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# NON-ECONOMIC VARIABLES RELATED TO ECONOMIC GROWTH

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## Abstract

Economic growth is a common macroeconomic objective for countries all over the world, but not only economic variables are significant determinants for its sustainability; there might be other crucial non-economic variables significantly related to it as well, such as *Absence of Corruption, Fragility of Human Rights and Rule of Law, Human Development, and Peace*. Therefore, this research, through a quantitative scientific approach, aimed to examine the relationship between the respective non-economic variables and economic growth. The sample of the study was quite representative since it covered 151 countries around the world. Data involved in this research were secondary and cross-sectional, collected from credible international institutions such as the World Bank, United Nations Development Programme (UNDP), Transparency International, Vision of Humanity<sup>1</sup> and the Fund for Peace<sup>2</sup>. The outcome of this research article, which used the median regression model as the cardinal tool, provided reliable information on the significant relationship between non-economic variables and economic growth.

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<sup>1</sup> <https://www.visionofhumanity.org/>

<sup>2</sup> <https://fragilestatesindex.org/>

While economic growth is already an obvious macroeconomic aggregate from the measuring point of view, the determining factors of its level are not easy to state or investigate. In other words, it might be said that not only economic variables are related to economic growth, but non-economic variables as well. Concerning this, as the title suggests, the objective of this research is to investigate the non-economic variables that might be significantly related to economic growth, i.e., to find out the relationship between non-economic variables and economic growth. One should clarify that since this study uses cross-sectional data (in this instance for 151 countries for the year 2018), it does not draw on the causality of the non-economic variables on economic growth (i.e., there are no panel data used to measure the impact of non-economic variables on economic growth); instead, the study tries to find out the relationship between such variables. However, the research still provides credible results on the relationship between non-economic variables and economic growth, which is what it aimed to achieve based on the respective research question mentioned below.

The study considers the gross domestic product (GDP) per capita as a measure of economic growth level (i.e., *economic growth* is a dependent variable), while the independent non-economic variables are considered the following four: *Human Development* (Human Development Index), *Absence of Corruption* (Corruption Perception Index, CPI), *Peace* (Global Peace Index), *Fragility of Human Rights and Rule of Law*. Based on the above-mentioned variables involved in the study, the research question of this article is as follows:

*RQ: What is the relationship between non-economic variables and economic growth?*

Overall, this study addressed a crucial problem related to the main macroeconomic objective (i.e., economic growth), that of the non-economic variables related to economic growth, which is not an easy goal at all, but the research manages to report thoroughly reliable outcomes, being a solid contribution to this field of study. Moreover, one can argue that non-economic variables are becoming much more relevant in the nowadays times (i.e., which is known as a sustainable development era) as the conventional *laissez-faire* approach towards the economy is dismissed, among other reasons, because of the environmental issues and financial crises that countries are facing worldwide (Hajdari & Hadzimustafa, 2023).

Indeed, economic growth, as one of the most important macroeconomic objectives, is affected by many indicators and variables, including non-economic ones. As far as the corruption implications are concerned (not the absence of corruption but the existence of it), many scholars, using different types of scientific approaches, methods and models, have provided evidence of the negative relationship between corruption and economic growth (Gründler & Potrafke, 2019; Alfada, 2019; Cieślík & Goczek, 2018; Thach et al., 2017).

For worthwhile economic growth, another crucial non-economic variable to be considered by countries around the world, respectively policymakers of such countries is the rule of law. Even though the rule of law is not an easy concept to define, because of the different components that may be included in it, it can still be said that its role in economic growth is important (Luong et al., 2020; Ozpolat et al., 2016; Castiglione et al., 2015).

Two other indicators involved in this research are peace and human development, of course, both of them being non-economic variables. According to Bayar and Gavriletea (2018), there is a statistically significant positive impact of peace on economic growth and vice versa, a statistically negative impact on economic growth in the absence of peace. A similar conclusion about the importance of peace on economic growth was provided by Balami et al. (2016). Meanwhile, many other scholars gave a significant role in human development to economic growth (Elistia & Syahzuni, 2018; Taqi et al., 2021; Gulcernal, 2020).

