Politická ekonomie 2026

Volume 74 (2)
https://doi.org/10.18267/j.polek.1493
Open Access

PRAGUE UNIVERSITY OF ECONOMICS AND BUSINESS

Cultural Patterns and the Structure of Tax Revenue and Public Expenditures: An International Perspective

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Abstract

This study examines the link between cultural patterns and fiscal policy in 29 EU/EFTA countries. Using Ward's clustering on Hofstede's dimensions, five groups were formed. Results confirm that cultural clusters share similar tax and expenditure structures. Regression analysis shows that a 1% increase in individualism raises tax revenues by 0.686% and spending by 0.655% (social +0.740%, human capital +0.364%, classical +0.375%, economic +0.340%). A 1% rise in long-term orientation increases indirect tax shares by 0.717% and income taxes by 0.340%. Uncertainty avoidance (+1%) correlates with higher tax revenues (+0.164%) and indirect taxes (+0.298%). Dimensions like individualism, uncertainty avoidance, masculinity, restraint, and power distance differentiate expenditure structures. These findings indicate that cultural patterns significantly influence fiscal policies, posing challenges for a uniform EU fiscal model.

Keywords: Cultural pattern, fiscal policy, public expenditures, tax revenues
JEL Classification: H50, H20, Z13, Z18

Citation: Wiśniewska-Kuźma, M.: Cultural Patterns and the Structure of Tax Revenue and Public Expenditures: An International Perspective. *Politická ekonomie*, 2026, 74(2), 278–304, https://doi.org/10.18267/j.polek.1493

1. Introduction

Globalization brings diverse societies closer together, promotes the creation of international standards, harmonizes legal regulations, products, services, behaviour and conduct, and shapes the operations of international and national institutions. At the same time, it leads to increasing interactions among individuals from different cultural backgrounds within shared environments. Amid these global changes, can we still identify the influence of deeply rooted cultural norms, beliefs and values on fiscal policy decisions and the responses of economic agents to implemented regulations? Can culture, as the backdrop to individual behaviour, play a role in shaping tax systems and influencing the level and structure of public expenditures?

Culture is analysed from two perspectives: as a constraint on individual behaviour (Belloc and Bowles, 2013) and as a lens through which people interpret the world (Chamlee-Wright and Storr, 2011). In economic research, culture is examined from an institutional perspective, serving as a factor that indirectly influences economic outcomes. Norms, customs and traditions constitute informal institutions at their most fundamental level, providing the framework and constraints for the development of specific formal institutions. The cultural pattern plays a crucial role in shaping governance norms and modes of exercising power (Licht *et al*., 2007). It also influences economic and political preferences, which are expressed and implemented through government economic policies (Guiso *et al*., 2006).

The objective of this article is to identify the relationship between cultural patterns and the level and structure of tax revenues and public expenditures. This raises the question of which cultural dimensions have the greatest significance for the level and structure of tax revenues and public expenditures. A regression analysis will be conducted to show the extent to which different public expenditures and tax revenues can be explained by various cultural dimensions.

The level and structure of tax revenues and public expenditures are determined by many social, economic and political factors. This article focuses on analysing the cultural factor, which affects formal and informal institutions within a country. It is assumed that cultural patterns shape the extent of state intervention in welfare creation (through levels of societal acceptance, perceptions of authority and possibilities of usurping it), the scale of redistribution (society's expectations of redistribution, tolerance for inequality and attitudes towards risk), tax morale (views on authority, rule acceptance and risk tolerance), the share of public spending viewed as investments in human capital (long-term versus short-term orientation), the share of public expenditures on defence and public security (risk tolerance and perception of public authority), the share of social insurance contributions in the tax

revenue structure (uncertainty avoidance, risk tolerance, societal restraint) and the ratio of direct to indirect taxes in the tax revenue structure (degree of rule adherence and views on authority). By examining cultural patterns and their relationship with the level and structure of tax revenues, the author attempts to understand how deeply rooted social beliefs and values influence fiscal policy. This understanding could shed light on the scope, speed and effectiveness of harmonizing tax systems and the convergence of the level and structure of public expenditures within European Union member states.

2. Cultural Patterns as Determinants of Tax Revenue Level and Structure

The level of tax revenue in relation to GDP is the most frequently used fiscal policy indicator to determine the overall tax burden on society and the effectiveness of the applied fiscal policy, *i.e.*, the costs incurred by society in relation to achieving the state's goals. The main factors considered as causes of variation in the level and structure of tax revenue between countries include economic growth and the level of GDP per capita (Castro and Camarillo, 2014), which affect the tax base, *i.e.*, consumption, income and wealth(Muibi and Sinbo, 2013) and lead to citizens' lower resistance to tax payments due to a decrease in the marginal utility of income (Castañeda Rodríguez, 2018). Other factors include: inflation (Mahdavi, 2008), income distribution (Committeri and Pessino, 2013), sectoral structure of the economy (Karagoz, 2013), value added in industry (Ha *et al*., 2022), level of foreign direct investment and international trade (Bird *et al*., 2008), innovative capacity (Uyar *et al*., 2021), public debt level (Teera and Hudson, 2004), foreign public debt level (Lutfunnahar, 2007), monetary policy (Tanzi, 1988), legitimacy of government (Castañeda Rodríguez, 2018), acceptance of tax burdens in society (Sanz-Sanz, 2022), education level of citizens and institutional factors such as political stability, civil rights (Castro and Camarillo, 2014), corruption (Castañeda Rodríguez, 2018), population growth (Bahl and Wallace, 2005), female labour force participation (Mahdavi, 2008), life satisfaction and family ties (Mare *et al*., 2020) and tax morality (Ciziceno and Pizzuto, 2022). According to Castañeda Rodríguez (2018), there are differences between countries in the impact of individual factors on the level of tax revenue. They depend on the overall social and economic conditions.

