Well-being as a Prerequisite for Sustainability on a Macroeconomic Scale? Case of V4 Countries

DOI: 10.12776/QIP.V27I3.1945

Jan Pokorný, Alena Palacká

Received: 2023-11-17 Accepted: 2023-11-29 Published: 2023-11-30

ABSTRACT

Purpose: Human well-being is a necessary prerequisite for achieving sustainable development. This assumption aligns with the basis of Maslow's pyramid of needs and the Kuznets curve in its ecological presentation. Therefore, the presented paper aims to clarify what impact specific indicators of human well-being have on the reported level of sustainability achieved on a macroeconomic scale in the Visegrad Group in the years 2005-2021 and verify whether the author's assumptions are correct.

Methodology/Approach: Following the correlation analysis of selected variables, there is a linear regression model used to examine the relationship between the overall result of the V4 countries and the selected variables.

Findings: People in V4 countries need to have their basic personal needs fulfilled to promote sustainability. Within the analysed variables, the most significant influence on the country's sustainability has the Employment rate, the Gender wage gap, and perceived Health.

Research Limitation/implication: This study examines the situation within the Visegrad Group, and only 13 variables are selected for the analysis.

Originality/Value of paper: The paper deals with the macroeconomic perception of sustainability and sustainable development in connection to human well-being in V4 countries. The potential linkage between overall sustainable countries' performance based on SDGs fulfilment and human well-being presented by OECD Social and Welfare Statistics is analysed.

Category: Research paper

Keywords: sustainability; well-being; indicators; SDR score; SDGs; V4 countries

Research Areas: Quality by Sustainability

1 INTRODUCTION

As much as sustainability is a frequently discussed topic both on microeconomics and macroeconomics scale, there is still no unified definition. Currently, the most commonly cited definition of sustainable development remains still the one presented by the World Commission on Environment and Development (1987, p. 16), which states: "Humanity has the ability to make development sustainable to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs." It is also pointed out that there are limits to the sustainable development concept that are not absolute but rather imposed by the present state of technology, environmental resources, and social organization, as well as by the ability of the planet to cope with the effects of human actions. The state of the first two variables can be managed in comparison to the absorbing ability of the biosphere; it is where the potential lies.

As there is no precise understanding of how to perceive sustainability, several models and concepts of sustainability were proposed (Elkington, 1998; Porritt, 2007; Walker, 2011). Some of those models and concepts are interlinked, as one concept was used as a basis for another. Nevertheless, concepts with no bonds to others occur as well. The Triple Bottom Line concept (TBL), which consists of three main spheres – economic, social, and environmental- suggests that sustainability can be achieved when all of the spheres are taken into account equally, without any trade-offs (Elkington, 1998). TBL is also commonly referred to as the 3Ps – People, Profit/Prosperity, and Planet. The 3Ps concept was expanded into the 5Ps as two other essential components - Partnership and Peace were added. The 5Ps were identified by the United Nations' 2030 Agenda for Sustainable Development within its Sustainable Development Goals (UN SDGs).

UN SDGs are one of the sustainability models that have actually proposed SMART goals to be achieved. In the Czech Republic, the UN SDGs are being incorporated into the practice through the Czech Republic 2030 Strategic Framework. Indices being monitored and evaluated within the Strategic Framework are focused on the quality of life - in terms of income and wealth, employment, housing, health, work-life balance, education, social interaction, civic engagement, safety, and personal well-being. (Ministerstvo zivotniho prostedi, n.d.)

In terms of macroeconomic sustainability, the essence of sustainable development, according to Garza (2013), lies in the fulfilment of three simultaneous goals, namely in maintaining a stable and high level of economic growth and employment; in effective environmental protection and careful use of natural resources; and last but not least in social development that respects the needs of all. There is consensus among authors that sustainability cannot be achieved by the actions of individuals. Coordination and cooperation are required, as well as innovation is vital. (Hart and Milstein, 2013)

The authors of this paper estimate that for people to be interested in sustainability, personal needs must be fulfilled, and a certain level of social well-being has to be achieved. This presumption is based on Maslow's hierarchy of needs (Bridgman,

Cummings and Ballard, 2019) and the Kuznets curve and its adjustment to the ecological Kuznets curve (Ravallion and Chen, 2022; Kasioumi, 2021).