The robust median regression model, being the cardinal part of this research, is run under the following formula:

$$\begin{aligned}
 \text{GDP per capita} = & \beta_0 + \beta_1 * \text{Absence of Corruption} + \beta_2 * \\
 & \text{Fragility of Human Rights and Rule of Law} + \beta_3 * \\
 & \text{Human Development} + \beta_4 * \text{Peace} + \varepsilon
 \end{aligned}
 \tag{1}$$

Of course,  $\beta_1$ ,  $\beta_2$ ,  $\beta_3$ , and  $\beta_4$  represent the regression coefficients (or slopes) for each independent variable of the study, which represent the change in the natural logarithm of GDP per capita associated with a one percent increase in the corresponding independent variable, while holding all other variables constant. The results of the ordinary least squares (OLS) and two tests, variance inflation factor (VIF), heteroskedasticity and normality test are presented.

**Table 1.** Analysis of variance (ANOVA)

<i>Source</i>	<i>SS</i>	<i>df</i>	<i>MS</i>
Model	277.175699	4	69.2939249
Residual	34.8212084	146	0.238501428
Total	311.996907	150	2.07997938
Number of obs.			151
F(4, 146)			290.54
Prob > F			0.0000
R-squared			0.8884
Adj R-squared			0.8853
Root mean squared error			0.48837

Note: SS = sum of square; df = degrees of freedom; MS = mean square.

**Table 2.** Ordinary least squares (OLS) regression results

<i>lnGDPpercapita</i>	<i>Coef.</i>	<i>Std. err.</i>	<i>t</i>	<i>P &gt;  t </i>	<i>[95% conf. interval]</i>	
<i>lnHumanDevelopmentIndex</i>	4.680177	0.2427417	19.28	0.000	4.200436	5.159918
<i>lnAbsenceofCorrCPI</i>	0.524873	0.1743262	3.01	0.003	0.1803443	0.8694018
<i>lnGlobalPeaceIndex</i>	0.4988493	0.2918529	1.71	0.090	-0.0779529	1.075651
<i>lnFrHumanRightsandRuleofLa</i>	-0.3368947	0.1039626	-3.24	0.001	-0.5423606	-0.1314287
<i>_cons</i>	8.504429	0.8163482	10.42	0.000	6.891042	10.11781

The VIF proves that there is some multicollinearity between independent variables, but the figures are not severe enough to be considered a significant issue. The VIF results show that multicollinearity between independent variables is not a serious issue, since all such variables have VIF outcomes less than 5 (even in this case, as shown in the VIF table, are less than 4). Generally speaking, VIF values less than 5 are not considered problematic, and vice versa, VIF values more than 5 would indicate a high degree of multicollinearity among the independent variables, which could lead to biased regression estimates and inflated standard errors. See the results below.

**Table 3.** Variance inflation factor (VIF)

<i>Variable</i>	<i>VIF</i>	<i>1/VIF</i>
<i>lnAbsenceofI</i>	3.57	0.280435
<i>lnFrHumanR~a</i>	3.00	0.333517
<i>lnGlobalPe~x</i>	2.72	0.366996
<i>lnHumanDev~x</i>	2.05	0.487239
Mean VIF	2.84	

However, two other tests, heteroskedasticity and normality tests, prove that the OLS model of this research violates the assumptions, as presented in the following.

**Table 4.** Breusch-Pagan/Cook-Weisberg test for heteroskedasticity

Null hypothesis: Constant variance	
Variables: fitted values of <i>lnGDPpercapita</i>	
chi2(1)	3.65
Prob > chi2	0.0561

*Note: Null hypothesis assumes constant variance (homoskedasticity). Since the Prob > chi2 is 0.05 (is a borderline), we could not reject the null hypothesis, which means the assumption of OLS is violated in the aspect of heteroskedasticity.*

**Table 5.** Shapiro-Wilk W-test for normal data

<i>Variable</i>	<i>Obs.</i>	<i>W</i>	<i>V</i>	<i>z</i>	<i>Prob &gt; z</i>
<i>resid</i>	151	0.98229	2.072	1.652	0.04924

Taking into consideration that the median regression model is a robust model that is less sensitive to heteroskedasticity issues, non-normal or skewed data, and robustness to outliers, we decided to go on with this model instead of OLS. Below we present its results, interpretations and discussion.