The construction of a country's tax system is determined by many factors such as historical traditions, political, socio-economic and administrative factors. The present article focuses on the relationship between the structure of tax revenues and public expenditures and the Hofstede cultural pattern. A research gap has been identified in the literature in this area. The cultural pattern is associated with the adopted socio-economic doctrine

in the country (which affects the scope of taxation and the level of public expenditures), preferred types of taxes by society, effectiveness of tax collection, tax mentality and the extent of tax avoidance (through social norms). According to Bobek *et al*. (2012), social norms have important direct as well as indirect influences on tax compliance behaviour. They also affect tax morality, and consequently, the extent of tax evasion. Masca and Chis (2023) demonstrated that cultural determinants are significant in shaping the relationship between tax evasion by individuals and income polarization. Allam *et al*. (2023) showed that countries with high levels of power distance, uncertainty avoidance and collectivism are characterized by higher levels of tax evasion. Similarly, Tsakumis *et al*. (2007) identified high levels of uncertainty avoidance and power distance as factors contributing to tax evasion. Richardson (2008) also included lower levels of individualism among these factors, while Brink and Porcano (2016) identified higher levels of masculinity. Saunoris (2024) proved that market-supporting institutions and individualistic cultures are important determinants in reducing the size of the informal economy.

This suggests that the impact of cultural patterns on the size of the informal economy may also affect the structure of tax revenues, by influencing both policymakers' decisions on the distribution of tax burdens (considering taxpayers' tendencies to escape into the informal sector) and taxpayers' responses to different types of taxes. There are also other grounds for exploring the relationship between cultural dimensions and the structure of tax revenues. Firstly, Chui and Kwok (2008) demonstrated that power distance and masculinity negatively affect life insurance consumption, whereas individualism has a positive effect. Trinh *et al*. (2020) found that cultural characteristics such as individualism, long-term orientation, masculinity and uncertainty avoidance were the drivers of expenditures on property insurance, whereas long-term orientation and uncertainty avoidance explained accident and health insurance spending across the OECD countries. Considering that contributions to social insurance have a negative impact on life insurance expenditures (Sanjeewa *et al*., 2019), one can explore the relationship between social insurance contributions and cultural dimensions. Wiśniewska-Kuźma (2023) examined the relationship between Hofstede's cultural dimensions and the structure of tax revenues in OECD countries. The research results indicate that countries characterized by lower power distance, higher levels of individualism, uncertainty avoidance, restraint and a short-term orientation exhibit a higher fiscal importance of personal income tax relative to social security contributions, as well as lower progressivity in personal income tax and a lower tax wedge.

3. Determinants of the Level and Structure of Public Expenditures

Public expenditures constitute a fundamental instrument of fiscal policy, used to stimulate or stabilize economic growth and improve the welfare of society. Facchini (2018) pointed out that the size of public finances reflects citizens' preferences (according to the demand model), the authority of public power to impose its interests on citizens (the supply model) and constitutional conditions for increasing revenues. Thus, the legitimization of the size and structure of public expenditures occurs through societal consensus and expectations regarding the scope of meeting needs and the public authority determining the directions of development of welfare policy based on the state's financial capabilities. Facchini (2014) described the following determinants of public expenditures: income, the costs of public goods, bureaucrat inefficiency, interest groups, the costs of taxation (the demand of public goods as a function of price-tax), political regime, fiscal illusion, fiscal decentralization, electoral rules, political rights, pre-tax income distribution, income volatility, ethnic diversity, social trust, political ideology, displacement effect or ratchet effect (temporary crises cause government spending to rise and to remain permanently higher than if the crises had not occurred). Some researchers identify the influence of demographic, institutional, sociological, geographic and cultural factors (Sanz and Velazquez, 2001).

This article focuses on the relationship between the cultural pattern according to Hofstede's classification and the structure of taxation and public expenditures. The literature on the subject pays little attention to the cultural determinants of the composition of public expenditures. According to the author, cultural patterns determine society's preferences regarding the expected level of state intervention in the economy and the welfare of citizens, as well as the choice of appropriate tools, *i.e.*, particular types of public expenditures. For example, according to Outreville (2018), cultural characteristics can influence the accepted level of risk and shape people's attitudes towards risk. This can translate into preferences regarding the level of expenditures on social spending and healthcare expenditures.

Kammas *et al*. (2017) demonstrated that societies characterized by less collectivistic cultures show higher levels of fiscal redistribution. In this situation, the welfare state replaces strong family ties by protecting individuals against risk. In turn, Cai *et al*. (2022) showed that stronger individualism is associated with higher levels of charitable donations, promotes pro-social behaviour and contributes to improved moral attitudes. Such attitudes may also correlate with higher acceptance of tax collection to support the state's redistributive activities. According to van Hoorn (2016), cultural traits such as attitudes, values and social norms significantly affect individuals' views on the importance of education and their

propensity to engage in activities promoting human capital. Future orientation, in particular, has a significant influence, suggesting that it may play an important role in the development of public expenditures on education. This is consistent with the research results of French *et al*. (2015), which revealed that power distance and masculinity negatively affect public spending on education, while individualism and long-term orientation positively influence educational expenditures. Gründler and Köllner (2020) confirmed that culture affects the extent of social welfare through factors such as the degree of integration of individuals into cohesive groups, the strength of family ties, solidarity, acceptance of status and power disparities and attitudes towards uncertainty. Individualist societies tend to have strong support for redistribution, as they lack familial safety nets. Societies that support inequality and social hierarchy and have low tolerance to risk also demonstrated lower propensity for redistribution (private insurance reduces the need for social security). This suggests that the share of social expenditures may be linked to cultural dimensions such as individualism versus collectivism, power distance and uncertainty avoidance. Giuliano and Spilimbergo (2014) found that societies prioritizing pleasure and happiness over wealth generation tend to vote for left-leaning parties and support higher government redistribution. This provides a basis for hypothesizing that the share of social expenditures correlates with the cultural dimension of indulgence. Based on these examples, it was decided to examine the relationship between cultural patterns and the level and structure of public expenditures.

