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THE FREEDOM CUBE: CORRELATION BETWEEN CULTURAL ADJUSTMENT INDEX, ECONOMIC FREEDOM INDEX AND GROSS CAPITAL FORMATION IN 117 AND 161 COUNTRIES

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Abstract: The objective of the research was to relate the Hofstede cultural adjustment index, The Heritage Foundation economic freedom index and the gross capital formation of the World Bank. The hypothesis was that culture (X) has a strong influence on: freedom (Y) and gross capital formation (Z), in turn freedom has a strong relationship on capital. The results lead us to the following: the hypothesis between (X);(Y) is accepted because individualism has correlational values between +0.1055 and +0.6697; satisfaction with values between +0.0249 and +0.2729; long term with values between +0.0474 and +0.2504. The hypothesis between (X);(Z) is accepted, which shows values: individualism values between +0.2108 and +0.4000; masculinity between +0.20 and +0.2722; satisfaction +0.1352 and 0.2203; long term +0.0578 and 0.1352. The hypothesis between (Y);(Z) is accepted with the following positive correlational values: judicial effectiveness +0.5559; financial freedom +0.5449; tax burden +0.5409; labor freedom +0.5397; trade freedom +0.5219; fiscal health +0.5211. The conclusion is that individualism is the Source value of freedom and capital formation. The economic freedoms that offer the best conditions to capital are: judicial effectiveness, financial freedom, tax burden, labor freedom, commercial freedom and fiscal health.

Keywords: (JEL): A13 Relationship of the economy with social values; B25 Austrian School; D24 Capital; E22 Investment; Z1 Cultural economy

INTRODUCTION

The purpose of the research was to establish the level of relationship between the cultural adjustment index prepared by Hofstede Insights, the index of economic freedoms of The Heritage Foundation and gross capital formation in dollars \$ USD at current prices prepared by the World Bank.

The definition of culture used in this research has been provided by Professor Hofstede who defines it as follows: The programming of the human mind by which one group of people is distinguished from another group. Culture is learned from the environment and is always a shared collective phenomenon. Freedom defined by The Heritage Foundation as: the fundamental right of every human being to control his or her own work and property. The World Bank defines: Gross capital formation (formerly gross domestic investment) consists of outlays on additions to the economy's fixed assets plus net changes in the level of inventories.

Honduras is a developing country, research is justified because we want to find the sources or mechanisms to make the transition to capitalism, in a way that allows national capital to grow rapidly and allow foreign capital the conditions that make it come. fast and permanent. If we take as a reference the country with the highest average of the Hofstede cultural index: Belgium and considering the correlation coefficients between the cultural adjustment index and the economic freedom index, Honduras must work on individualism from 20 to 75, Complacency or satisfaction from -1 to 57 and the long-term orientation from -1 to 82 these are the pillars of economic freedoms.

In the relationship between the Hofstede cultural adjustment index and gross capital formation, Honduras must give importance to individualism, masculinity, the long term and indulgence, which are the highest correlations in the relationship. The relationship between economic freedoms and gross capital formation, if we take as a reference the best relationship that is Senegal, shows a similar graph of correlations, Honduras must work on government spending and integrity, to a lesser extent property rights, judicial effectiveness.

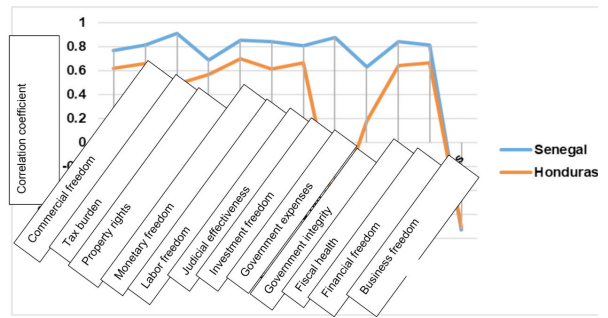


Figure 1: Correlation between the economic freedom index and gross capital formation from 2013 to 2023

Source 1: Own elaboration year 2023, World Bank database, The Heritage Foundation

THEORETICAL FRAMEWORK

HOFSTEDE INDEX

Firstly, Ortiz (2010) states that: The results of this study demonstrate that, in general, national culture (measured by Hofstede's cultural indices) explains a significant variation in the use of transactional and transformational leadership styles that exhibit the managers of foreign companies that operate in Puerto Rico.

