Are Hofstede's and Schwartz's values frameworks equally predictive across contexts?

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Abstract

Purpose – This study uses bipolar cultural dimensions (i.e., Hofstede's and Schwartz's values frameworks) to predict trade between countries and consumption behaviour.

Design/methodology/approach – The analysis in this paper was based on secondary data. Consequently, there were some missing data that limited the number of countries that could be examined in terms of trade and consumption aspects. Stepwise regressions were performed to test the hypotheses.

Findings – This study found that egalitarian-hierarchical distance predicts trade negatively, providing support to the idea that cultural similarity drives trade. On top of that, the study suggested that consumption divergence is more likely than consumption convergence. Cultural values were significant predictors of consumption even when income was controlled, suggesting that consumers want to express their values systems through consumption when they have the financial means to do so.

Originality/value – The empirical analysis illustrated that bipolar cultural dimensions of these frameworks predict trade and consumption behaviour differently, thus providing evidence on the applicability of the cultural frameworks in different contexts.

Keywords – Cultural Dimensions, Hofstede, Schwartz, Trade, Consumption Divergence

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1 Introduction

The application of multiple "Cultural Distance" measures in a single study has become more popular as cultural scholars have made their dimension scores publicly available (e.g. Hofstede, Schwartz and the Globe Studies). While including multiple Cultural Distance measures may improve the predictive power of Cultural Distance, multicollinearity might be an issue, as Cultural Distance measures are likely to be highly correlated (Samiee, 2013). For example, Lopez-Duarte and Vidal-Suarez (2013) used three different cultural measures (Hofstede, Schwartz and Globe Studies) and noted high multicollinearity. Thus, research that compares the applicability of cultural frameworks may help researchers determine which Cultural Dimension measure is appropriate (instead of including multiple measures). Consequently, this paper begins by comparing two well-known cultural frameworks' recent developments (Hofstede and Schwartz) and tests their usefulness in a number of trade and consumption contexts.

In an earlier paper, Ng, Lee and Soutar (2007) examined the congruency between Hofstede's (1980) and Schwartz's (1994) values frameworks for the twenty three countries for which national level scores from both frameworks were publicly available at the time. Their results suggested there were differences between the two approaches and that Schwartz's framework was a better predictor, at least in the trade context they considered. However, it seems worthwhile to re-examine this issue for a number of reasons, namely:

1. Schwartz's national level value scores have been adjusted in recent years as additional data have been obtained.
2. Two new dimensions have been introduced to Hofstede's framework (long-term orientation and indulgence versus restraint) that are based on the World Values Survey data (Hofstede, Hofstede & Minkov, 2010).

3. The number of countries for which cultural dimension data are available has increased substantially. As of 2016, data for aspects of Hofstede's framework are available for 111 countries (http://geerthofstede.nl/dimension-data-matrix), although complete data (six dimensions) are only available for 65 countries (Hofstede et al, 2010), compared to 40 such countries in 1980 (Hofstede, 1980). Similarly, data for Schwartz's framework are available for 80 countries (Schwartz, personal communication, August 10, 2011), compared to 38 such countries in 1994 (Schwartz, 1994). Consequently, there are now 52 countries, rather than 23 countries, for which data from both values frameworks are available.

In addition to extending Ng et al.'s (2007) study that looked at trade flows using a larger sample and revised bipolar dimension distance values scores and additional dimensions, the present study also examined consumption data to further assess the predictive ability of the frameworks using the approach suggested by Mooij (2003) in her testing of the consumption divergence hypothesis. Thus, the present study:

1. Briefly reviewed the developments in the two frameworks (score adjustment and new dimension introduction).
2. Examined the predictive ability of bipolar value dimensions of both frameworks in a trade context; value distance dimensions of both frameworks were included in a stepwise regression to examine their individual impacts, as has been suggested by a number of researchers (e.g. Brock, Shenkar, Shoham & Siscovick, 2008; Pothukuchi, Damanpour, Choi, Chen & Park, 2002; Schwartz, 2008; Shenkar, 2001).
3. Used Mooij's (2003) approach to see whether the individual dimension values of the two values frameworks were related to the number of consumptions.