4. Research Methodology

Groups of countries representing a particular cultural pattern according to Hofstede's classification were identified using cluster analysis, employing the Ward method for clustering objects. The Euclidean distance squared was used to assess the similarity of objects. The data underwent standardization. Clustering was performed on a group of 29 European Union and EFTA countries based on the variables known as Hofstede's cultural dimensions (Czerny, 2018):

- PDI (power distance index) – shows the society's attitude towards inequality among its members and preferences regarding authoritarianism/democracy.
- INDCOL (individualism versus collectivism) – illustrates the relationships among society members: strong individualism translates into loose social ties and a focus on the individual's well-being (and that of the immediate family), while collectivism characterizes communities with a strong sense of belonging to a group and a focus on working towards the "common good".

- MASFEM (masculinity versus femininity) – depicts the gender roles in society. A "masculine" society is oriented towards goals such as profit, professional success, competitiveness and efficiency, while "feminine" societies emphasize interpersonal relationships, improving quality of life, cooperation and concern for the social interest.
- UA (uncertainty avoidance) – extent to which the members of a culture feel threatened by ambiguous or unknown situations and have created beliefs and institutions that try to avoid these. This feeling is expressed, among other things, by stress and the need for predictability, which can be satisfied by various laws, regulations and customs (Hofstede, 2011).
- LSTO (long-term orientation versus short-term orientation) – associated with perseverance in achieving long-term goals, prudent management, having savings and investment funds, or expecting quick results, social pressure for consumption and meeting needs through loans.
- INRES (indulgence versus restraint) – the degree to which people try to control their desires and impulses based on norms. Restrained societies are oriented towards work rather than leisure, control the satisfaction of their desires according to social norms, attach great importance to foresight and define gender roles.

A cultural pattern consists of the norms, values, behaviour and ways of thinking that are commonly accepted within a given society. In this study, the cultural pattern is defined by the configuration of cultural dimensions, characterizing a group of countries. It is assumed that countries representing a specific cultural pattern exhibit similar values of indicators reflecting cultural dimensions while significantly differing from other groups. Hofstede's classification was chosen to describe cultural conditions because it is the most widely used framework in the study of cultural differences. The literature provides evidence of a relationship between Hofstede's cultural dimensions and tax avoidance (*e.g.*, Allam *et al*., 2023; Tsakumis *et al*., 2016), the use of insurance (Chui and Kwok, 2008; Trinh *et al*., 2020), the structure of tax revenues (Wiśniewska-Kuźma, 2023) and education spending (*e.g.*, French *et al*., 2015). This suggests that there is a rationale for exploring the relationship between cultural dimensions and variables that characterise fiscal policy.

The extracted models were described using the median and positional coefficient of variation of diagnostic characteristics. The positional coefficient of variation (CVP) is a measure of relative variability, calculated as the ratio of the interquartile range to the median. The CVP is more resistant to outliers and distribution asymmetry, making it particularly useful in analyses of group where variables may exhibit skewed distributions or extreme values. In the context of cluster validation, the CVP allows the assessment of group stability and homogeneity, especially when cluster sizes are small (in this study, clusters range from 4 to 7 countries). A low CVP within clusters suggests internal cohesion, whereas a high

CVP may indicate the need for further segmentation. It has been assumed that a coefficient of variation below 30% indicates low dispersion, between 31% and 60% is moderate dispersion and above 60% is significant dispersion.

Table 1: Variables used in regression model

Variables	Description
Explained variables	
Public expenditures (*PE*)	Public expenditures as % of GDP
Classic expenditures (*CE*)	Share of classic expenditures in total public expenditures. This category of expenses includes general public services (*GPS*), defence (*DF*), public order and safety (*POS*)
Economic affairs (*EA*)	Share of economic affairs in total public expenditures
Human capital (*HC*)	Share of expenditures on human capital in total public expenditures (*HC*) – this category of expenses includes environmental protection (*EP*), housing and community amenities (*HCA*), health (*H*), recreation (*R*), culture and religion (*CR*) and education (*E*)
Social protection (*SP*)	Share of expenditures on social protection in total public expenditures
Tax revenues (*TR*)	Tax revenues as % of GDP
Indirect taxes (*IDT*)	Share of revenues from indirect taxes in total tax revenues (VAT and excise)
Income taxes (*IT*)	Share of income tax revenues in total tax revenues (PIT and CIT)
Property taxes (*PT*)	Share of property taxes in total tax revenues
Social security contributions (*SSC*)	Share of social security contributions in total tax revenues
Debt (*D*)	Public debt ratio as % of GDP
Explanatory variables	
Power distance index (*PDI*)	The scale runs from 0–100, with 50 as a mid-level. If a score is under (over) 50, the culture scores relatively low (high) on that scale
Individualism versus Collectivism (*INDCOL*)	The scale runs from 0–100, with 50 as a mid-level. The lower side (under 50) is considered "collectivist" and the higher side above 50 is considered "individualist"
Masculinity versus femininity (*MASFEM*)	The scale runs from 0–100, with 50 as a mid-level. The lower side (under 50) is considered "masculinity" and the higher side above 50 is considered "femininity"
Uncertainty avoidance (*UA*)	The scale runs from 0–100, with 50 as a mid-level. If a score is under (over) 50, the culture scores relatively low (high) on that scale
Long-term orientation versus short-term orientation (*LSTO*)	The scale runs from 0–100, with 50 as a mid-level. The lower side (under 50) is considered "short-term orientation" and the higher side above 50 is considered "long-term orientation"
Indulgence versus restraint (*INRES*)	The scale runs from 0–100, with 50 as a mid-level. The lower side (under 50) is considered "restraint" and above 50 is considered "indulgence"

Source: Author's own elaboration, based on metadata of The Culture Factor Group and Eurostat

The Kruskal–Wallis test was performed to verify the assumption that the identified groups differ significantly in terms of the adopted characteristics. This procedure was repeated for variables describing the structure of tax revenues and public expenditures to check whether groups representing a particular cultural pattern also exhibit similarity in these features.