On the contrary BISWAS (2023) Contrived by analyzing survey data from the subsidiaries of a single multinational corporation, Hofstede has brazenly pursued a reductive notion of national cultures. His polemic responses to his critics (e.g. Hofstede 2002; 2009) such as, Brendan McSweeney and Galit Ailon elucidate that he is convinced of his feat of having discovered the “secrets of entire national cultures” (Hofstede 1980, p. 44). If one were to scratch beneath the surface, the methodological deficits of his research would come unraveling.

Indeed Pacheco (2023) Our main findings verify the significant impact of Individualism dimension on Tax Morale, as most individualistic nations tend to have more tolerance towards ethically questionable behaviors such as tax avoidance, consistent

with Triandis and Bhaw uk (1997) and Parboteeah et al (2005). Power Distance has also shown an inverse relationship to Tax Morale, consistent with our hypotheses and with the research of Tsakumis et al (2007) and Richardson (2008), since people from high Power Distance countries perceive taxation as unfair, benefiting only the ones that already are in a more favorable positions in society.

Within this order of ideas Lee, et al., (2023) The cultural impact of entrepreneurship in Iran suggests individualism is a very important factor in the development of entrepreneurship. It is possible to compare the Hofstede culture indexes between countries with high individualism and entrepreneurship (Fig. 2). It is also possible to consider the cultural diversity features that develop social tolerance as an important key to the development of cultural diversity and the creation of entrepreneurship. These results show that although entrepreneurship is a social issue (social subject), it also has a solid foundation in individualist cultures that enhance individual success.

ECONOMIC FREEDOM INDEX

Secondly Puška, et al., (2023) The results of this methodology revealed that the most weight was given to criterion C9 - Monetary Freedom, which had the greatest dispersion in the country evaluations. Using the DNCRADIS method, results showed that Bulgaria has the best indicators of economic freedom when compared to other Balkan countries. Validating the results and conducting a sensitivity analysis confirmed these findings.

Hence: Ahmed, et al., (2023) When we evaluated the different sorts of economic liberty individually, we revealed that the coefficients of most of the sorts of economic sovereignty are significant. However, the coefficient of monetary mobility is negligible. However,

the results of government disbursement, government integrity, and labor freedom are misleading. The tax burden has a destructive and substantial influence on the economic prosperity of the countries considered. Padda and Akram [61] found the adverse impacts of a tax burden on economic growth and output in Asian countries.

This way Cervelló Royo, et al., (2023) The results show that combinations of business freedom and government integrity, along with high labor freedom levels or low tax burden levels, enhance a country's economic growth. For full employment, the best combination is business freedom, government integrity and labor freedom. We must always take into consideration that these results fall in the Eurozone context, where there is a common monetary policy in place and has similar financial freedom levels. The results of this study are relevant because, despite the abundant literature on the topic, no empirical study has been found that jointly addresses the effect of these factors on economic growth with clear results.

Now Bektur (2023) The obtained results, under the scope of the EKC hypothesis, indicate that there is an existence of EKC hypothesis for Canada, Denmark, and Singapore. The results demonstrate that economic growth in these countries reduces the environmental degradation. This means that the effects of environmental protection policies for Canada, Denmark and Singapore have appeared positively. However, the same is not the case for other countries, and environmental policies are insufficient to reduce environmental degradation.

GROSS CAPITAL FORMATION

In third place Valverde Batista (2023) The results represent a challenge for governments, whether central or local, through economic policies that establish the post-covid-19 economic reactivation, which under current conditions, falling by more than 40% gross capital formation and private consumption at almost 19% (Valverde-Batista, 2021), it is difficult to create conditions of trust in the economic system, despite microenterprises being considered units capable of adapting to the market. for having a flexible productive capacity, especially due to the evidence that points to a lack of financing (Calderón, 2008).