2 Literature Review

2.1 Recent developments in Hofstede's Framework

Hofstede (2001) suggested that the maximum number of dimensions included in a framework should be seven. He also noted that adding dimensions will not create a richer framework unless the new dimensions are significantly different from previous ones. Hofstede (1980) started with four dimensions. A fifth dimension (long- versus short-term orientation), which was based on the Chinese Value Survey, was subsequently introduced (Hofstede, 1991). A long-term orientation is associated with thrift and perseverance, while a short-term orientation is associated with meeting social obligations and protecting face. However, the small numbers of countries for which such scores were available meant most researchers continued to use the initially suggested four dimensions (e.g. Desender, Castro & Leon 2011; Ng et al., 2007).

In 2010, the pride and religiousness aspects of the World Values Survey (WVS) (Hofstede et al., 2010) were found to be strongly negatively correlated with people's long-term orientation and are seen as conceptually equivalent to a short-term orientation that emphasises face and personal dignity (Hofstede et al., 2010; Minkov & Hofstede, 2011). An obvious advantage of using the WVS-based items to measure "long-term orientation" was the expansion in the number of countries for which such scores were available (93 countries). In this case, long-term oriented societies were seen as those that value pragmatic virtues that are oriented towards future rewards, in particular saving, persistence and adapting to changing circumstances. Short-term oriented societies value virtues that are related to the past and present, such as national pride, respect for tradition, preservation of "face" and fulfilling social obligations (Hofstede et al., 2010). The revised definition added "adaptability" as a long-term oriented characteristic and "national pride"

as a short-term oriented priority. Long-term orientation scores are high in East Asia, moderate in Eastern and Western Europe and low in the Anglo world, the Muslim world, Latin America and Africa.

A sixth dimension (indulgence versus restraint), which is also based on the World Values Survey, has been suggested recently (Hofstede et al., 2010). This dimension measures the emphasis societies place on relatively free gratification of desires. Indulgent societies value human drives to enjoy life and have fun, while restrained societies suppress the gratification of needs and regulate behaviour through social norms and prohibitions. Indulgence scores are high in Latin America, parts of Africa, the Anglo world and Nordic Europe, while high restraint scores are found in East Asia, Eastern Europe and the Muslim world.

In fact, there have been some criticisms of Hofstede's framework (e.g. Baskerville, 2003; McSweeney, 2002; McSweeney, 2013) concerning aspects such as the use of the survey method being inappropriate to measure culture, nations not being the best units for studying cultures, IBM data being old and obsolete, and four or five dimensions not being enough to measure culture. Hofstede (2002) responded to these criticisms by giving evidence that the IBM data were obtained from well matched samples, the identified dimensions were found to have centuries-old roots, and those dimensions were validated against all kinds of external measurements and showed no loss of validity. When Hofstede et al. (2010) increased the dimensions to six, concern about limited dimensions was overcome.

2.2 Recent developments in Schwartz's framework

The number of countries for which Schwartz's values scores are available has increased considerably since the initial publication of 38 nations' scores (Schwartz, 1994). The number increased to 49 countries in 1999 (Schwartz, 1999) and to 73 countries in 2008 (Schwartz & Zamboanga, 2008). Scores for 80 countries

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were obtained in personal correspondence from Shalom Schwartz (Schwartz, personal communication, August 10, 2011; Schwartz, 2011b). Some changes and refinements have been made over the years and the comprehensive report of cultural value orientations found eight "meaningful" world cultural regions (Schwartz, 2008; Schwartz, 2011).

Some amendments have been made to the framework since 1994. Most notably, the "conservatism" value has been re-termed "embeddedness." The scores have also been adjusted in some countries as newer data have been obtained. As an example, the "egalitarianism" score for Finland, which was originally 5.26 (Schwartz, 1994), was adjusted to 5.03 in 2005 (Siegel, Licht & Schwartz, 2011) and adjusted again to 4.90 in 2011 (Schwartz, personal communication, August 10, 2011).

