

freedom, matter in explaining the differences in countries' economic performances (Acemoglu et al., 2019; Inglehart & Welzel, 2005; North 1991; Tylecote, 2016). As a measure of political institutions, we use The Economist Intelligence Unit's *Democracy Index 2020*. The index is based on the average of five categories: (1) electoral process and pluralism; (2) the functioning of government; (3) political participation; (4) political culture; and (5) civil liberties. We use the raw index value that ranges from 0 (authoritarian) to 10 (full democracy).

We also account for the effect of economic institutions on GDP per capita by including two measures of the GDP structure: *Value added of Industry* and *Value added of Services* (as a percentage of GDP). Both measures are obtained from the World Bank Indicators database from 2019, except for the case of six countries (Hong Kong, Israel, Japan, New Zealand, United States, and Zambia) for which data values are as of 2018.

Lastly, based on our theoretical framework, we account for the effect of economic institutions on government adaptability by using the CATO Institute's *Economic Freedom Index*. The index measures the degree to which the policies and institutions of countries are supportive of economic freedom, and ranges from 0 to 10, with 10 representing more freedom. It is based on 42 components that are classified into five broad categories: (1) size of government; (2) legal system and property rights; (3) sound money; (4) freedom to trade internationally; and (5) regulation of business, labor, and credit.

#### 2.4. Summary statistics

Table 1 reports the summary statistics of the variables that are used in our analysis. The average country in our sample has a government adaptability score of 49.32, which is only slightly higher than the global average of 46.81 (authors' calculations). As shown in the table and mentioned in previous sections, there are observations with missing values. Thus, the sample gets smaller (54 countries) in regressions that estimate the effect of government adaptability on GDP per capita. This is because GDP per capita was reported only for 55 countries (excluding Taiwan and Venezuela) and services and industry values were reported for 54 countries (excluding Canada, Taiwan, and Venezuela). Nonetheless, the countries in our remaining sample still vary in economic size and structure as indicated by the variability of the GDP per capita, the share of services and industry, and the Economic Freedom Index.

Table 1. Descriptive statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
Government adaptability score	57	49.32	15.60	8.58	85.52
Ensuring stable policy	57	52.55	18.97	5.76	89.66
Responsiveness to change	57	47.52	15.30	7.20	85.22
Legal framework adaptability	57	49.01	14.15	14.74	78.03
Long-term vision	57	48.22	16.95	6.64	91.20
Institutional collectivism	57	4.25	0.43	3.25	5.22
Group collectivism	57	5.20	0.73	3.53	6.36
Humane orientation	57	4.11	0.46	3.29	5.23
Uncertainty avoidance	57	4.12	0.59	2.88	5.32
Power distance	57	5.19	0.39	3.89	5.80
Assertiveness	57	4.12	0.36	3.38	4.89
Performance orientation	57	4.08	0.40	3.20	4.90
Future orientation	57	3.81	0.45	2.88	5.07
Ln GDP per capita	55	9.62	1.19	7.08	11.29
Services (% of GDP)	54	60.48	8.32	44.23	88.71

## RECENT ISSUES IN ECONOMIC DEVELOPMENT

Industry (% of GDP)	54	26.72	8.90	6.48	57.46
Democracy Index	57	6.56	2.06	2.26	9.39
Economic Freedom Index	57	7.22	1.00	3.34	8.94

Source: *Authors' own calculations using data from GLOBE study, World Economic Forum's Global Competitiveness Index, World Bank Indicators, The Economist Intelligence Unit, and CATO Institute.*

## 2.5. Methodology

Using Ordinary Least Square (OLS) regression analysis, we first estimate two models to establish the key relationships between formal institutions (government adaptability) and economic performance (GDP per capita) and between informal institutions (culture) and formal institutions (government adaptability). Equation 1 is a baseline model that estimates the variation in GDP per capita due to the changes in the GAI, and each individual government adaptability dimensions, controlling for GDP sectors and democracy. Equation 2 is a baseline model that is used to estimate the variation in GAI and each government adaptability dimension due to variations in cultural values, controlling economic freedom. To estimate the variation in impact of aspects of government adaptability on economic performance, we estimate each model five times, regressing the GDP per capita on the GAI and on each government adaptability dimension separately.