Within this framework Santacruz&Ushiña(2023) Under the results of the correlation coefficient between savings and investment, it was determined that it maintains a correlation between moderate to strong, providing information on the behavior of these two variables in the country's economy, helping us to predict its evolution and with this we can have things clearer for decision-making in economic policy, because, according to the graph, it is shown that the trend line is stable until 2019, when the FBKF falls to its lowest value for 10 years. This shows us that companies are not producing at their maximum capacity and, therefore, are not generating resources to save.

On the other hand, Becerra&Sanabria (2023) must be considered. The same thing happens in the case of the FBK, which shows an increase from 1960 onwards, especially from 1980 when the entry of foreign capital made it possible to increase the competitiveness of companies. However, investment is still not enough to accelerate growth, so it is timely to allocate public investment in a better way. Consequently, it is possible to increase the efficiency of resources and produce an impact on the economy with the generation of added value.

Finally, Gutiérrez&Ciancio(2023) 85% of the value of the products that make up this cluster is allocated to gross capital formation, that is, to investment. On the other hand, 14% is directed to intermediate consumption and 2% to the remaining components of demand.

RESEARCH METHODOLOGY

The research is of an applied type, due to its depth it is descriptive and correlational, its inference is hypothetical, the databases of the variables are quantitative, and the temporality is longitudinal. The general objective was to establish the degree of correlation between both variables (X), (Y), (Z) in the form of a cube: Hofstede Cultural Adjustment Index (X), Economic Freedom Index (Y) and Gross Capital Formation (Z); The specific objective was to determine the shape of the variables using descriptive statistics. The population of the databases is 220 countries (includes islands and administrative zones), in the normal distribution 220 countries were considered (includes islands and administrative zones), the correlation analysis between (X) and (Y) included 117 countries, between (X) and (Z) 117 countries and for (Y) and (Z) 161 countries. A representative sample for this population by the "Sturges rule" $K=1+3.3(\log n)$ would be: 9 countries (VILCHES, LEGARRALDE, & DARRIGRAN, 2012).

1. The hypothesis is that the Cultural Adjustment Index (X) does not influence the Economic Freedom Index (Y) and gross capital formation (Z), in turn the economic freedom index (Y) affects gross capital formation (AND).
2. The research model is a cube of three variables: a) the Hofstede cultural adjustment index (X) obtained at: <https://www.hofstede-insights.com/>. The economic freedom index prepared by: <https://www.heritage.org/index/>. The capital formation database

prepared by the World Bank: <https://datos.bancomundial.org/indicador/NE.GDI.TOTL.CD?locations=F1>.

3. Binary cube research model:

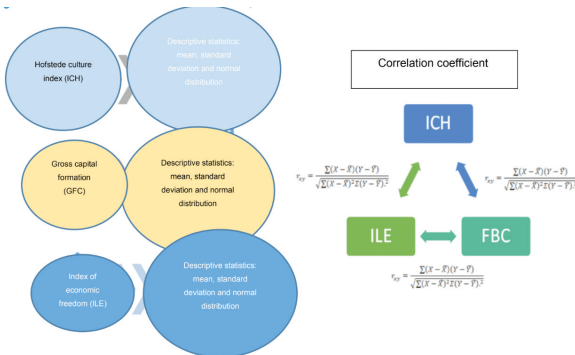


Figure 2: Research model between IAC, FBC, ILE in 220 countries

Source 2: Own elaboration, World Bank database, The Heritage foundation and Hofstede Insights

RESULTS

1. The normal distribution of the cultural adjustment index year 2023:

$$\Phi\mu, \sigma^2(x) = \int_{-\infty}^x \varphi\mu, \sigma^2(u) du = \frac{1}{\sigma\sqrt{2\pi}} \int_{-\infty}^x e^{-\frac{(u-\mu)^2}{2\sigma^2}} du, x \in R;$$
 with its dimensions: a) power distance b) individualism c) masculinity d) avoidance of uncertainty e) long-term orientation f) complacency (satisfaction) shows that they are symmetrical.