Schwartz's seven cultural values are often defined as three-polar dimensions (Schwartz, 2008), namely:

- **Embeddedness versus autonomy**: In autonomous cultures, people are encouraged to pursue their own interests. Autonomy is broken into two sub-categories (e.g., intellectual autonomy and affective autonomy). The former category recognises individuals' entitlement to pursue their own intellectual interests and desires (broadmindedness, curiosity and creativity), while the latter category recognises individuals' entitlement to pursue their stimulation and hedonism interests (pleasure, exciting life and varied life). In embedded societies, people find meaning in life by identifying with a group, living a shared way of life and pursuing shared goals (e.g., social order, respect for tradition, security, obedience and wisdom).
- **Hierarchy versus egalitarianism**: In hierarchical societies, roles and resource allocation are used to ensure responsible and productive behaviour. People are expected to comply with the obligations and rules attached to their roles and to show respect to their superiors (social power, authority, humility and wealth). Egalitarian societies believe people are morally equal, voluntarily cooperate and are concerned about other people's welfare. They emphasise the transcendence of selfless interests (e.g., equality, social justice, responsibility, help and honesty).
- **Mastery versus harmony**: Societies that value mastery believe they have a right to master, direct and change the natural and social environment for group or personal interests. These societies encourage the active mastery of the social environment and endorse people's rights to get ahead of other people (e.g., ambition, success, daring, self-sufficiency and competence). Societies that value harmony believe people should live in harmony with nature and fit into the social and natural worlds without attempting to change or exploit them (e.g., world at peace, unity with nature, protecting the environment and accepting one's portion).

2.3 The frameworks' ability to predict trade

In a study that tried to identify the factors that drive countries to trade, Zhou (2011) found geographic distance and cultural similarity were significant drivers, despite claims by some (e.g. Dicken, 2003; Fligstein, 2005) that advances in transportation, communications and the institutionalisation of global economic governance have resulted in the "death of distances". Geographic distance had a negative effect on bilateral trade across the three sectors that were investigated (raw materials, manufacturing materials and finished goods), which was consistent with Hummels' (2007) suggestion that a quarter of global trade occurs between countries that share a land border and that half of global trade involves partners with geographic distances

of less than 3000 kilometres. Cultural similarity, measured in terms of common civilization and common language, had a positive effect in the manufacturing materials and finished products sectors, although it was not significant in the raw materials sector, suggesting culture still matters in some trade contexts. Trade seems more likely when countries have a similar language or share similar values, as it is easier to understand and predict each other's behaviours, which helps develop trust and facilitate the interactions that occur when countries trade with each other.

Ng et al. (2007) found that Schwartz's cultural distance (CD) score, which measured the overall cultural differences between two countries, predicted exports and imports as expected, while Hofstede's CD score was not statistically related to trade flows. However, some researchers have argued against the use of composite CD scores and suggested using individual value dimensions, as some values are likely to be more relevant in some contexts than in others (e.g.; Brock et al., 2008; Kirkman, Lowe & Gibson 2006; Schwartz, 2008; Sousa & Lages, 2011; Pothukuchi et al., 2002). This study intends to complement Ng et al's study by investigating the ability of culture to predict trade flows using bipolar value dimension distance (e.g. PDI distance; Egalitarianism-Hierarchy Distance). That is, bipolar value dimension distance is expected to predict trade even when country wealth and geographical distance are controlled. Thus, H1a, H1b, H2a and H2b are developed as follows:

> **H1a:** *At least one bipolar value dimension distance of Hofstede's Framework predicts Imports*

> **H1b:** *At least one bipolar value dimension distance of Schwartz's Framework predicts Imports*

> **H2a:** *At least one bipolar value dimension distance of Hofstede's Framework predicts Exports*

> **H2b:** *At least one bipolar value dimension distance of Schwartz's Framework predicts Exports*

2.4 Cultural values and consumption patterns

Consumption convergence advocates (e.g. Assael, 1998; Bullmore, 2000; Levitt, 1983) have suggested the convergence of income, education, media and technology will lead to global consumers who make rational purchases and share similar needs, tastes, lifestyles and values and, therefore, will tend to consume similar products. For example, there seems to be a "global teenager" group who enjoys similar cross-border TV channels, such as Hallmark, and music channels, such as MTV, who visits similar internet websites, such as YouTube, Facebook and Google and who consume similar fast foods, such as MacDonald's burgers. This globalised trend is seen as likely to lead to the standardisation of products, pricing, promotion and distribution, thus reducing costs, lowering prices and improving product quality. The consumption convergence argument seems to be supported by the economic theory of the consumer; consumers should ideally use a rational maximising model when making consumption choices (Thaler, 1980), which eventually leads to product standardization and economies of scale, and finally consumption convergence. As education, media and technology are determined by a country's affluence, convergence advocates seem to be suggesting that wealth convergence will lead to consumption convergence, or that income and wealth are responsible for variations in consumption across countries.