The relationship between the cultural dimensions and the variables describing the level and structure of tax revenues and public expenditures was examined using regression analysis with log-transformed data. Both the clustering of countries using Ward's method and the regression analysis were conducted on cross-sectional data. The median shares of individual taxes and expenditures from 2013 to 2022 were used to mitigate the impact of cyclical fluctuations on the level of tax revenues and public expenditures. For the regression analysis, both dependent and independent variables were logarithmically transformed to reduce data skewness and approximate a normal distribution.

The dependent variables were the shares of different tax revenues and public expenditures, while the independent variables were indicators representing Hofstede's cultural dimensions:

$$Y = \beta_i KUL_i + \varepsilon \quad (1)$$

where Y is the explained structure of tax revenue and public expenditure variables, β_i represents the regression coefficient of the explanatory variables of Hofstede's cultural dimensions and ε means the residual.

Five equations were formulated to illustrate the relationship between cultural dimensions and specific categories of public expenditures and six equations were developed to depict the relationship between cultural dimensions and individual tax revenues:

$$PE = \beta_1 INDCOL + \beta_2 UA + \varepsilon \quad (2)$$

$$CE = \beta_1 PDI + \beta_2 INDCOL + +\beta_3 UA + \varepsilon \quad (3)$$

$$EA = \beta_1 INDCOL + \beta_2 UA + \varepsilon \quad (4)$$

$$HC = \beta_1 PDI + \beta_2 INDCOL + +\beta_3 LSTO + \varepsilon \quad (5)$$

$$SP = \beta_1 INDCOL + \beta_2 MASFEM + \varepsilon \quad (6)$$

$$TR = \beta_1 INDCOL + \beta_2 UA + \varepsilon \quad (7)$$

$$IDT = \beta_1 LSTO + \beta_2 UA + +\beta_3 INRES + \varepsilon \quad (8)$$

$$IT = \beta_1 LSTO + \beta_2 INRES + \varepsilon \quad (9)$$

$$PT = \beta_1 INRES + \varepsilon \quad (10)$$

$$SSC = \beta_1 UA + \beta_2 INRES + \varepsilon \quad (11)$$

$$D = \beta_1 UA + \beta_2 INRES + \varepsilon \quad (12)$$

These are the main equations describing the relationship between the structure of tax revenues and public expenditures and cultural dimensions. Additionally, eight supplementary equations were formulated with dependent variables representing the shares of public expenditures within the categories of classical expenditures and human capital expenditures, including general public expenditures, defence, public order and safety, education, recreation, health, housing and environmental protection. These equations were developed to identify which specific types of expenditures within the broader categories of classical expenditures and human capital expenditures play a more significant role in the relationship between cultural dimensions and these main expenditure categories.

As noted by Owsiak (2021), similarities in fiscal policy, tax structures, public expenditure levels and public debt magnitudes can be observed among groups of European Union countries. These similarities reflect the preferred socio-economic doctrine as well as historical, economic and cultural conditions. Following Owsiak (2021), this study assumes that the prevailing economic and social doctrine is reflected in fiscal policy. Fiscal policy, in turn, can be illustrated by the structure of public expenditures and tax revenues, which reveal the hierarchy of goals and functions of expenditure and tax policies. This structure is shaped by the composition of these instruments and the responses of economic entities to them in the context of economic, social and cultural conditions. The ratio of tax revenues to GDP is widely accepted as a measure of fiscalism, indicating what portion of the national output is collected by the state to achieve the objectives set by public authorities. Meanwhile, the level of public expenditures is considered an indicator of state intervention in the economy and its role in shaping citizens' welfare. The structure of total tax revenues, measured by the share of major taxes in the overall tax income, illustrates the distribution of the total tax burden across different economic resources, processes and capital. In the literature, the share of various tax revenues has been used as a classification variable in tax models (*e.g.*, Owsiak, 2021; Velichkov and Stefanova, 2017).

The classification of public expenditures refers to the division proposed by Oxley and Martin (1991) and Sanz and Velazquez (2001), who classified expenditures on administrative services, public order and safety and defence as "pure goods", expenditures on healthcare, education and housing as "merit goods", expenditures on transportation and communication, culture, recreation, religion and economic affairs as "economic services and others", and expenditures on social protection and the environment as "transfers". In the category of classical expenditures, three groups of expenditures were included: expenditures on general public services, defence and public order and safety. These three groups of expenditures are associated with the fundamental functions of the state (Abad *et al.*, 2020). These public expenditures are mainly intended to finance collective consumption.

Expenditures classified into the third category, *i.e.* "investment in human capital", have also been the subject of numerous studies and analyses regarding the improvement of general welfare or economic growth stimulation. Semmler *et al*. (2007), in examining the structure of public investment expenditures in 35 countries, distinguished between expenditures related to infrastructure and educational and healthcare facilities. According to the author, expenditures on healthcare, education as well as environmental protection and housing should be regarded as supporting the development of human capital, as they directly contribute to improving the quality and length of citizens' lives. Expenditures on social protection constitute the fourth distinct group of public expenditures. They exemplify the direct state intervention in income distribution within society, justified by the implementation of justice principles, maximizing welfare according to the maxmin rule or stimulating economic growth.

The statistical verification of the model was conducted based on residuals, the standard errors of the coefficients, the probability that a coefficient value is random, the R^2 value indicating the proportion of the variability of the dependent variable explained by the model, and the significance level of the overall model. To verify the correctness of the econometric model assumptions, the following tests were conducted. The Doornik–Hansen test was performed, the results of which indicate that the random component has a normal distribution for the obtained models[1]. To confirm the absence of heteroskedasticity of residuals, the White and Breusch–Pagan tests were conducted. The Ramsey RESET test was used to verify the correctness of the functional form of the model, selecting the version in which the auxiliary equation includes squared and cubed terms of the dependent variable. Additionally, nonlinearity tests were performed to confirm that the relationships are linear. Given the use of cross-sectional data, a nonparametric runs test was applied to check for autocorrelation[2].

1 However, this assumption was not met for the following variables: property taxes, defence, recreation, health and environment. This model also exhibits weaknesses based on the SBC, AIC, HQ criteria, R^2 values and log likelihood, except for recreation. Nevertheless, the defence variable belongs to the main category of classical expenditures, while recreation, health and environment fall under human capital expenditures, for which the normality assumption of residuals was satisfied.