Thus, if the population's economic security level is sufficient, then the individual pays attention to other parameters such as the social area or the environment. Maslow's Pyramid shows this progression on an individual basis. The Kuznets curve points to the general social attitude and development between satisfying the economic parameter (security) and paying attention to other realities (social or environmental).

This paper aims to examine whether the authors' presumptions of the necessity of having personal needs fulfilled to promote sustainability are correct and, therefore, well-being is a precondition for achieving better sustainable performance on a macroeconomic scale based on a dataset from the Visegrad Group (referred to as V4 countries). In the case of the presented research, sustainability ranking by Sustainable Development Report (n.d.) is considered to be an indicator expressing the level of the country's achieved sustainability.

This paper has four sections. The theoretical background and authors' presumptions are presented in the Introduction. It is followed by a presentation of the data, variables, and methods used as the basis of this paper's research in the Data and Methodology. The results of the conducted research, limitations, and suggestions for further research are provided in the Results and Discussion section. The Conclusion consists of a summary of the authors' findings.

2 DATA AND METHODOLOGY

The aim of this paper is to prove the potential influence of reported well-being and its specific indices on sustainability in V4 countries. The main research question is set as follows: "What impact do specific OECD indices on well-being have on a country's sustainable development ranking?"

The overall performance of SDGs by the Sustainable Development Report (n.d.) represents a dependent variable. Specific indices were chosen based on OECD Social and Welfare Statistics called "How's Life? Well-being," and these indices are further used as the independent variables.

	Area of interest	Specific indices
1.	Income and Wealth	Household income; Household wealth; Relative income poverty;
		Difficulty making ends meet; Financial insecurity
2.	Work and Job Quality	Employment rate; Gender wage gap; Long-term unemployment
		rate; Youth not in employment, education, or training; Labour
		market insecurity; Job stain; Long hours in paid work; Earnings
3.	Housing	Overcrowding rate; Housing affordability; Housing cost
		overburden; Poor households without access to basic sanitary
		facilities; Households with internet access at home
4.	Work-life Balance	Time off; Long unpaid working hours; Gender gap in working
		hours; Satisfaction with time use

Table 1 – "How's Life? Well-Being" indices

5.	Health	Life expectancy at birth; Perceived health; Deaths from suicide,
		alcohol, drugs; Self-reported depression
6.	Knowledge and Skills	Student skills (reading, math, science); Adult skills (numeracy,
	_	literacy)
7.	Social Connections	Social support; Time spent in social interactions; Satisfaction with
		personal relationships
8.	Civic Engagement	Having a say in government; Voter turnout
9.	Environmental Quality	Access to green space; Air pollution
10.	Safety	Homicides; Feeling safe at night; Road deaths
11.	Subjective Well-Being	Life satisfaction; Negative affect balance

Table 1 shows all indicators covered by OECD statistics called "How's Life? Wellbeing." However, not all indicators are available for V4 countries. Indicators available for the broadest possible period and reported for V4 countries have been chosen for further analysis. The indices' evaluation timeframe was set for 2005-2021. The final set of indicators used is highlighted in bold in Table 1.

There were a few cases of specific indices not being available for a country for a particular year, as the data were missing in the OECD database. In such a case, the average gradually transitioned between the given years. The missing data representing the country's results for a specific year were supplemented by authors based on the indices' development of the previous two years. A ratio of 25% influence was set for the first previous year and the remaining 75% for the second year.

Areas of interest and specific indices for those areas are presented in Table 2. Variable descriptions, authors' expectations, and units (characterisations) are also shown in Table 2.

In terms of variable descriptions – as the countries of the V4 were chosen as a research sample, *i* stands for the country (namely the Czech Republic, Hungary, Poland, and Slovakia), and the time (specific year) is marked as t, representing years from 2005-2021.