**Table 6.** Median regression model

<i>Iteration</i>	<i>Sum of weighted deviations</i>	<i>Results</i>
Iteration 1	Weighted least squares sum of weighted deviations	27.439214
Iteration 1	Sum of abs. weighted deviations	27.307568
Iteration 2	Sum of abs. weighted deviations	27.196138
Iteration 3	Sum of abs. weighted deviations	27.096193
Iteration 4	Sum of abs. weighted deviations	27.090836
Iteration 5	Sum of abs. weighted deviations	27.089956
Iteration 6	Sum of abs. weighted deviations	27.079546
Iteration 7	Sum of abs. weighted deviations	27.078248
<b>Median regression</b>		
Raw sum of deviations	90.61517 (about 8.5683012)	
Min sum of deviations	27.07825	
Number of obs.	151	
Pseudo R <sup>2</sup>	0.7012	

**Table 7.** Median regression results

<i>lnGDPpercapita</i>	<i>Coef.</i>	<i>Std. err.</i>	<i>t</i>	<i>P &gt;  t </i>	<i>[95% conf. interval]</i>	
<i>lnAbsenceofCorrCPI</i>	0.7145398	0.2009608	3.56	0.001	0.3173718	1.111708
<i>lnFrHumanRightsandRuleofLa</i>	-0.4162734	0.1198466	-3.47	0.001	-0.6531317	-0.179415
<i>lnHumanDevelopmentIndex</i>	4.578946	0.2798293	16.36	0.000	4.025907	5.131986
<i>lnGlobalPeaceIndex</i>	0.770833	0.336444	2.29	0.023	0.1059034	1.435763
<i>_cons</i>	7.654418	0.941075	8.13	0.000	5.794528	9.514307

First of all, below is presented the formula with coefficients, based on the results found by the above regression model.

*Formula with results*

$$\begin{aligned}
 \ln GDP \text{ per capita} &= 7.654418 + 0.7145398 * \\
 &\quad \ln \text{Absence of Corruption} - 0.4162734 * \\
 &\quad \ln \text{Fragility of Human Rights and Rule of Law} + 4.578946 * \\
 &\quad \ln \text{Human Development} + 0.770833 * \ln \text{Peace} + \varepsilon
 \end{aligned}$$

Overall, this research paper, using a quantitative scientific approach, studied the non-economic variables related to economic growth, i.e., the relationship between non-economic variables and economic growth. The study considered *GDP per capita* as a dependent variable (as a measure of economic growth), on the other hand, four other non-economic variables were considered independent ones, such as *Absence of Corruption*, *Fragility of Human Rights and Rule of Law*,

*Human Development*, and *Peace*. The results of a robust median regression model, as a main tool of this study, show the significant relationship between the non-economic variables and economic growth since all four out of four non-economic variables involved in the research have resulted in a p-value less than 0.05. Specifically, the relationship between three non-economic variables, *Human Development* (as measured by the Human Development Index), the *Absence of Corruption* (as measured by the Corruption Perception Index), and *Peace* (as measured by the Global Peace Index) was found to be positively related and statistically significant to economic growth, at a 5% level of significance, while the relationship between the *Fragility of Human Rights and Rule of Law* (as a component and a measure of Fragility States Index) and economic growth was found to be negatively related and statistically significant (again at a 5% level of significance).

All in all, even though this research did not draw the causality between non-economic variables and economic growth (since it used cross-sectional data) still managed to report valuable findings on the relationship between the variables examined by using a virtuous representative sample of 151 countries (which, after all, was its aim).