2 Moran's global statistic indicates the presence of spatial autocorrelation, meaning that values for geographically proximate countries are more similar to each other than to those of distant countries. However, in this study, such an outcome is unavoidable, as it examines the relationship between cultural dimensions and fiscal policy. Geographically close countries share common historical experiences (*e.g.*, post-communist countries), which shape their cultural patterns while simultaneously influencing fiscal policy – such as the existence of a specific tax base, tax morale affecting tax structure and development needs determining the composition of public expenditures.

To assess the goodness of fit of the model, the Akaike information criterion (AIC), Bayesian information criterion (BIC) and Hannan–Quinn criterion (HQC) were applied. The lowest values were observed for equations where the dependent variable was human capital expenditures (particularly education and healthcare), total public expenditures, total tax revenues, classical expenditures (especially general public expenditures) and social spending, followed by indirect taxes and income taxes. Log-likelihood values were also used to assess the goodness of fit. The highest value was observed for the equation with human capital expenditures as the dependent variable, followed by total tax revenues, total public expenditures, classical expenditures and social spending.

5. Research Results

As a result of the clustering, five groups were obtained, representing five cultural patterns in this study. Table 2 contains the median value (Me) and the positional coefficient of variation (CVP) of the results obtained in each group in the context of Hofstede's cultural dimensions.

Table 2: Characteristics of individual cultural patterns

	I		**II**		**III**		**IV**		**V**	
	Belgium, France, Greece, Malta, Spain, Portugal, Slovenia		**Bulgaria, Romania, Czechia, Italy, Poland, Hungary, Slovakia**		**Germany, Luxemburg, Ireland, Austria, Switzerland**		**Denmark, Finland, Sweden, Iceland, Norway, Netherlands**		**Estonia, Croatia, Latvia, Lithuania**	
	Me	**CVP**	**Me**	**CVP**	**Me**	**CVP**	**Me**	**CVP**	**Me**	**CVP**
PDI	63.0	12.7	68.0	39.0	34	20.6	31	7.3	41	6.1
INDCOL	67.0	27.6	53.0	28.3	77	24.7	85	8.2	62	6.0
MASFEM	43.0	32.6	64.0	46.1	68	5.9	12	58.3	24.5	55.1
UA	94.0	11.2	82.0	15.9	65	18.5	50	36.0	61.5	5.7
LSTO	50.0	17.0	49.0	18.4	51	19.6	58	11.2	70	10.0
INRES	48.0	15.6	29.0	19.0	63	14.3	67.5	14.8	16	4.7

Note: "Me" means median and "CVP" positional coefficient of variation.

Source: Author's own calculations based on data The Culture Factor Group

Countries grouped in Cluster I are characterized by a high power distance index, have a lower-than-average level of individualism and exhibit a strong sense of threat in the face of uncertainty, leading to the proliferation of legal regulations and social norms to eliminate it. They also display a balanced approach to achieving goals and maintaining work-life balance. The societies of Cluster II are characterized by the highest power distance among the identified groups. They are hierarchical, accepting socio-economic inequalities, have a strong group affiliation and work for the so-called "common good". They exhibit a strong sense of threat in the face of uncertainty. They focus on achieving short-term goals and show great restraint, placing a great emphasis on professional work in life. The countries grouped in Cluster III are democratic societies with high public participation in governance, which is associated with an individualistic attitude and a strong sense of responsibility for creating their own well-being, mainly understood through economic outcomes considered in a moderately short-term perspective. Society accepts uncertainty as a natural part of life and is largely oriented towards enjoying life. Societies in Cluster IV countries are characterized by high-quality democracy. They are individualized and oriented towards improving the quality of life in every aspect (strong importance is placed on leisure time and non-economic aspects of quality of life) for all members in the medium and long term, accepting uncertainty in life. Cluster V includes countries where society is characterized by a low level of power distance, relatively strong group affiliation and work for the so-called "common good". They are more oriented towards collective, long-term goals, combining economic objectives with improving non-economic aspects of quality of life. They have a moderate sense of threat in the face of uncertainty and strong restraint, oriented towards work rather than leisure time.

The Kruskal–Wallis test conducted allowed a positive verification of the assumption that the identified groups are homogeneous and differ significantly in terms of the adopted characteristics. This procedure was repeated for variables describing the structure of tax revenues and public expenditures to check whether the groups representing a given cultural pattern also show similarities in these aspects. The test confirmed that for the variables taxes on products, taxes on income, *SSC*, public expenditures as a percentage of GDP, economic affair expenditures and social expenditures, the groups differ significantly at the 0.1 significance level. This result is consistent with the findings of Ferreiro *et al*. (2010), according to which expenditures on health and education did not significantly differentiate the groups of EU countries identified based on the structure of public expenditures. These expenditures are of great importance for shaping well-being in any economy and are thus supported by the general public.

In Table 3, columns contain groups of countries representing a specific cultural pattern, while the rows display the median value and the positional coefficient of variation for public expenditures and tax revenues relative to GDP, as well as the share of individual categories of public expenditures and tax revenues.