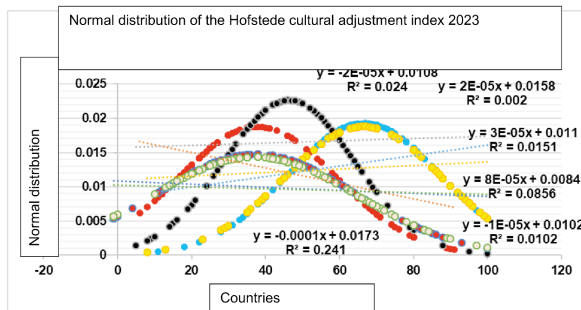


Figure 3: Normal Distribution of the Hofstede Culture Adjustment Index for the year 2023 in 117 countries

Source 3: Own elaboration year 2023, database at <https://www.hofstede-insights.com/>

2. The normal distribution of the variable gross capital formation in dollars \$ USD at current prices from 1960 to 2022: $\Phi\mu, \sigma^2(x) = \int_{-\infty}^x \varphi\mu, \sigma^2(u) du = \frac{1}{\sigma\sqrt{2\pi}} \int_{-\infty}^x e^{-\frac{(u-\mu)^2}{2\sigma^2}} du, x \in R;$ which shows that it has negative asymmetry.

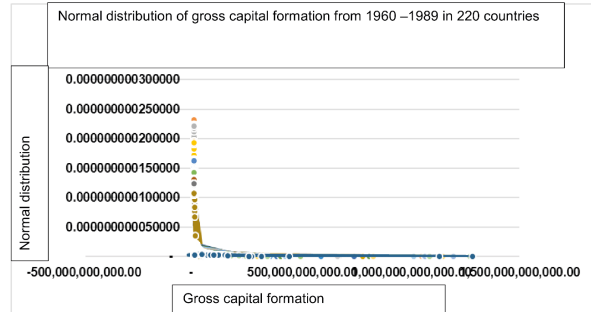


Figure 4: Normal distribution of gross capital formation from 1960 to 1989 in 220 countries

Source 4: Own elaboration year 2023, World Bank database

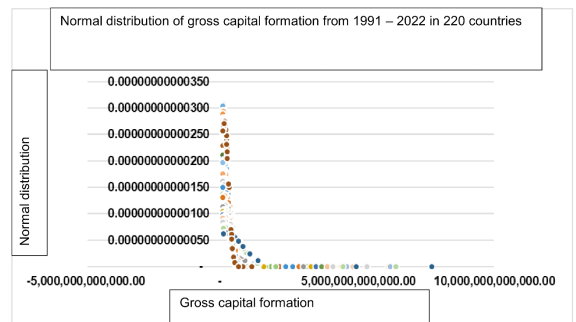


Figure 5: Normal Distribution of gross capital formation from 1991 to 2022 in 220 countries

Source 5: Own elaboration year 2023, World Bank database

3. The normal distribution of the economic freedom index from 2013 to 2023 in 220 countries: $\Phi\mu, \sigma^2(x) = \int_{-\infty}^x \varphi\mu, \sigma^2(u) du = \frac{1}{\sigma\sqrt{2\pi}} \int_{-\infty}^x e^{-\frac{(u-\mu)^2}{2\sigma^2}} du, x \in R;$ which includes the freedoms of: a) property rights b) judicial effectiveness c) government integrity d) tax burden e) government spending f) fiscal health g) business freedom h)

4. labor freedom i) monetary freedom j)

commercial freedom k) investment freedom l) financial freedom.

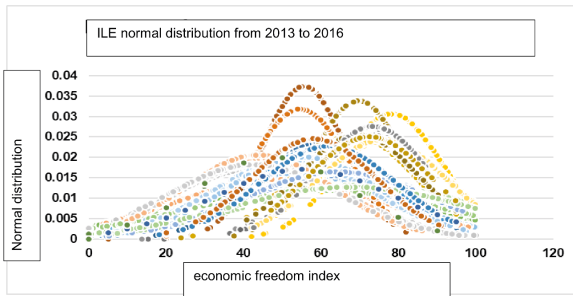


Figure 6: Normal distribution of the Economic Freedom Index from 2013 to 2016 in 220 countries