## REFERENCES

1. Alfada, A. (2019). The destructive effect of corruption on economic growth in Indonesia: A threshold model. *Heliyon*, 5(10), Article e02649. <https://doi.org/10.1016/j.heliyon.2019.e02649>
2. Balami, D. H., Ahmed, F. F., & Yusuf, A. B. (2016). The imperative of peace and security for the attainment of inclusive growth in Nigeria. *European Journal of Research in Social Sciences*, 4(2), 82–93. <https://www.idpublications.org/wp-content/uploads/2016/03/Full-Paper-TH-IMPERATIVE-OF-PEACE-AND-SECURITY-FOR-THE-ATTAINMENT-OF-INCLUSIVE-GROWTH-IN-NIGERIA.pdf>
3. Bayar, Y., & Gavriletea, M. D. (2018). Peace, terrorism and economic growth in Middle East and North African countries. *Quality & Quantity*, 52(5), 2373–2392. <https://doi.org/10.1007/s11135-017-0671-8>
4. Castiglione, C., Infante, D., & Smirnova, J. (2015). Environment and economic growth: Is the rule of law the go-between? The case of high-income countries. *Energy, Sustainability and Society*, 5, Article 26. <https://doi.org/10.1186/s13705-015-0054-8>
5. Cieřlik, A., & Goczek, Ł. (2018). Control of corruption, international investment, and economic growth — Evidence from panel data. *World Development*, 103, 323–335. <https://doi.org/10.1016/j.worlddev.2017.10.028>
6. Elistia, E., & Syahzuni, B. A. (2018). The correlation of the human development index (HDI) towards economic growth (GDP per capita) in 10 ASEAN member countries. *Journal of Humanities and Social Studies*, 2(2), 40–46. <https://doi.org/10.33751/jhss.v2i2.949>
7. Gliem, J. A., & Gliem, R. R. (2003). *Calculating, interpreting, and reporting Cronbach's alpha reliability coefficient for Likert-type scales*. Midwest Research-to-Practice Conference in Adult, Continuing, and Community Education. <https://scholarworks.iupui.edu/items/63734e75-1604-45b6-aed8-40ddd7036ee>

8. Gründler, K., & Potrafke, N. (2019). Corruption and economic growth: New empirical evidence. *European Journal of Political Economy*, 60, Article 101810. <https://doi.org/10.1016/j.ejpolco.2019.08.001>
9. Gulcemal, T. (2020). Effect of human development index on GDP for developing countries: A panel data analysis. *Journal of Economics Finance and Accounting*, 7(4), 338–345. <https://doi.org/10.17261/Pressacademia.2020.1307>
10. Haggard, S., & Tiede, L. (2011). The rule of law and economic growth: Where are we? *World Development*, 39(5), 673–685. <https://doi.org/10.1016/j.worlddev.2010.10.007>
11. Hajdari, A., & Hadzimustafa, S. (2023). Environmental issues and financial crises dismiss Laissez-Faire capitalism. *Journal of Liberty and International Affairs*, 9(2), 550–560. <https://doi.org/10.47305/JLIA2392725h>
12. Human Development Reports. (n.d.). *Human development index (HDI)*. United Nations Development Programme. <https://hdr.undp.org/data-center/human-development-index>
13. Luong, T. T. H., Nguyen, T. M., & Nguyen, T. A. N. (2020). Rule of law, economic growth and shadow economy in transition countries. *The Journal of Asian Finance, Economics and Business*, 7(4), 145–154. <https://doi.org/10.13106/jafeb.2020.vol7.no4.145>
14. Ozpolat, A., Guven, G. G., Ozsoy, F. N., & Bahar, A. (2016). Does rule of law affect economic growth positively? *Research in World Economy*, 7(1), 107–117. <https://doi.org/10.5430/rwe.v7n1p107>
15. Taqi, M., Ali, M. S. e., Parveen, S., Babar, M., & Khan, I. M. (2021). An analysis of human development index and economic growth. A case study of Pakistan. *IRASD Journal of Economics*, 3(3), 261–271. <https://doi.org/10.52131/joe.2021.0302.0042>
16. Thach, N. N., Duong, M. B., & Oanh, T. T. K. (2017). Effects of corruption on economic growth — Empirical study of Asia countries. *Imperial Journal of Interdisciplinary Research*, 3(7), 791–804. [https://www.researchgate.net/publication/325683331\\_Effects\\_of\\_Corruption\\_on\\_Economic\\_Growth\\_-\\_Empirical\\_Study\\_of\\_Asia\\_Countries](https://www.researchgate.net/publication/325683331_Effects_of_Corruption_on_Economic_Growth_-_Empirical_Study_of_Asia_Countries)
17. The World Bank. (n.d.). *World development indicators*. <https://databank.worldbank.org/source/world-development-indicators>
18. Transparency International. (n.d.). *Corruption perceptions index*. <https://www.transparency.org/en/cpi/2018>