Table 3: Characteristics of the structure of tax revenues and public expenditures in individual cultural patterns

	I		II		III		IV		V	
	Belgium, France, Greece, Malta, Spain, Portugal, Slovenia		Bulgaria, Romania, Czechia, Italy, Poland, Hungary, Slovakia		Germany, Luxemburg, Ireland, Austria, Switzerland		Denmark, Finland, Sweden, Iceland, Norway, Netherlands		Estonia, Croatia, Latvia, Lithuania	
	Me	CVP	Me	CVP	Me	CVP	Me	CVP	Me	CVP
PE	48.0	14.8	42.4	11.5	41.8	26.4	49.2	9.0	39.1	8.8
CE	19.9	15.3	20.6	15.5	18.2	14.8	19.2	15.5	19.8	1.8
EA	10.9	18.3	14.9	20.2	11.7	26.4	10.0	28.1	14.2	35.5
HC	30.2	9.5	30.0	5.1	30.0	3.5	32.9	16.1	33.7	3.7
SP	38.7	6.0	33.1	16.7	41.3	8.0	39.8	8.2	31.3	8.9
TR	37.6	19.3	34.5	12.5	38.3	32.4	40.7	14.7	32.0	12.1
IDT	33.2	27.1	34.3	24.5	24.5	5.3	28.8	9.7	40.5	9.1
PT	4.7	64.9	3.7	56.8	4.6	78.3	3.5	163.0	3.2	58.7
IT	26.5	30.0	20.8	9.9	36.5	36.4	44.0	17.7	20.5	23.4
SSC	34.4	9.6	38.9	23.5	30.8	35.4	16.9	107.0	32.7	19.6
D	103.0	29.9	51.4	50.3	65.1	41.2	43.1	48.0	39.9	44.8

Source: Author's own calculations based on Eurostat

Countries grouped in Cluster I (debt-financed) are characterized by a moderate level of fiscalism, a share of income taxes in tax revenues close to the median and a share of almost all expenditure categories in total spending also near the median of all the countries included in the study. This cluster is distinguished by a high level of public expenditures relative to GDP and a gap between expenditures and tax revenues relative to GDP (by 11.4

percentage points). Indirect taxes and *SSC* dominate the tax revenue structure, with a large share of property taxes.

Countries in Cluster II (stimulating the economy) are characterized by a relatively low level of fiscalism, a high share of indirect taxes and the highest share of *SSC*, with a low share of direct taxes in the structure of tax revenues. Classical expenditures and spending on economic affairs have a high share in public expenditures, while social spending has a low share.

Countries in Cluster III (social protection) are characterized by a high level of fiscalism, the lowest share of indirect taxes among all the groups, a low share of *SSC*, the highest share of property taxes and a high share of income taxes in the structure of tax revenues. Countries in this cluster are distinguished by the highest share of social expenditures among the identified clusters, with a low share of classical and economic expenditures.

Cluster IV (interventionist state) consists of countries with the highest level of fiscalism, the highest share of income taxes and a low share of *SSC* and indirect taxes in tax revenues. They also have the highest level of public expenditures relative to GDP, with a high share of spending on human capital and social expenditures, and the lowest share of classical and economic expenditures.

Countries in Cluster V (liberal) stand out from the other groups with the lowest level of fiscalism and public expenditures, the highest share of indirect taxes and the lowest share of property and income taxes in the structure of tax revenues. These countries are characterized by a high share of spending on human capital, economic affairs and classical expenditures, with the lowest share of social expenditures.

The results of the regression analysis indicate the significant role of cultural dimensions in differentiating the level and structure of tax revenues and public expenditures. A positive relationship was found between the dimensions of individualism and uncertainty avoidance and the level of public expenditures relative to GDP. Spatially, higher levels of individualism, power distance and uncertainty avoidance correlate with a higher share of classical expenditures. This category of expenditures shows slight differentiation regarding its relationship with cultural dimensions: higher levels of uncertainty avoidance and indulgence are associated with higher expenditures on general public services; higher defence spending is related to higher power distance and restraint; and higher spending on public order and safety correlates with higher levels of individualism, masculinity, restraint and power distance.

Table 4: Results of regression analysis – cultural dimensions and the level and structure of public expenditures

	Public expenditures	Classic expenditures	Economic affairs	Human capital	Social spending
PDI	–	0.164 (0.080)*	–	0.087 (0.047)*	–
INDCOL	0.655 (0.056)***	0.375 (0.061)***	0.340 (0.128)***	0.364 (0.120)***	0.740 (0.034)***
MASFEM	–	–	–	–	0.134 (0.040)***
UA	0.246 (0.057)***	0.181 (0.096)*	0.386 (0.084)***	–	–
LSTO	–	–	–	0.340 (0.138)***	–
INRES	–	–	−0.234 (0.088)**	–	–
R^2	0.998611	0.997430	0.993605	0.998635	0.997522
***p*-value for *F*-test**	2.66e-39	8.94e-34	1.25e-28	2.39e-37	6.62e-36
Log likelihood	39.80162	37.99227	30.25184	42.73906	32.92797
SBC	−72.86866	−65.88266	−50.40179	−75.37623	−59.12135
AIC	−75.60325	−69.98455	−54.50368	−79.47811	−61.85595
HQC	−74.74681	−68.69989	−53.21902	−78.19345	−60.99951

Notes: ***, **, * denote statistical significance at the 0.1%, 1% and 5% levels, respectively.

Source: Author's own calculations based on Eurostat data

Table 5: Results of regression analysis – cultural dimensions and public expenditures

	General public	Defence	Public order and safety	Education	Recreation	Health	Housing	Environmental
PDI	–	0.538 (0.146)***	0.270 (0.080)***	–	–	–	0.396 (0.100)***	0.379 (0.123)***
INDCOL	–	–	0.276 (0.115)**	0.288 (0.159)*	0.543 (0.119)***	–	–	−0.231 (0.112)**
MASFEM	–	–	0.103 (0.049)**	–	−0.110 (0.064)*	–	–	–
UA	0.368 (0.048)***	–	–	–	–	–	–	–
LSTO	–	–	–	0.302 (0.169)*	–	0.663 (0.010)***	–	–
INRES	0.272 (0.055)***	−0.347 (0.151)**	−0.339 (0.089)***	–	−0.230 (0.122)*	–	−0.360 (0.104)***	–
R^2	0.993860	0.633788	0.980643	0.994901	0.933301	0.992986	0.404246	0.654249
***p*-value for *F*-test**	1.38e-30	1.29e-06	5.10e-21	1.12e-31	2.10e-15	1.04e-31	0.000919	5.93e-07
Log likelihood	29.77733	−4.505608	31.58162	33.93955	19.55285	26.80960	6.410559	12.00176
SBC	−52.82008	15.74581	−49.69406	−61.14450	−29.00380	−50.25190	−6.086527	−17.26893
AIC	−55.55467	13.01122	−55.16324	−63.87910	−33.10569	−51.61920	−8.821119	−20.00352
HQC	−54.69823	13.86766	−53.45036	−63.02266	−31.82103	−51.19098	−7.964679	−19.14708