The percentages are the most commonly used units in the case of selected indices, but there are also different units used. For example, Household income is expressed in USD at 2015 PPPs per capita, while Earnings are in USD at 2020 PPPs. However, this difference does not matter within the given calculations.

Area of interest	Specific indices	Variable	Expectation	Characterisation
Sustainable Development Report	Overall performance of SDGs	SDG _{it}	X	Score (0-100)
Income and Wealth	Household income	HI _{it}	+	Household net adjusted disposable income, measured in USD at 2015 PPPs per capita
Work and Job Quality	Employment rate	ER_{it}	+	Percentage

Table 2 – Variable characterisation

Area of interest	Specific indices	Variable	Expectation	Characterisation
Sustainable Development Report	Overall performance of SDGs	SDG _{it}	X	Score (0-100)
	Gender wage gap	<i>GWG</i> _{it}	-	Percentage
	Earnings	EA _{it}	+	Measured in USD at 2020 PPPs
	Housing affordability	HA _{it}	-	Percentage
Housing	Households with internet access at home	HIA _{it}	+	Percentage
	Life expectancy at birth	LE_{it}	+	Years
Health	Perceived health	PH_{it}	-	Percentage
Tieaiui	Deaths from suicide, alcohol, drugs	DS_{it}	-	Deaths per 100 000 population (standardized to 2010)
Social Connections	Social support	SS_{it}	-	Percentage
Civic Engagement	Voter turnout	VT_{it}	+	Percentage
Safety	Homicides	<i>HO</i> _{it}	-	Homicides refer to deaths due to assault (rate per 100 000 population)
	Feeling safe at night	FS _{it}	+	Percentage

The authors' expectations, i.e., what effect the parameter will have on the explained variable, are also based on economic and social logic. Whereas for parameters such as Earnings or Feeling safe at night, a higher value can be expected to improve the overall SDGs' results; in the case of Homicides, and Deaths from suicide, alcohol, drugs, a higher SDGs' value can be expected to reduce these negative social phenomena. The exact correlation applies to the SDGs' value and the Gender wage gap, as well as the Home affordability, which shows what percentage of income is allocated to housing.

The basic parameters of analysed variables, such as means, standard deviation, and minimal and maximal value of variables, are presented in Table 3. Based on the results, the average value of SDGs is relatively high, with a relatively low standard deviation value. A similarly low deviation can be seen in Social Support, Employment rate, and Housing affordability. Higher deviations are evident for Households with internet access at home, Voter turnout, Homicides, and Feeling safe at night. The variation in the Gender wage gap is significant. However, it is necessary to perceive the time context and the difference between countries. The appendix shows the basic descriptive statistics of individual countries.

The mean of the overall SDGs performance is 78 points. The highest mean (78.9) is in the Czech Republic, and the lowest (77.1) is in Slovakia. This value has long-term positive development from 75 to 80 points.

Household income and Earnings are variables in USD. The Czech Republic has the highest Household income value for all analysed years. Other countries changed their rank during the evaluated time. In 2005, Hungary was the second, Slovakia was the third, and Poland was the last regarding results in the given indicators. In 2021, Poland was the second, and Slovakia the third. The position of Hungary had rapidly decreased in 2007, and it is noted that the expectations of a financial crisis could represent the main reason behind this decline.

Earnings have not so clear differences as Household income. The starting point of the Czech Republic, Hungary, and Poland was the same. In 2005, Earnings in Slovakia were on the ³/₄ level of average in other states. While Czechia and Poland have similar positive trends, Hungary stagnated. Slovakia and Hungary have similar values since 2014. Exclude Hungary, and changed over 40 p.p. in 2021 against 2005, Hungary just about 17 p.p.

Deaths from suicide, alcohol, drugs, and Homicides have similar measurement units (count per 100,000 population). Firstly, Deaths from suicide, alcohol, drugs have a statistically negative development. Hungary has the most significant change from 50.8 to 23.4. Other countries started with roughly half the value. The Homicides variable has similar development, only in lower values (see mean in Table 3).