On the other hand, consumption divergence advocates have argued that income convergence leads to consumption divergence, as consumers have the income needed to express their values systems (Mooij, 2000, 2001, 2003). As values are stable, strongly rooted in history and unlikely to change (Hofstede 2001), values differences are likely to result in consumption differences beyond those explained by income

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differences. These two schools of thought point to the core issue of whether culture still matters to people's consumption decisions in today's shrinking world.

Mooij (2000, 2003) provided evidence of consumption divergence. Using secondary data from 49 countries, she found a reduced income effect over time (e.g. from 1969 to 1997), but an increased cultural values effect, at least in some cases. At least one cultural value consistently predicted consumption, even when income (i.e. GNI per capita) was included in the analysis. For example:

- UA and MAS were significant predictors of mineral water consumption.
- IDV was a significant predictor of early car adoption.
- MAS, PD and IDV were significant predictors of the percentage of households owning two cars.
- UA and MAS were significant predictors of the percentage of people preferring new cars.

The present study attempted to examine the consumption convergence-divergence hypothesis by looking at four personal consumption aspects (internet users, mobile phone subscribers, personal computers owners and physicians) using more recent data (2011-2015). People in low UA countries are more open to change, more willing to take risks and more receptive to new products or ideas (Hofstede, 2001). Consequently, they were expected to use new products, such as mobile phones, personal computers and internet services. Hofstede (2001) also found more doctors per capita in high UA and high IDV countries because of a belief in expert knowledge and living independently. Thus, it was expected that UA and IDV would be positively related to the number of physicians per capita. In short, at least one of Hofstede's dimensions was expected to predict consumer consumption, using data from 2011 to 2015.

More recent studies have also provided support for consumption divergence. For instance, Cleveland, Rojas-Mendez, Lorache

and Papadopoulos (2016) investigated culture's influence on eight consumption categories and found culture affected all eight consumption categories, where the impact was greatest for the food products category and lowest for the appliances category. Similarly, Zhang (2013) found support for divergence in internet consumption.

Although no empirical studies found linking Schwartz's bipolar value dimensions to these four personal consumption behaviours, some evidence in brand personality consumption provides indications that Schwartz's value dimensions are predictive of consumer consumption. For instance, Aaker, Benet-Martinez and Garolera (2001) found that Schwartz's cultural dimension (i.e. harmony versus mastery) predicted the brand personality dimension. They reported that Japanese and Spanish individuals placed a higher emphasis on the Harmony orientation than individuals from the United States, finding the "peacefulness" brand personality dimension emerged in their brand evaluation data. On the other hand, individuals from the United States who emphasized the Mastery value dimension, where toughness and masculine characteristics are preferred, found the "Ruggedness" brand personality dimension emerged in their data. In short, culture did play a role in the brand personality consumption context.

From the literature summarised above, Hofstede's and Schwartz's values dimensions seem likely to predict consumer consumptions. Thus, the following hypotheses are suggested:

H3a: *At least one bipolar value dimension from Hofstede's Framework predicts internet consumption*

H3b: *At least one bipolar value dimension from Schwartz's Framework predicts internet consumption*

H4a: *At least one bipolar value dimension from Hofstede's Framework predicts mobile phone consumption*

H4b: *At least one bipolar value dimension from Schwartz's Framework predicts mobile phone consumption*

H5a: *At least one bipolar value dimension from Hofstede's Framework predicts personal computer consumption*

H5b: *At least one bipolar value dimension from Schwartz's Framework predicts personal computer consumption*

H6a: *At least one bipolar value dimension from Hofstede's Framework predicts physician service consumption*

H6b: *At least one bipolar value dimension from Schwartz's Framework predicts physician service consumption*

Three government consumptions were also examined (education expenditure, military expenditure and R & D expenditure). First, following Humana's (1992) findings, MAS and PD were expected to be negatively related to education expenditure, while IDV was expected to be positively related to it. Next, PD and MAS were expected to be positively related to military expenditure, as high PD countries accept acquiring power through force, while MAS countries tend to resolve conflicts through fighting (Hofstede, 2001). Finally, UA was expected to be positively related to R&D expenditure, since high UA countries have the tendency to uncover as much truth as possible to reduce uncertainty around them (Hofstede, 2001).