Notes: ***, **, * denote statistical significance at the 0.1%, 1% and 5% levels, respectively.
Source: Author's own calculations based on Eurostat data

Countries with a higher share of expenditures on economic affairs tend to have higher levels of individualism, uncertainty avoidance and restraint, while those with a higher share of human capital expenditures show higher levels of power distance, individualism and long-term orientation. Differences also exist within the various types of human capital expenditures: higher education spending is found in countries with higher individualism and long-term orientation, recreation spending is higher in countries characterized by individualism, femininity and restraint, healthcare spending is associated with higher long-term

orientation, housing spending with higher power distance and restraint, and environmental spending with higher power distance and collectivism. Meanwhile, countries with a higher level of social spending were characterized by higher levels of individualism and masculinity, which aligns with the findings of Kammas *et al*. (2017).

Table 6: Results of regression analysis – cultural dimensions and the level and structure of tax revenues

	Tax revenues	Indirect taxes	Income taxes	Property taxes	SSC	Debt
INDCOL	0.686 (0.059)***	–	–	–	–	–
LSTO	–	0.717 (0.113)***	0.340 (0.074)***	–	–	–
UA	0.164 (0.059)***	0.298 (0.086)***	–	–	1.072 (0.100)***	0.589 (0.123)***
INRES	–	−0.175 (0.069)**	0.534 (0.080)***	0.361 (0.036)***	−0.323 (0.114)***	0.437 (0.140)***
R^2	0.998316	0.996653	0.995106	0.777646	0.984706	0.984566
***p*-value for *F*-test**	3.60e-38	2.76e-32	6.46e-32	1.21e-10	3.10e-25	3.50e-25
Log likelihood	38.64414	29.71633	25.03883	–7.172977	8.511696	2.620343
SBC	–70.55369	–49.33077	–43.34306	17.71325	–10.28880	1.493906
AIC	–73.28828	–53.43266	–46.07765	16.34595	–13.02339	–1.240686
HQC	–72.43184	–52.14800	–45.22121	16.77417	–12.16695	–0.384246

Notes: ***, **, * denote statistical significance at the 0.1%, 1% and 5% levels, respectively.
Source: Author's own calculations based on Eurostat data

The regression analysis results indicate that countries with higher levels of individualism and uncertainty avoidance exhibit a higher level of tax revenues relative to GDP. As for the structure of tax revenues, higher levels of uncertainty avoidance, long-term orientation and restraint are associated with a greater share of indirect taxes; a higher level of indulgence is linked to a higher share of property taxes; a combination of higher indulgence and long-term orientation correlates with a higher share of income taxes; and higher levels of restraint and uncertainty avoidance are associated with a higher share of social security

contributions (*SSC*). These findings highlight the significant role of long-term orientation, uncertainty avoidance and indulgence/restraint in differentiating the structure of tax revenues and public debt, while individualism/collectivism, uncertainty avoidance, masculinity/femininity, indulgence/restraint and power distance are key in differentiating the structure of public expenditures. The analysis also reveals that countries with higher levels of uncertainty avoidance and indulgence are characterized by higher levels of public debt.

The results of the tests conducted indicate that the level of public expenditures and specific categories of public expenditures (such as classical expenditures, human capital expenditures, economic affairs and social support) as well as the level of tax revenues and the share of indirect and income taxes are associated with cultural dimensions. However, a well-fitting model was not obtained for property taxes, social security contributions or public debt. Regarding the composition of human capital expenditures, only healthcare and education expenditures can be considered significantly related to cultural dimensions, while in the case of classical expenditures, this applies to general public expenditures and public order and safety.

According to Ferreiro *et al*. (2014), a convergence process among EU countries is observable in expenditures on general public services, defence, public order and health, while divergence is noted in economic affairs, housing, recreation, education and social protection. However, this study suggests that cultural dimensions significantly affect the share of all the main expenditure categories, which may complicate the implementation of a uniform fiscal model within the European Union. This is consistent with the views of scholars such as Navarro *et al*. (2004) and Kim and Zurlo (2009), who argued that cultural and historical factors are critical to understanding changes in public expenditures.

The results of this study also show that the share of indirect and income taxes is significantly determined by cultural factors. Although indirect taxes in the EU are subject to harmonization, it can be observed that in some countries – especially those with a large informal sector and lower tax morality – these taxes constitute the main source of revenue. The findings suggest that cultural factors have little influence on property taxes and social security contributions. This indicates the potential feasibility of introducing common regulations in these areas across EU member states.

6. Conclusion

This article focused on identifying the relationship between cultural dimensions and the level and structure of tax revenues and public expenditures, which represent the hierarchy of fiscal policy functions and the extent of state intervention in the economy and the creation of social welfare. The results of the regression analysis and cluster analysis indicate the significant role of cultural dimensions in differentiating the level and structure of tax revenues and public expenditures. This is in line with the opinion of Sanz and Velazquez (2001) on the influence of cultural, demographic and sociological factors on fiscal policy.

Based on the results of cluster analysis, it can be concluded that the groups of countries identified based on variables describing Hofstede's cultural dimensions also exhibit similarities in terms of the structure of tax revenues and public expenditures. However, the identified groups differ significantly only in terms of taxes on products, taxes on income, *SSC*, public expenditures as a percentage of GDP, economic affairs expenditures and social expenditures. This result is consistent with the findings of Ferreiro *et al*. (2010), according to which expenditures on health and education did not significantly differentiate the groups of EU countries identified based on the structure of public expenditures. These expenditures are of great importance for shaping well-being in any economy and are thus supported by the general public.