Source 6: Ownelaboration year 2023, database, <https://www.heritage.org/>

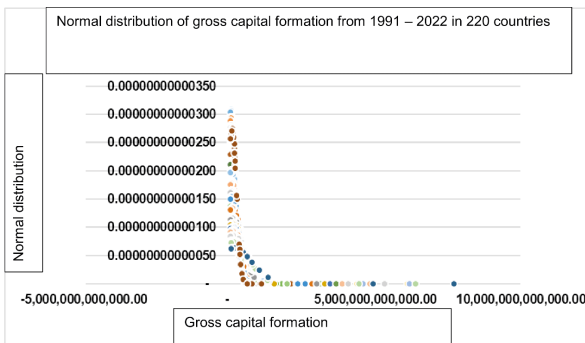


Figure 7: Normal distribution of the ILE from 2017 to 2020 in 220 countries, 12 economic freedoms

Source 7: Own elaboration year 2023, database, <https://www.heritage.org/>

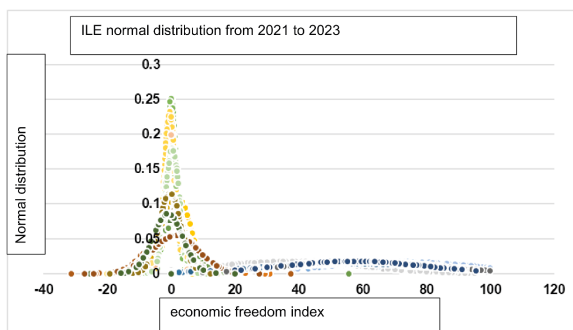


Figure 8: Normal distribution of ILE from 2021 to 2023 in 220 countries, 12 economic freedoms

Source 8: Own elaboration year 2023, database, <https://www.heritage.org/>

5. The correlation coefficient:

$$r_{xy} = \frac{\sum(x-\bar{x})(y-\bar{y})}{\sqrt{\sum(x-\bar{x})^2 \sum(y-\bar{y})^2}}$$

between: the cultural adjustment index and the economic freedom index indicates that the cultural pillars that support economic freedoms are: individualism because it has correlational values between +0.1055 and +0.6697; satisfaction with values between +0.0249 and +0.2729; long term with values between +0.0474 and +0.2504 (graph enlarged in: (<https://photos.app.goo.gl/juUDLeKxxBAGSb8x6>)).

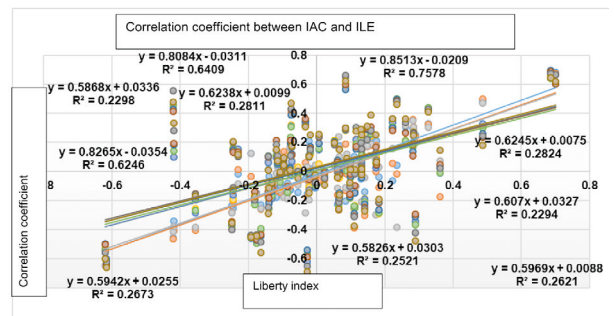


Figure 9: Correlation coefficient between the cultural adjustment index and the economic freedoms index in 117 countries

Source 9: Own elaboration year 2023, database <https://www.hofstede-insights.com/>, <https://www.heritage.org/>

6. The correlation coefficient: $r_{xy} = \frac{\sum(x-\bar{x})(y-\bar{y})}{\sqrt{\sum(x-\bar{x})^2 \sum(y-\bar{y})^2}}$

between: the cultural adjustment index and gross capital formation expresses that individualism, masculinity, long-term and satisfaction are the cultural forces that influence the formation of capital. The individualism coefficients are values between +0.2108 and +0.4000; masculinity between +0.20 and +0.2722; satisfaction +0.1352 and 0.2203; long term +0.0578 and 0.1352.

7. The correlation coefficient: $r_{xy} = \frac{\sum(x-\bar{x})(y-\bar{y})}{\sqrt{\sum(x-\bar{x})^2 \sum(y-\bar{y})^2}}$

between: the index of economic freedom and gross capital formation reveals that: the economic freedoms

that underpin gross capital formation in 161 countries in descending order as an average of positive correlations (+) are: judicial effectiveness +0.5559; financial freedom +0.5449; tax burden +0.5409; labor freedom +0.5397; trade freedom +0.5219; fiscal health +0.5211. Table 1 shows us that there are 28 countries where freedoms are very strong for capital formation because their coefficient is greater than +0.50 (graph enlarged in: (<https://photos.app.goo.gl/8nR3n1Lpytb6w5d87>).