Schwartz (2008) found that some of his cultural values correlated with public expenditure on health, education and defence. Autonomy-embeddedness and egalitarianism-hierarchy were positively correlated with expenditure in health and education (Schwartz, 2008). Countries that emphasise autonomy and egalitarianism and embrace independence from the extended family and equal opportunities are more likely to pressure governments to take responsibility for providing health and education services. On the other hand, countries that emphasise embeddedness and hierarchy expect extended families to take care of members' welfare, including health and education. Therefore, there is less pressure on governments to invest in these areas. Schwartz also found a negative correlation between harmony-mastery cultural values and defence expenditure. A mastery orientation encourages a country to gain control over resources, attracting conflict and threats, and resulting in greater defence expenditure.

Based on the literature above, hypotheses relating Hofstede's and Schwartz's bipolar value dimensions and government consumptions are developed as follows:

H7a: *At least one bipolar value dimension from Hofstede's Framework predicts a government's education expenditure*

H7b: *At least one bipolar value dimension from Schwartz's Framework predicts a government's education expenditure*

H8a: *At least one bipolar value dimension from Hofstede's Framework predicts a government's military expenditure*

H8b: *At least one bipolar value dimension from Schwartz's Framework predicts a government's military expenditure*

H9a: *At least one bipolar value dimension from Hofstede's Framework predicts a government's research and development expenditure*

H9b: *At least one bipolar value dimension from Schwartz's Framework predicts a government's research and development expenditure*

3 The Data and the Analysis

The country level values data were obtained from Hofstede et al. (2010), which provided the

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required scores for each of the six dimensions, and from personal correspondence with Schwartz (Schwartz, personal communication, August 10, 2011), which provided the scores for the seven dimensions. The trade data for 2015 that were used to assess the relationships between the two frameworks and trade flows were obtained from the World Bank World Integrated Trade Solution (https://tcdata360.worldbank.org/about, retrieved on 16 March, 2018). In order to examine the question of consumption divergence or convergence, data for seven consumption categories and GNI per capita were obtained from the World Bank tcdata360 (https://tcdata360.worldbank.org/about, retrieved on 16 March, 2018) for the 5 year period from 2011 to 2015. The 5 years of data were averaged to see whether there was consumption divergence-convergence during this period.

The next section provides the results of the analysis that was undertaken to study the questions of interest. The first section provides the results of the regression analyses that were used to examine the relationship between the two values frameworks and trade flows (Imports and Exports), while the second section provides the results of the regressions that were used to examine the consumption divergence-convergence hypothesis and to see which of the framework's dimensions were related to the seven types of consumption that were included in the study.

4 The Results

4.1 The frameworks and trade flows

Secondary trade data were obtained for the same four countries used by Ng et al. (2007)

(Malaysia, Hong Kong, Mexico and Thailand). Total imports and exports in 2015 between these four focal countries and the other 51 countries (total 52 countries used in the analysis) were extracted from World Bank World Integrated Trade Solution (https://tcdata360.worldbank.org/about, retrieved on 16 March, 2018). In order to better assess the relationship between cultural value distance and trade, variables that are known to have an impact on trade between countries (GNI per capita distance and geographic distance) (Schwartz 2008; Zhou 2011) were included in a regression analysis, as were Hofstede's six cultural dimension distances and Schwartz's three bipolar dimension distances. Two stepwise regression models were estimated, in which geographic distance and GNI per capita distance were included as control variables. A stepwise method was used as it reduces the multicollinearity problem. In the first model, Hofstede's dimensions were included as independent variables, while, in the second analysis, Schwartz's dimensions were included.

As can be seen in Table 1, none of Hofstede's dimensions predicted imports or exports (model 1), while Schwartz's bipolar Egalitarianism-Hierarchy distance predicted imports. Thus, only H1b was supported while H1a, H2a and H2b were not supported. The bipolar Egalitarianism-Hierarchy distance was negatively related to imports (b = -0.19, P<0.05), suggesting that the higher the Egalitarianism-Hierarchy distance between countries, the smaller the import activities between them, which was consistent with our prediction that cultural similarity drives trade.