$$GDP_i = \beta_0 + \beta_1 GAI_i + \beta_2 SERVICE_i + \beta_3 INDUSTRY_i + \beta_4 DEM_i + \varepsilon_i, \quad (1)$$

where  $i$  indicates countries and  $\varepsilon_i$  is an error term. In this equation, GDP is a natural logarithm of real GDP per capita; GAI is the Government Adaptability Index and its components (ensuring stable policy, responsiveness to change, digital adaptability, and long-term vision), SERVICE is service sector as a percentage of GDP, INDUSTRY is industrial sector as a percentage of GDP, and DEM is Democracy.

$$GAI_i = \beta_0 + \beta_1 InstCol_i + \beta_2 FUT_i + \beta_3 FREEDOM_i + \varepsilon_i, \quad (2)$$

where  $i$  indicates countries, GAI represents Government Adaptability Index and its four components, InstCol is institutional collectivism, FUT is future orientation, FREEDOM is Freedom Index, and  $\varepsilon_i$  is an error term.

We then proceed to investigate the relationships between informal and formal institutions. Equation 3 estimates the indirect effect of cultural dimensions on government adaptability. Specifically, we estimate the variation in Institutional Collectivism due to changes in Performance Orientation, Assertiveness, and Uncertainty Avoidance. Equation 4 estimates the effect of other cultural dimensions on In-group collectivism (Equation 5). Equation 5 estimates the effect of In-group Collectivism on political institutions (democracy). This relationship has been explored before by Shostya and Banai (2017) and Gorodnichenko and Roland (2021) who found that collectivist societies are less likely to adopt a democratic regime than individualistic societies.

$$InstC_i = \beta_0 + \beta_1 Assert_i + \beta_2 Uncert_i + \beta_3 PerfO_i + \varepsilon_i, \quad (3)$$

$$IGCol_i = \beta_0 + \beta_1 PowD_i + \beta_2 HumO_i + \varepsilon_i, \quad (4)$$

$$DEM_i = \beta_0 + \beta_1 IGC_i + \varepsilon_i, \quad (5)$$



where  $i$  indicates countries, InstC is Institutional Collectivism; Assert is Assertiveness; Uncert is Uncertainty Avoidance; PerfO is Performance Orientation; DEM is Democracy; IGC is In-group Collectivism; PowD is Power Distance; HumO is Humane Orientation, and  $\varepsilon_i$  is an error term.

### 3. Conducting research and results

#### 3.1. Regression analysis

We report our OLS regression analysis findings in Tables 2-4. The coefficients on the predictor variables are positive and statistically significant at a 1% or 5% level. In Model 1, the independent variables explain about two-thirds of the variation in GDP per capita growth (see Table 2). The coefficient on Democracy Index ranges from 0.247 to 0.293, depending on the specification and suggests that a 1-point increase in Democracy Index leads to approximately 30% increase in GDP per capita. To interpret the log-transformed coefficients, we exponentiate them, subtract one and multiply by a 100. This gives us the percent increase (or decrease) in the response to every one-unit increase in the independent variable. For example, to calculate the coefficient on democracy, we did the following:  $(\exp(0.264)-1)*100 = 30.1$ . We report all our coefficients in Model 1 using this method.

The coefficients on GAI and its components are positive and range from 0.013 to 0.025, depending on the specification. This means that every one-point increase in the government adaptability score leads to approximately 2% increase in real GDP per capita. The effect of each individual component of the GAI on the dependent variable ranges from 1.3% to 2.5%. The most interesting result can be found in comparative magnitudes of the coefficients on each individual component of the GAI. The coefficients on responsiveness to change and legal framework adaptability are almost twice as large as the coefficients on the ensuring stable policy and long-term vision variables. We address these results further in our discussion section.

Table 2. The effect of government adaptability's dimensions on real GDP per Capita

VARIABLES	(1a)	(1b)	(1c)	(1d)	(1e)
Government adaptability	0.020*** (0.007)				
Ensuring stable policy		0.014** (0.006)			
Responsiveness to change			0.023*** (0.007)		
Legal Framework				0.025*** (0.008)	
Long-term vision					0.013* (0.006)
Services (% of GDP)	0.082*** (0.017)	0.083*** (0.018)	0.082*** (0.016)	0.079*** (0.017)	0.090*** (0.017)
Industry (% of GDP)	0.061*** (0.016)	0.066*** (0.016)	0.059*** (0.016)	0.061*** (0.015)	0.068*** (0.016)
Democracy Index	0.264*** (0.058)	0.267*** (0.060)	0.261*** (0.056)	0.247*** (0.058)	0.293*** (0.057)
Constant	0.284 (1.246)	0.335 (1.308)	0.261 (1.202)	0.351 (1.219)	-0.177 (1.260)
Observations	54	54	54	54	54
Adjusted R-squared	0.675	0.658	0.691	0.687	0.653

Standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

Table 3 presents estimations of Model 2. Variations in Institutional Collectivism, Future Orientation and Economic Freedom seem to be good predictors of the variation in Government Adaptability. Together, these three variables explain more than 50% of the variation in GAI and its individual components. The only exception is Model 2e, which estimates the variation in long-term vision, in which the adjusted R-squared is 0.48 (See Table 3). An increase in economic freedom leads to an increase in government adaptability; and the effect is more profound on the ensuring stable policy variable.