Variable	Mean	Standard Deviation	Min	Max
SDG _{it}	78.0	1.9	74.0	82.5
HI _{it}	19 313.5	2 750.4	14 047.0	25 524.0
ER _{it}	72.0	5.5	61.7	82.8
GWG _{it}	12.0	4.3	0.4	20.1
EA _{it}	24 311.9	3 694.8	17 064.0	33 566.0
HA _{it}	76.5	4.0	68.6	81.5
HIA _{it}	61.4	24.6	5.1	91.7
LE _{it}	76.5	1.5	73.0	79.3
PH _{it}	59.3	4.5	45.3	67.0
DS _{it}	23.5	7.7	13.4	50.8
SS _{it}	90.0	3.2	81.2	96.3
VT _{it}	60.8	5.4	44.5	69.7
HO _{it}	1.0	0.4	0.4	2.0
FS _{it}	61.8	8.6	47.0	79.3

Table 3 – Variable description

Life expectancy at birth has gradually increased from 2005 to 2014, in 2016, and 2019. In V4 countries, the decreasing life expectancy was recorded in four analysed years (2015, 2017, 2020, and 2021). However, every country reported a higher value in 2021 than in 2005. The highest difference in Life expectancy at birth within the evaluated period V4 countries has been recorded in Hungary. On the other hand, Hungary also has the lowest life expectancy value (74.5 years) in 2021.

The Employment rate is increasing, excluding the years hit by the financial and COVID-19 crisis. The Gender wage gap has the opposite tendency, excluding the case of Hungary. In 2021, the lowest value in terms of the Gender wage gap had Poland (9.0), then the Czech Republic (11.5), and Slovakia (11.7). Hungary's Gender wage gap reached 12.5 % in 2021; nevertheless, this value in Hungary has an increasing trend. In contrast to fast-changing variables, Housing affordability values were reported without significant changes.

Households with internet access at home are growing rapidly, related to making the technology available to the general population. While the initial values ranged from 5 to 16 % in 2005, these values are currently between 89 and 92 %.

Perceived health has an increasing trend, as over 60 % of the population perceived their health positively in 2021. Social support has a vague trend. The decline in values occurred around the time of the financial crisis, but the values do not entirely correspond with this development within individual countries. At the same time, there was a significant decrease in V4 countries in 2017. In 2020, there was a decrease only in Hungary and the following year in the Czech Republic and Poland.

There is a similarly ambiguous trend for the Feeling safe at night variable. There was an increase in variables over the entire period, but in Poland, it was only an increase of 8 percentage points. In the case of Slovakia, it was 59 percentage points.

Based on these data, the correlation between individual parameters (Figure 1) and the linear regression model (Table 4) is created in the next section. The output of the model answers the aim of this study. The equation of the model is:

$$SDG_{it} = \beta_0 + \beta_X X_{it} + \varepsilon_t$$
 (1)

In equation (1), β_0 is the constant, and ε_t is the error term. The explanatory variables are in Table 3, X_{it} represents the matrix of these variables, and β_X is the coefficient of individual parameters. SDG_{it} is the dependent variable.

Due to the results, the next part does not consider adjusting the linear regression model within the difference of variables or their logarithmization.

3 RESULTS AND DISCUSSION

Figure 1 shows variable correlation. A relatively positive high correlation is between *SDG* and *HI*, *HIA*, *EA*, *ER*, and *FS*, and a high negative correlation is with *HO*. At the same time, it is noticeable that the expected trends of positivity or negativity are observed in the correlation when the correlation rate is significant.

For other variables, it is possible to see a high degree of correlation between HI and ER, and between EA and FS. While the first three indicators are logically

related in the sense of an economic parameter, *FS* is slightly different and is probably related to lower crime in a society with a higher employment rate, so people have an income and do not resort to obtaining funds by other means.

HO and *DS* are also closely related, which may not be considered entirely surprising. At the same time, it is noticeable that these two parameters are negatively correlated with most other parameters. In the case of *HO*, one can even talk about a strong negative correlation.