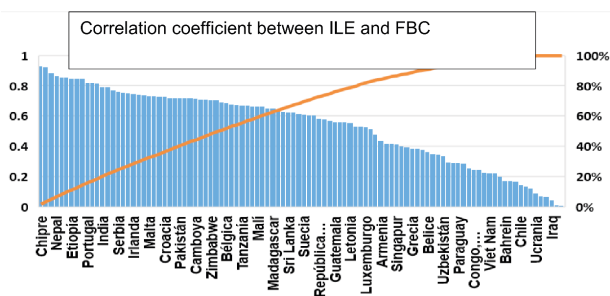


Figure 11: Correlation coefficient between ILE and FBC from 2013 to 2023 in 160 countries

Source 11: Own elaboration, World Bank database, <https://www.heritage.org/index/>

8. Among the 10 countries out of 28 that have a correlation greater than +0.50 to +1; that use economic freedoms as a mechanism for gross capital formation we have in descending order: Senegal +0.6790, Montenegro +0.6437, Indonesia +0.6399, Slovak Republic +0.6368, Spain +0.6357, Cyprus +0.6356, Croatia +0.6318, Portugal +0.6061, Israel +0.5976, Serbia +0.5939, Ireland +0.5906.

CONCLUSION

The general objective of establishing the relationship between the Hofstede cultural adjustment index, the economic freedom index and gross capital formation in dollars \$ USD at current prices is achieved, reaching the following conclusions:

1. The correlation coefficient between the cultural adjustment index and the economic freedom index (figure 8) indicates that the highest values are achieved with individualism because it has correlational values between +0.1055 and +0.6697; satisfaction with values between +0.0249 and +0.2729; long term with values between +0.0474 and +0.2504, so they are the most important cultural values to implement in society if we want to be a country with strong economic freedoms.
2. The relationship between the cultural adjustment index and gross capital formation in dollars \$ USD at current prices (figure 9) shows that: the individualism coefficients are values between +0.2108 and +0.4000; masculinity between +0.20 and +0.2722; satisfaction +0.1352 and 0.2203; long term +0.0578 and 0.1352., are the strongest correlations to strengthen capital formation.
3. The relationship between the economic freedom index and gross capital formation in dollars \$ USD at current prices summarizes in (table 1), that: there are 104 countries with positive correlation and 56 countries with negative correlation.
4. The main freedoms that create the conditions for forming capital in 104 countries (figure 10), which have a correlation between 0 and +1 are: judicial effectiveness +0.5559; financial

Number of countries	Correlation value	Correlation strength	Number of countries	Correlation value	Correlation strength
39	de +0 a -0.29	Strong	28	de +0.50 a +1	Strong
13	de -0.30 a -0.49	Moderate	34	de +0.30 a +0.49	Moderate
4	de -0.50 a -1	Weak	42	de +0 a +0.29	Weak
0		None	0		None

Table 1: Number of countries according to their strength of correlation between 12 economic freedoms and gross capital formation

Source 12: Own elaboration year 2023, World Bank database, <https://www.heritage.org/>

freedom +0.5449; tax burden +0.5409; labor freedom +0.5397; trade freedom +0.5219; fiscal health +0.5211.

- The countries that achieve the best results as an average of the correlation between ILE and FBC (figure 10) in descending order are: Senegal +0.67, Montenegro +0.64, Indonesia +0.63, Slovak Republic +0.63, Spain +0.63, Cyprus +0.63, Croatia +0.63, Portugal

+0.60, Israel +0.59, Serbia +0.59, Ireland +0.59.

- The specific objective is achieved, the cultural adjustment index is symmetrical (figure 3), the economic freedom index has positive asymmetry (figure 6), (figure 7), (figure 8); and gross capital formation in dollars \$ USD at current prices has positive asymmetry (figure 4), (figure 5).