As for our key predictor variables, cultural dimensions, the coefficients suggest that more collectivist societies tend to have a greater degree of government adaptability. These results are more profound in model 2c and suggest that institutional collectivism plays a larger role in explaining the variation in the governments' long-term vision and responsiveness to change (the coefficients are 16.71 and 11.96, respectively; see Table 3). The positive coefficient on future orientation suggests that more future-oriented societies tend to have more adaptable governments and this cultural dimension is particularly important for ensuring stable policy (the coefficient on this variable in Model 2b is 13.8, which is much higher than the coefficients on this variable in any other specifications).

Table 3. The effect of culture and economic freedom on government adaptability and its dimensions

VARIABLES	(2a) Government adaptability	(2b) Ensuring stable policy	(2c) Responsiveness to change	(2d) Legal Framework	(2e) Long-term vision
Institutional collectivism	11.475*** (3.675)	8.161* (4.404)	11.962*** (3.893)	9.072*** (3.380)	16.706*** (4.427)
Future Orientation	10.134*** (3.734)	13.798*** (4.475)	9.095** (3.956)	7.863** (3.434)	9.778** (4.498)
Economic Freedom	6.101*** (1.525)	8.974*** (1.828)	5.195*** (1.616)	6.486*** (1.403)	3.747** (1.838)
Constant	-82.143*** (15.325)	-99.551*** (18.367)	-75.524*** (16.235)	-66.372*** (14.095)	-87.124*** (18.462)
Observations	57	57	57	57	57
Adjusted R-squared	0.576	0.588	0.506	0.564	0.479

Standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

Estimated models 3, 4 and 5 are presented in Table 4. All coefficients are statistically significant. Performance Orientation, Uncertainty Avoidance and Assertiveness explain about 42% of the variation in Institutional Collectivism (see Table 4, Model 3). These results imply that cultures that are more performance oriented, are more likely to avoid uncertainty and are less assertive tend to be more institutionally collectivist. Model 4 suggests that more power distant and more humane oriented cultures tend to be more collectivist. In-group Collectivism explains almost 40% of the variation in the Democracy Index (Model 5). The coefficient on this predictor variable is negative, meaning that more group-collectivistic cultures are less likely to be democratic.

Table 4. Interlinkages between cultural dimensions and the effect of cultural dimensions on democracy

VARIABLES	(3) Institutional collectivism	(4) Group Collectivism	(5) Democracy Index
Performance orientation	0.348** (0.132)		
Uncertainty Avoidance	0.176* (0.091)		
Assertiveness	-0.486*** (0.123)		
Power Distance		1.196*** (0.166)	
Humane Orientation		0.496*** (0.137)	
Group Collectivism			-1.773*** (0.213)
Constant	4.112*** (0.686)	-3.048*** (1.111)	15.776*** (1.018)
Observations	57	57	57
Adjusted R-squared	0.419	0.440	0.382

Standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

### 3.2. Robustness tests

We used several tests to detect possible issues with the functional forms, robustness, and outlier effects. The multicollinearity diagnostics did not detect any issues. All the explanatory variables VIF values were below 3.0. Breusch-Pagan / Cook-Weisberg test indicated that in Models 1-3 there was no statistically significant evidence of heteroscedasticity (all p-values were greater than 0.05), which means the models were properly specified. Because models 4 and 5 had issues with heteroscedasticity, we rerun them with robust errors.

To evaluate the models for any outlier effects, we used the means of visualization and Cook's D test. The scatter plot with the leverage (a measure of how far an independent variable deviates from its mean) versus the squared residuals depicted several outliers, which had either high leverage or large residuals. However, Cook's D values were all relatively small (less than 0.5), indicating that there were no serious concerns that the outliers would affect the robustness of the model.