Table 4 shows the linear regression model results, where the variable SDG is explained according to equation (1).

The value of the coefficient of determination is relatively high, i.e., it explains 95% of the model. However, it is necessary to consider that the value of the model's coefficient is very high, reaching a value of 72.6.

	SDG	Ī	R	GWG	EA	HA	HIA	Ш	H	DS	SS	5	우	E S L	
SDG	1.00	0.86	0.77	-0,08	0.80	0.31	0.86	0.61	0.46	-0.44	0,03	0.30	-0.73	0.77	
HI	0.86	1.00	0.90	0.25	0.75		0.69	0.66	0.62	-0.60	0.22	0.24	-0.83	0.70	4
ER	0.77	0.90	1.00	0.39	0.58		0.61	0.63	0.58	-0.61	0.22	0.26	-0.77	0.56	-
GWG		0.25	0.39	1.00	-0.11	-0.71	0.05	0.44	0.48	-0.60		-0.26	-0.37	-0.07	
EA	0.80	0.75	0.58	-0.11	1.00	0.50	0.55	0.56	0.22	-0.32	0.07	0,08	-0.60	0.80	
HA	0.31		20:04	-0.71	0.50	1.00	0.17	-0:05	-0.42	0.36	-0.21	0.34	60.08	0.30	-
HIA	0.86	0.69	0.61	0.06	0.55		1.00	0.57	0.63	-0.51		0,18	-0.72	0.63	
LE	0.61	0.66	0.63	0.44	0.56		0.57	1.00	0.60	-0.66	-0.20	0.02	-0.79	0.48	
PH	0.46	0.62	0.58	0.48	0.22	-0.42	0.63	0.60	1.00	-0.73			- <mark>0.76</mark>	0.35	-
DS	-0.44	-0.60	-0.61	-0.60	-0.32	0.36	-0.51	-0.66	-0.73	1.00	5.07	0.22	0.80	-0.34	2-
SS		0.22	0.22	0.67	0,07	-0.21		-0.20	0305		1.00		1.mai	0.29	
VT	0.30	0.24	0.26	-0.26	0.08	0.34	0.18	ţĹIJ	() dh	0.22		1.00	1110	0.040	5
НО	-0.73	-0.83	-0.77	-0.37	-0.60	0.05	-0.72	-0.79	-0.76	0.80	104		1.00	-0.58	2-
FS	0.77	0.70	0.56	-0.07	0.80	0.30	0.63	0.48	0.35	-0.34	0.29	0.6A	-0.58	1.00	

Figure 1 – Variable correlation

Looking at the primary trend, it can be seen that the trend is followed when the explained variable increases for parameters such as *HI*, *ER*, or *FS* growth. On the other hand, SDG increases when there is a decrease in variables such as *GWG*, *PH*,

or DS. However, the results of *HI*, *LE*, *DS*, *VT*, and *HO* variables are not statistically significant. For the other parameters, there is statistical significance.

The influence of individual variables is low. This is associated with a high value of the constant. Of the statistically significant values, the Employment rate has the highest influence. The Gender wage gap and Home affordability have a similar level of influence; both are parameters with a negative result, as expected.

The individual parameters do influence the value achieved in SDGs and, therefore, the Sustainability Development Ranking. At the same time, there is a high degree of explaining ability (through the coefficient of determination). However, the coefficients of the individual variables are low, which can be explained by the fact that the constant has a high value, as already mentioned.

The results presented in Table 4 thus answer the research question of this study: "What impact do specific OECD indices on well-being have on a country's sustainable development ranking?" The impact of the specific parameters is in line with the authors' expectations and assumptions set at the beginning. The promotion of sustainability and sustainable principles is influenced by Maslow's pyramid of needs and the Kuznets curve, as the economic needs have to be satisfied first.