Table 1

Regressions for 2015 Trade Data – Standardized Coefficient (b) and Adjusted R-Squared Coefficients (R²)

Independent Variables (GNI per capita distance and geographic distance were controlled)	Dependent Variable: Exports		Dependent Variable: Imports	
	Significant Predictors (b)	R^2	Significant Predictors (b)	R^2
Model 1: Hofstede's 6 dimensions	Geo_dis (b = -0.23*) **(H1a) Not Significant**	0.05	Geo_dis (b = -0.23*) **(H2a) Not Significant**	0.05
Model 2: Schwartz's 3 bipolar dimensions	Geo_dis (b = -0.23*) Ega-Hier_Dis (b = -0.19*) **(H1b)**	0.05 0.08	Geo_dis (b = -0.23*) **(H2b) Not Significant**	0.05

International business expansion through imports or exports involves some contact with a host's business environment. Thus egalitarian distance, which predicted FDI flows (Schwartz 2008), was also found to be significant in the present study's trade context. In this study, despite bipolar Egalitarianism-Hierarchy distance being used, the result supported that of Schwartz (2008) in the FDI context.

4.2 Cultural values and consumption

Mooij (2003) analysed the relationships between a set of independent variables (national wealth and Hofstede's national cultural dimensions) and consumption patterns in a regression analysis. The same approach was used in this study, in which the consumption aspects included in the study were regressed with GNI per capita and Hofstede's and Schwartz's cultural variables to see if they were related. When using Hofstede's dimensions, researchers have often estimated regressions for wealthy countries and for poorer countries separately (e.g. Humana, 1992). However, this study controlled for wealth by using Mooij's approach, in which GNI per capita was included in the regression itself. As GNI per capita was seen as a control variable, it was included as the first step in a hierarchical regression, while the values dimensions were included in the second step of the regression in a stepwise manner to see if they added to our explanation of the various consumption aspects of interest. Once again, two regressions were estimated, with the first including Hofstede's value dimensions and the second including Schwartz's value dimensions. The results obtained can be seen in Table 2. As was expected, the cultural variables predicted the various aspects of consumption even when income was included, suggesting culture influences consumption decisions, thus providing support for consumption divergence.

Table 2

Regressions for the Consumption Data (2011-2015) – Standardized Coefficient and Adjusted R-Squared Coefficients (R2)

		Significant Predictors	
Consumption as dependent variable	Sample Size	a. Independent Variables: Hofstede's 6 dimensions (Per capita income was controlled)	b. Independent Variables: Schwartz's 3 bi-polar dimensions (Per capita income was controlled)
Consumer Aspects			
Internet users (% of population)	N=52	1. GNI per capita (b=0.83; R² = 0.63)	1. GNI per capita (b=0.80; R² = 0.63)
		2. LTOwvs (b=0.21; R² = 0.67)	2. Auto_Embed (b=0.27; R² = 0.66)
		3. IDV (b=0.21; R² = 0.69) **(H3a)**	**(H3b)**
Mobile phone subscribers (per 100 people)	N=52	1. IVRwvs (b= -0.33; R² = 0.08) **(H4a)**	None **(H4b) – Not Significant**
Households with Personal computers (%)	N=52	1. GNI per capita (b=0.79; R² = 0.61)	1. GNI per capita (b=0.79; R² = 0.61)
		2. LTOwvs (b=0.26; R² = 0.67)	2. Auto-Embed (b=0.30; R² = 0.66)
		3. IDV (b=0.22; R² = 0.70) 4. UAI (b=0.16; R² = 0.72) **(H5a)**	**(H5b)**
Physicians (per 1,000 people)	N=46	1. GNI per capita (b=0.46; R² = 0.19)	1. GNI per capita (b=0.46; R² = 0.19)
		2. UAI (b=0.55; R² = 0.44) **(H6a)**	2. Ega-Hier (b= 0.61; R² = 0.44) **(H6b)**
Education expenditure (% of GDP)	N=48	1. GNI per capita (b=0.51; R² = 0.25) 2. IVRwvs (b=0.40; R² = 0.37)	1. GNI per capita (b=0.51; R² = 0.25)
		3. IDV (b=0.37; R² = 0.45)	2. Ega-Hier (b= 0.43; R² = 0.36)
		4. MAS (b=-0.40; R² = 0.60) **(H7a)**	**(H7b)**
Military expenditure (% of GDP)	N=51	None	1. Har-Mastery (b=-0.41; R² = 0.14)
		(H8a) – Not Significant	**(H8b)**
Research and development expenditure (% of GDP)	N=51	1. GNI per capita (b=0.67; R² = 0.44)	1. GNI per capita (b=0.67; R² = 0.44)
		2. LTOwvs (b=0.41; R² = 0.60)	2. Auto-Embed (b=0.38; R² = 0.51)
		3. PDI (b=-0.28; R² = 0.64)	3. Ega-Hier (b= -0.33; R² = 0.56)
		3. IVRwvs (b=0.26; R² = 0.67) **(H9a)**	**(H9b)**