Another area of concern, typical of this type of methodology, was the endogeneity problem. Because we hypothesized that GAI is affected by other variables (Institutional Collectivism and Future Orientation), and that Institutional Collectivism is affected by three other cultural dimensions, namely Assertiveness, Uncertainty Avoidance and Performance Orientation, it is possible that Models 1 and 2 suffer from omitted variable bias. The same reasoning would apply to the Democracy variable that, according to our hypothesis, is affected by In-group Collectivism. However, an augmented Durbin-Wu-Hausman test (Davidson & MacKinnon, 1993) between the OLS model and 2SLS model concluded that the OLS estimates were unbiased, and therefore most efficient. This suggests that we do not need to use the two-stage least squares, a method that is often used in the case of instrumental variables.

### **3.3. Discussion**

Our results confirm the fundamental theoretical link between government performance, and, more specifically, government adaptability, and national economic performance. The focus of our attention, government adaptability, has a potential to increase the standard of living, as measured by the real GDP per capita. This finding supports North's argument that "the differential performance of economies over time is fundamentally influenced by the way institutions evolve" (North, 1990, p. 3). Among the four components of government adaptability, responsiveness to change and legal framework's adaptability to digital technology seem to be almost twice as impactful as the other two components. Moreover, government adaptability depends on how other formal institutions, such as economic freedom, function. This is in line with other studies that found that economic freedom is a significant determinant in the choice of a legal structure (Khurana et al., 2020).

Economies constantly undergo various changes, either because of sudden exogenous shocks (e.g., financial crises, political cataclysms, natural disasters, water crises, food crises, climate change risks, and pandemics) or long-term endogenous social, economic, and political dynamics. Governments' capacity to respond to such changes and develop policies and institutions that not only help deal with them but also involve the anticipation of future challenges is critical for government efficacy and the resulting economic outcomes (Amsden, 1979; Huntington, 1968; Yolles & Fink, 2011). The most compelling evidence provided by our results is that good government may serve as a moderator of the relationship between culture and national economic performance (Kyriacou, 2016). This study found supporting evidence for previous investigation (Shostya & Banai, 2017; Gorodnichenko & Roland, 2021) that in-group collectivism is an important determinant of democracy, which, in turn, is a good predictor of economic performance. Although democracy per se is not a necessary precondition for a better quality of life (Sen, 1999), as a formal institution it may ensure that policy makers design 'rules of the game' that fit the fundamental interests and objectives of the people. Low in-group collectivist (highly individualist) societies emphasize rationality in people's behavior and stress personal needs and individualism, the cultural characteristics that are at the foundation of democracy (Hayek, 1948). Thus, these societies tend to be more democratic. Moreover, Moellman and Tarabar (2022) find that a sense of individualism strengthens the effectiveness of democracy. This is in comparison to in-group favoritism, inherent to collectivist societies, which tends to engender corruption, nepotism and clientelism in the public sphere (Kyriacou, 2016).

In-group collectivism, in turn, depends on other cultural dimensions, namely power distance and humane orientation. Societies that rank highly on power distance and are more humanely oriented tend to have a greater degree of in-group collectivism. One of the reasons is that in such societies, upward mobility and meritocracy-based rewards are limited and resources are concentrated in the hands of a few. At the same time, people who have sufficient financial resources can 'afford' to treat out-group members less kindly (Schlösser, 2006). This is because they do not need to rely on out-group members' financial help as much as those who lack such resources.

Societies that are long-term oriented are more likely to build an institutional framework that can be effective at promoting social, political, and financial stability. We also found that institutional collectivism has a positive effect on government adaptability and the effect is more pronounced for the government's responsiveness to change and long-term vision. The coefficients on these components are larger in magnitude than the coefficients on the other government adaptability components (see Table 1). This is because societies where critical decisions are made by institutions may benefit from future-oriented and trusted institutional

frameworks. Thus, such societies may find it easier to implement risk-mitigating policies, especially during times of rapid technological change or economic upheaval (Shostya & Banai, 2017).

Institutional collectivism is a function of other cultural dimensions, namely performance orientation, uncertainty avoidance and assertiveness. High performance orientation societies that view formal feedback as necessary for performance improvement would also need to rely on a strong institutional framework. Also, societies that tend to avoid uncertainty and are less assertive are more likely to be institutionally collectivistic. This is because people in such societies may feel a strong need for consensus, so there is a greater potential for the decision-making policy makers to work together.