Variable	Coefficient	Standard Error	t-stat	p-value
Constant	72.6246	7.9042	9.188	1.25e-012 ***
HI	0.0001	0.0001	0.806	0.4235
ER	0.1041	0.0326	3.189	0.0024 ***
GWG	-0.0707	0.0295	-2.392	0.0203 **
EA	0.0001	0.0001	2.154	0.0357 **
HA	-0.0767	0.0448	-1.711	0.0929 *
HIA	0.0385	0.0045	8.645	9.09e-012 ***
LE	0.0320	0.0761	0.421	0.6758
PH	-0.0651	0.0257	-2.536	0.0141 **
DS	-0.0023	0.0148	-0.152	0.88
SS	-0.0606	0.0231	-2.627	0.0112 **
VT	0.0290	0.0174	1.672	0.1002
HO	0.3699	0.4396	0.842	0.4038
FS	0.0278	0.0124	2.245	0.0289 **
Observation	68			
		Adjusted R-		
R-squared	0.9601	squared	0.9504	

Table 4 – Linear regression model

Within the statistics of essential data, it turned out that the Employment rate has the highest importance, corresponding to the assumption of economic security. At the same time, Earnings should have a high coefficient, but they have a very low degree of influence. The reason may be a mixture of these parameters, as both (Employment rate and Earnings) have a character affecting economic security. The Gender wage gap is also related to the same assumption of the importance of economic needs. If there is income equalization (not only in terms of gender), then there usually is sufficient economic security for the population as such. All those variables mentioned fall into Work and Job Quality category, representing an important economic area.

The question of Housing, which is related to basic assumptions, as the ability to live in a dignified way helps to fulfil one's own needs, is another significant influencer. The principle is similar to the assumption of good Health; without this prerequisite being met, attention to other areas (such as sustainability) cannot be assumed.

Social support plays an essential role in social interactions, which has less influence than the factors mentioned above, but it is presented as another level of Maslow's pyramid of needs. While within the given categories, economic security is the basis for basic needs and the next level of safety needs, the higher level is represented by social inclusion. Thus, the sequence of identified variables influencing sustainability has a logical structure corresponding to Maslow's theory. Concerning social inclusion and its meaning within human needs, the value of households connected to the internet, which helps maintain social contact, is also consistent. However, we can find negative aspects here.

One question remains for authors to figure out concerning the Feeling safe at night variable. Isn't it a parameter that should be statistically more significant in terms of its influence on sustainability, as it is more related to the category of safety needs (that are in lower positions in Maslow's hierarchy)? However, this indicator has a higher influence than Earnings, as discussed above.

There are several significant limitations to this presented paper. The authors focus solely on V4 countries in the years 2005-2021. Only 13 descriptive variables were considered for further analysis, as insufficient data was available for other possible variables presented in the OECD database. Further research can be focused on a larger territorial area, where it is possible to take into account a different cultural environment and approach to sustainability and its fulfilment within the policies of the given country.

4 CONCLUSION

The issue of sustainability is a constantly discussed topic in the public and private spheres. The primary question is when society deals with this issue (when it can or desires to deal with it) and what impacts it. The premise of this study is that the interest in the matter of sustainability in its broader definition is economic security, which on a theoretical level, is based on Maslow's pyramid of needs and the Kuznets curve.

The presented study is focused on influencing parameters on the development of the reported level of sustainability in the V4 countries (the Czech Republic, Hungary, Poland, and Slovakia) by OECD. All these countries have a similar historical foundation in an undemocratic past until the end of the 1980s. Since then, their journey to democracy and different economic models began, i.e., the transition from a planned economy to a market economy.

All V4 countries emphasize sustainability, albeit at a different level. Reported sustainability values achieved in those countries have increased over the monitored period 2005-2021. The main influence on sustainability ranking had the development of the Employment rate, the Gender wage gap, and perceived Health.

Considering the empirical results, confirmation of the theoretical assumptions was achieved. This confirmation may be limited by the Earnings parameter, which was statistically significant, but its significance was not based on the coefficient value.

ACKNOWLEDGMENTS

This paper was created within the project SGS-2023-007 'Current Challenges and Problems of Modern Society from the Perspective of Finances and Accounting' at the Faculty of Economics, University of West Bohemia.