REFERENCES

- Ahmed, S., Mushtaq, M., Fahlevi, M., Aljuaid, M., & Saniuk, S. (02 de 2023). Decomposed and composed effects of economic freedom on economic growth in south Asia. *Heliyon*, 9(2), 11. doi:<https://doi.org/10.1016/j.heliyon.2023.e13478>
- Becerra Ramírez, S., & Forero Sanabria, C. (23 de 01 de 2023). Inversión extranjera directa y productividad en el marco del crecimiento económico de México. *SUMMA. Revista multidisciplinaria en ciencias económicas y sociales*, 11. doi:<https://doi.org/10.47666/summa.5.1.9>
- Bektur, C. (30 de 04 de 2023). The role of economic freedom in achieving the environmental sustainability for the highest economic freedom countries: testing the environmental Kuznets curve hypothesis. *Research square*, 13. doi:<https://doi.org/10.21203/rs.3.rs-2628897/v1>
- BISWAS, A. (21 de 02 de 2023). Countering Hegemonic Knowledge in Cross Cultural Research: Hofstede, Epistemic Violence and Imperialism. *Journal of Critical Southern Studies*, 4(2), 5. doi:<https://doi.org/10.3943/jcss.43>
- Cervelló Royo, R., Devece, C., & González Tejero, C. (15 de 03 de 2023). Economic freedom influences economic growth and unemployment: an analysis of the Eurozone. *Economic Research-Ekonomska Istraživanja*, 36(2), 10. doi:<https://doi.org/10.1080/1331677X.2023.2175007>
- Gutiérrez Cabello, A., & Ciancio, A. (2023). Análisis del destino de la producción en la economía argentina: una aplicación de análisis de clúster. *Revista de la Facultad de ciencias económicas RFCE*, 30(1), 30. doi:<http://dx.doi.org/10.30972/rfce.3016710>
- Lee, K., Khoshnevisan, F., & Sharif, S. (13 de 05 de 2023). Students from humanities and human sciences are basically the same aren't they? Cultural factors affecting entrepreneurship in Iran. *Entrepreneurship Education*, 221-222. doi:<https://doi.org/10.1007/s41959-023-00094-2>
- Maigua Santacruz, D., & Alba Ushiña, N. (2023). Análisis de la Relación entre la Inversión (Formación Bruta de Capital Fijo) y el Ahorro (Ahorro Nacional Bruto). *Ciencia Latina Revista Científica Multidisciplinar*, 7(4), 4349. doi:https://doi.org/10.37811/cl_rcm.v7i4.7285

Ortiz Rivera, E. (2010). Los índices culturales de Hofstede y su impacto en los estilos de liderazgo en empresas extranjeras que operan en Puerto Rico. *Forum Empresarial*, 15(2), 75. Recuperado el 16 de 09 de 2023, de <https://www.redalyc.org/pdf/631/63117300003.pdf>

Pacheco Abreu, Í. (2023). *INFLUENCE OF CULTURE DIMENSIONS ON TAX AVOIDANCE: HOFSTEDE & GLOBE MODELS APPROACH*. Recuperado el 16 de 09 de 2023, de U. Porto: <https://repositorio-aberto.up.pt/bitstream/10216/152601/2/639514.pdf>

Puška, A., Štilić, A., & Stojanović, I. (17 de 02 de 2023). Approach for Multi-Criteria Ranking of Balkan Countries Based on the Index of Economic Freedom. *Journal of Decision Analytics and Intelligent Computing*, 3(1), 12. doi:<https://doi.org/10.31181/jdaic10017022023p>

Valverde Batista, R. (2023). Efectos del COVID-19 en las microempresas en Panamá. *Cuadernos Nacionales*, 20. doi:<https://doi.org/10.48204/j.cnacionales.n33.a4159>

VILCHES, A., LEGARRALDE, T., & DARRIGRAN, G. (2012). Uso de técnicas estadísticas básicas en las clases de metodología de investigación del nivel secundario de educación. Universidad Nacional de la Plata. Recuperado el 25 de 09 de 2023, de https://www.memoria.fahce.unlp.edu.ar/trab_eventos/ev.3724/ev.3724.pdf