Next to the aforementioned implications for theory, this study also provides valuable insights into policy decision-making and leadership. Government adaptability to technological and economic changes should be a high priority on leadership agendas. Ensuring stable policy is a necessary but not sufficient condition for global competitiveness, promoting long-term growth and improving individuals' standard of living. The dynamic nature of digital business eco-systems and the transience of competitive positions requires an adaptable legal framework and long-term vision. Governments need not only observe and react to changes, but also be aware of the emerging digital technologies, especially the ones that have betrayed the traditional business and regulatory models and thus raise legal and regulatory concerns. Some of these changes may create technological disruptions that raise the concern for cyber security. Intelligent transportation systems and developers of autonomous vehicles, for example, are susceptible to malicious cyber attacks (Linkov et al., 2019). Thus, complex disruptive technologies require regulators to be innovative and adaptive. Government bureaucracies can 'reinvent' themselves, that is, make fundamental changes to increase effectiveness, efficiency, adaptability, and capacity (Osborne & Plastrik, 1997).

## Conclusion

This study is an addition to the body of research about the relationship between culture, governance, and national economic performance. Previous research has mostly hypothesized and infrequently tested these relationships statistically. We estimate empirically the effect of eight cultural dimensions on the government adaptability index and each of its four components. In addition, we link government adaptability and its components to national economic performance, controlling for other formal political and economic institutions, which are also affected by culture. We found that cultural dimensions play a significant role in predicting variations in government adaptability. The results provide important evidence for the positive effect of institutional collectivism on government adaptability. We also found that institutional collectivism is a function of other cultural dimensions, namely assertiveness, future orientation, and performance orientation, which have an indirect effect on GDP per capita.

This research has limitations. First, the sample size and the type of data (cross-sectional) were limited by data availability provided by the GLOBE (House et al., 2004) study. Second, the GAI indices may reflect the responders' perceptions more so than an existing reality, a problem typical for survey-based data. Additionally, an OLS analysis assumes linear relationships between explanatory and dependent variables, yet the relationship between culture, government adaptability and economic performance might be non-linear in nature. Future research will require obtaining additional data and including more countries, especially in the developing regions of the world. Despite its limitations, this study is significant in its contribution to the ongoing discussion among scholars, economists, and government officials on how to improve national performance and global competitiveness. It is, therefore, of utmost

importance, to understand what fosters rapid adaptation to technological and economic changes and how government adaptation affects national economic performance. In a technology-driven age, when economic growth encounters economic and political risks and instability, and is threatened by climate change, epidemics, financial crises, and disruptive technologies, governments that attain adaptive advantage increase their chances of gaining a competitive edge.

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**Appendix**

List of countries, Government Adaptability Index and real GDP per Capita

Country	Government Adaptability Score (2019)	GDP per Capita (constant 2010 US\$)	Country	Government Adaptability Score (2019)	GDP per Capita (constant 2010 US\$)
Albania	43.29	5,211	Japan	59.85	49,188
Argentina	39.84	9,742	Kazakhstan	54.42	11,519
Australia	53.76	57,183	Korea, Republic of (South)	53.45	28,675
Austria	62.63	50,537	Kuwait	49.02	32,702
Bolivia	23.42	2,580	Malaysia	71.08	12,487
Brazil	28.65	11,122	Mexico	39.04	10,268
Canada	58.52	51,583	Morocco	52.23	3,396
China	56.35	8,242	Namibia	52.28	5,766
Colombia	40.64	7,838	Netherlands	67.61	55,451
Costa Rica	42.27	10,047	New Zealand	61.53	38,505
Denmark	64.93	65,867	Nigeria	31.60	2,374
Ecuador	31.37	5,097	Philippines	45.65	3,338
Egypt	52.80	3,010	Poland	36.93	17,409
El Salvador	19.72	3,572	Portugal	45.34	24,618
England	58.67	43,710	Qatar	71.86	63,282
Finland	71.79	49,386	Russian Federation	47.85	12,012
France	56.95	44,320	Singapore	85.52	58,830
Georgia	47.15	4,979	Slovenia	42.54	27,421
Germany	64.35	47,469	Spain	41.31	33,352
Greece	22.45	24,022	Sweden	60.55	58,050
Guatemala	28.82	3,413	Switzerland	71.83	79,403
Hong Kong (China)	67.89	37,928	Taiwan	48.08	N/A
Hungary	41.89	17,570	Thailand	47.00	6,502
India	58.35	2,152	Turkey	49.20	15,125
Indonesia	60.13	4,451	United States	71.26	55,753
Iran	30.30	5,923	Venezuela	8.58	N/A
Ireland	60.71	79,823	Zambia	41.64	1,654
Israel	58.10	35,276	Zimbabwe	29.60	1,183
Italy	28.90	35,677			

Source: Authors' calculations using data from World Economic Forum's Global Competitiveness Index and World Bank Indicators.