Note. P< 0.05

4.2.1 *Consumer consumption context*

Hofstede's values consistently predicted all four consumer consumption aspects (H3a, H4a, H5a and H6a were supported) while Schwartz's values predicted three (H3b, H5b and H6b were supported), suggesting Hofstede's framework was more applicable in these consumer consumption contexts. Internet users (% of population) was predicted positively by LTOwvs (b=0.21), IDV (b=0.21) and Autonomy-Embeddedness

(b=0.27), supporting Mooij's (2003) divergent consumption hypothesis even when investigated using more recent consumption data (2011-2015). Long term orientation countries that emphasise life-long learning, aiming for future rewards, had greater internet use, perhaps because the internet facilitates learning, which could bring future rewards in the form of career success. Similarly, individualistic and autonomous individuals who value freedom in thoughts, actions and expressions, may find the

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internet useful in expressing their individualism characteristics.

Mobile phone subscribers (per 100 people) was negatively predicted by IVRwvs (b=-0.33). As mobile phone services became cheaper, people in low IVR countries with greater restrictions on desires received greater societal approval to subscribe, as a mobile phone was no longer perceived as a luxury product.

In the 2011-2015 period, personal computers were no longer a "new" product but an essential tool to search for more efficient information (compared to other products such as mobile phones that access the internet). This is important to highly long-term orientated (b =0.26), individualistic (b =0.22), high uncertainty avoidant (b =0.16) and autonomy-embeddedness (b=0.33) people who desire more information than others in their efforts to plan long term, express their individualistic ideas, and reduce uncertainty in their daily life.

As expected, countries with higher egalitarianism-hierarchy (b=0.61) and uncertainty avoidance (b = 0.55) had more physicians per 100 people, as they see access to physicians as a basic service that should be provided, believe experts should be visited for health advice and feel people should take care of their own health. In addition, UA was positively related to physicians per 100 people, which is consistent with these countries' emphasis on avoiding uncertainty, which is possible only if health is monitored by physicians from time to time.

4.3.2 *Government Consumption*

Of the three government consumption types, all three were consistently predicted by Schwartz's values (H7b, H8b and H9b were supported), while two were predicted by Hofstede's values (H7a and H9a were supported). This suggests Schwartz's framework is more predictive in government consumption contexts. IVR (b=0.40), IDV (b = 0.37), MAS (b = -0.40) and Egalitarianism-Hierarchy (b = 0.43) were significantly related to education expenditure in

the 2011-2015 period in the direction expected. The results supported the findings of Humana (1992), Hofstede (2001) and Schwartz (2008).

In high IVR countries, society values present pleasure, and educational achievement brings pride to the family, society and country, which is consistent with their emphasis on current pleasure. In low IDV countries, education is about learning "how to do" things and acquiring the skills needed to be an acceptable member of society. Consequently, education is perceived as a one-time process (Hofstede, 2001). In contrast, high IDV countries associate education with learning "how to learn" and accept learning as a life-long process. Thus, governments in high IDV countries invest more in education to facilitate this life-long learning process. Higher spending on education in more feminine countries is consistent with their nurturance and egalitarian interests. In more recent times (2011-2015), however, education seems to have been used to reduce inequalities, as high egalitarianism-hierarchy countries have spent more on education. This is consistent with the belief in egalitarian countries that education is a social safety net that everyone should be entitled to obtain.

Harmony-Mastery (b=-0.41) was the only value related to military expenditure. Countries emphasizing mastery (where gaining control of resources is a primary focus) tend to spend more on the military, as was previously reported for data from different time periods (e.g. Schwartz, 2008).

Finally, research and development expenditure was positively related to LTO (b=0.41), IVR (b=0.26) and Autonomy-Embeddedness (b=0.38), while being negatively related to PDI (b=-0.28) and Egalitarianism-Hierarchy (b=-0.33). Research and development investment is designed to provide a more comfortable future lifestyle consistent with long-term value (future benefit), indulgence value (finding new lifestyles that facilitate indulgence) and autonomous individuals (finding new ideas). However, research and development investment goes against the beliefs of high PD and high Hierarchical societies

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that attempt to control people's behaviour by imposing power and strict rules, in which new ideas generated from research may empower people to be more autonomous and rebel against the power and rules imposed on them.