The results of the regression analysis highlight the great importance of the dimensions of long-term orientation, uncertainty avoidance and indulgence/restraint in differentiating the structure of tax revenues. Meanwhile, the dimensions of individualism/collectivism, uncertainty avoidance, masculinity/femininity, restraint/indulgence and power distance are crucial in differentiating the structure of public expenditures. This result is consistent with the opinion of Gründler and Köllner (2020) that culture affects the extent of social welfare through factors such as the degree of integration of individuals into cohesive groups, the strength of family ties, solidarity, acceptance of status and power disparities and attitudes towards uncertainty.

In conclusion, we can identify the following effects of individual cultural dimensions on the level and structure of public expenditures and tax revenues:

- Individualism/collectivism: In societies with high individualism, citizens are less likely to rely on support from other community members than they would be in collectivist societies. If they lack adequate income and wealth, they must seek to meet their needs through state assistance. This translates into a preference for higher levels of public expenditures and tax revenues, particularly a higher share of expenditures on social

purposes, public order and safety and environmental protection. This aligns with the findings of Kammas *et al*. (2017), who argued that the positive relationship between individualism and the extent of redistribution stems from the fact that the welfare state replaces strong family ties by providing protection against risk. Similarly, Cai *et al*. (2022) expressed the view that stronger individualism promotes pro-social attitudes and higher moral standards, which may translate into tax morale and greater acceptance of higher taxation for redistributive purposes.

- Uncertainty avoidance: Citizens prefer lower economic risk at the cost of transferring responsibility to the state. This results in a preference for higher public expenditures (both overall and in the share of economic and classical expenditures), tax revenues (especially indirect taxes and *SSC*) and public debt. This aligns with the assertion that society demands a broader role for government in response to increased economic openness, which leads to lower economic stability as a trade-off for accepting greater external risk (Facchini, 2014). According to Outreville (2018), cultural characteristics can influence the accepted level of risk and shape people's attitudes towards risk. A lower risk tolerance translates into efforts to mitigate it, for example, through higher expenditures on defence, public order and safety, as well as social security contributions as protection against income loss in old age or due to illness. The positive relationship between the level of tax revenues and uncertainty avoidance does not appear to confirm the evidence presented by Allam *et al*. (2023) or Tsakumis *et al*. (2007), regarding the association between higher levels of uncertainty avoidance and higher tax evasion. However, it should be noted that in this study, uncertainty avoidance is also associated with a higher level of indirect taxes. This may result from a greater tendency to evade income tax payments, leading to lost tax revenues being compensated for by a heavier burden on consumption.
- Long-term/short-term orientation: A society with a long-term orientation prioritizes enhancing the quality of human capital to achieve long-term welfare growth. This is reflected in a preference for higher expenditures on human capital, especially education and health, funded by indirect taxes. French *et al*. (2015) also showed that long-term orientation influences expenditures on education. According to van Hoorn (2016), long-term orientation significantly affects individuals' views on the importance of education and their propensity to engage in activities promoting human capital.
- Power distance: A society with high power distance prefers higher classical expenditures, especially on defence, public order and housing. This is associated with delegating responsibility to public authorities to ensure safety of both life and property, which

aligns with the findings of Chui and Kwok (2008) on the negative relationship between power distance and life insurance consumption.

- Masculinity/femininity: Masculine societies prefer higher levels of classical expenditures, especially on public order and social expenditures, while spending less on recreation, sport and religion. This is related to societal goals of profit, professional success, competitiveness and efficiency. Such expenditures provide security for individuals and property, reducing the costs and risks of conducting business. The positive association between masculinity and social expenditures can be explained by the acceptance of income and wealth inequalities and the assignment of different roles based on gender. These societies support social security as a means of ensuring economic stability, particularly for women in caregiving roles. According to Chui and Kwok (2008), masculinity negatively affects life insurance consumption. This finding appears to complement the present evidence – societies with higher masculinity prefer to shift the responsibility for social security to the state rather than bear it individually.
- Restraint/indulgence: Societies with high levels of restraint prefer higher economic expenditures, as well as greater spending on recreation, public order and defence, along with higher indirect taxes and *SSC*. Conversely, societies with high indulgence prefer to rely more on income and property taxes, allocate more spending to general services and maintain a higher level of public debt. Restrained societies focus on work and development, favouring expenditures that ensure both personal and property security while supporting business operations. They are also more inclined to save as a form of financial security in the case of unemployment. In contrast, indulgent societies prefer higher-quality public services, funded by direct taxes and debt. No confirmation was found for the view of Giuliano and Spilimbergo (2014) that societies prioritizing pleasure and happiness over wealth generation tend to support higher government redistribution through transfers.

This study demonstrates that cultural dimensions significantly influence the share of all the main expenditure categories and of indirect and income taxes, which may hinder the implementation of a unified fiscal model within the European Union. The findings suggest that cultural factors have little influence on property taxes and social security contributions. This indicates the potential feasibility of introducing common regulations in these areas across EU member states. Based on the obtained results, recommendations can also be formulated regarding ways to influence social attitudes to support higher tax revenues. Firstly, promoting an individualistic mindset in society and emphasizing the non-financial aspects of quality of life could lead to greater acceptance of income taxation. Secondly, support for

increased expenditures on defence, public order and social welfare should be sought among the more conservative segment of society, with an emphasis on the role of building a strong, hierarchical society to enhance national and economic security. Thirdly, to enhance support for expenditures on human capital (widely recognized in the literature as productive and growth-stimulating) and increase public acceptance of higher tax burdens, it is essential to encourage attitudes focused on investment, saving, strategic thinking and perseverance in achieving long-term goals. Meanwhile, to gain support for economic expenditures, it is advisable to appeal to values such as restraint, prudence and professional ambition. Finally, fostering a societal preference for creating security mechanisms to mitigate uncertainty could facilitate acceptance of higher tax burdens (particularly through indirect taxes and social security contributions) and increased public expenditures – especially in the areas of classical and economic expenditures.

Acknowledgement

Funding: There was no funding, either externally or internally, towards this study.

Conflict of interest: The author hereby declares that this article was not submitted no published elsewhere.

AI usage statement: The author confirms that no artificial intelligence (AI) or AI-assisted tools were used in the creation of this manuscript.

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