5 Discussion

Although Magnusson, Wilson, Zdravkovic, Zhou and Westjohn (2008) found that the LTO score computed from the Chinese Value Survey added very little to the four-dimensional Hofstede framework, the present study found that the LTO score computed from the World Value Survey explained some aspects of consumption (e.g. personal computer ownership and R&D expenditure), suggesting the latter LTO dimension improved the Hofstede framework's richness. The present study also found the IVR World Value Survey dimension helped explain some consumption aspects (mobile phone use, education expenditure and R&D expenditure), suggesting it added value to Hofstede's original framework.

Schwartz's bipolar Egalitarianism-Hierarchy distance explained trade flows, supporting the suggestion that individual value distances are more conceptually appropriate in explaining international business phenomena than is a single cultural distance score (Brock et al., 2008; Pothukuchi et al., 2002; Schwartz, 2008; Shenkar, 2001). Using more recent data (2011-2015), we found a similar result to that reported by Schwartz (2008): 1. The Egalitarian-Hierarchical dimension positively predicted education expenditure 2. Harmony-Mastery negatively predicted military expenditure, indicating no loss of influence of culture on government consumption.

All in all, Schwartz's framework was more predictive in trade and government consumption contexts while Hofstede's framework was more predictive in the personal consumption context. The result provides ideas to researchers in terms of which situations each framework may be more applicable.

As with all research, there were some limitations. First, the sample included only 52 countries, due to the limited number of countries for which data were available for both values frameworks, resulting in few African and Middle Eastern countries being included. The sample size for the trade analysis was 204 (51 x 4 focal countries) for imports and exports, while the sample size for the various consumption aspects examined was between 46 to 52 countries, due to poor reporting in some countries. Second, the Egalitarianism-Hierarchy distance negatively predicted trade, suggesting that some cultural differences hinder trade between two countries. Future research is needed to identify other value differences that hinder trade, so organisations can make better international business expansion decisions. Third, Autonomy-Embeddedness and Egalitarianism-Hierarchy predicted two consumptions respectively, indicating that their influence on consumption was greater than Harmony-Mastery, which predicted only one consumption aspect. Future research using different consumption aspects is needed to examine this issue in more detail, to understand which dimensions are more predictive. Fourth, the use of secondary country level data meant we could not examine variations between people within countries. Future research is needed to further test the divergence hypothesis using individual level values and consumption data. Finally, this study only compares dimensions of two frameworks (Schwartz's and Hofstede's), and so future studies are suggested to compare dimensions of other cultural frameworks such as those from GLOBE (Tung & Verbeke, 2010) and Trompenaars (1993).

6 Conclusions

Schwartz's framework was a better predictor of trade flows and government spending than Hofstede's framework. Hofstede's framework, however, was a better predictor of the personal consuption aspects examined. If the decision is made to reduce multicollinearity by including

only one framework, Schwartz's framework should be used in trade and government consumption contexts, while Hofstede's framework should be used in personal consumption contexts.

It is generally agreed that cultural similarity promotes trade, whereas cultural differences impede trade. This study provided more specific information on which cultural aspects (e.g. egalitarianism-hierarchy value differences) impeded trade. Consequently, future trade studies should use individual values distances (rather than a single cultural distance score) to better understand the ways in which cultural values influence trade.

This study also suggested that consumption divergence was more likely than consumption convergence. At least one cultural variable was significant in predicting the seven consumption aspects, even when income was included. In other words, the divergence hypothesis was robust across the seven consumption aspects examined. International marketers should not underestimate the effect values have on people's behaviour. That is, individuals do not converge in consumption even when they are exposed to converged media and technology.

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1. Definition of research problem	√	
2. Development of hypotheses or research questions (empirical studies)	√	
3. Development of theoretical propositions (theoretical work)	√	
4. Theoretical foundation/Literature review	√	√
5. Definition of methodological procedures	√	
6. Data collection		√
7. Statistical analysis	√	√
8. Analysis and interpretation of data	√	
9. Critical revision of the manuscript	√	
10. Manuscript writing	√	√

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