REFERENCES

Bridgman, T., Cummings, S., and Ballard, J., 2019. Who Built Maslow's Pyramid? A History of the Creation of Management Studies' Most Famous Symbol and Its Implications for Management Education. *Academy of Management Learning and Education*, [e-journal] 18(1), pp. 81-98. DOI: 10.5465/amle.2017.0351.

Elkington. J., 1998. *Cannibals with Forks: the Triple Bottom Line of 21st Century Business*. Oxford: Capstone.

Garza. F. A., 2013. A Framework for Strategic Sustainability in Organizations: A Three Pronged Approach. *Journal of Comparative International Management*, [ejournal] 16(1), pp. 23-36. https://journals.lib.unb.ca/index.php/JCIM/article/view/21151.

Hart. S. L., and Milstein. M. B., 2003. Creating Sustainable Value. Academy of Management Executive. *Academy of Management Perspectives*, [e-journal] 17(2), pp. 56-69. DOI: 10.5465/ame.2003.10025194.

Kasioumi, M., 2021. The Environmental Kuznets Curve: Recycling and the Role of Habit Formation. *Review of Economic Analysis*, [e-journal] 13, pp. 367-387.

Ministerstvo zivotniho prostredi, n.d. *Strategicky ramec Ceska republika 2030*. https://www.cr2030.cz/strategie/.

OECD, n.d. *OECD Social and Welfare Statistics*. https://stats.oecd.org/viewhtml.aspx?datasetcode=HSL&lang=en#.

Porritt. J., 2007. Capitalism: As If the World Matters. London: Earthscan.

Ravallion, M., and Chen, S. H. (2022). Is that really a Kuznets curve? Turning points for income inequality in China. *Journal of Economic Inequality*, [e-journal] 20, pp. 749–776. DOI: 10.1007/s10888-022-09541-x.

Sustainable Development Report, n.d. *Rankings: The overall performance of all 193 UN Member States*. https://dashboards.sdgindex.org/rankings.

Walker. S., 2011. *The Spirit of Design: object. environment and meaning*. London: Earthscan-Routledge.

World Commission on Environment and Development, 1987. *Report of the World Commission on Environment and Development: Our Common Future*. https://digitallibrary.un.org/record/139811

ABOUT AUTHORS

Jan Pokorný⁰⁰⁰⁰⁻⁰⁰⁰²⁻³²⁸⁸⁻⁵⁰⁸⁰ (J.P.) – Ph.D. Student, Department of Finance and Accounting, Faculty of Economics, University of West Bohemia, Czech Republic, e-mail: pokorny@fek.zcu.cz.

Alena Palacká⁰⁰⁰⁰⁻⁰⁰⁰¹⁻⁶⁵⁴⁰⁻⁸⁵⁶⁶ (A.P.) – Ph.D. Student, Department of Finance and Accounting, Faculty of Economics, University of West Bohemia, Czech Republic, e-mail: astankov@fek.zcu.cz.

AUTHOR CONTRIBUTIONS

Conceptualization, J.P. and A.P.; Methodology, J.P.; Validation, A.P.; Formal analysis, J.P.; Investigation, A.P.; Resources, J.P. and A.P.; Data curation, J.P.; Original draft preparation, J.P and A.P.; Review and editing, A.P.; Visualization, A.P.; Supervision, J.P.

CONFLICTS OF INTEREST

The authors declare no conflict of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, or in the decision to publish the results.



© 2023 by the authors. Submitted for possible open-access publication under the terms and conditions of the Creative Commons Attribution (CC-BY) license (http://creativecommons.org/licenses/by/4.0/).

		SDG	HI	ER	GWG	EA	HA	HIA	LE	РН	DS	SS	VT	НО	FS
	Mean	78.9	21470.6	77.3	15.4	26403.1	75.9	62.1	78.0	61.0	20.6	89.9	62.3	0.8	64.4
	Stand. Dev.	2.1	1969.3	3.7	1.5	2960.6	1.0	26.5	0.9	1.3	1.2	3.0	1.9	0.2	9.4
	Min	75.7	18804.0	73.4	11.5	22441.0	74.4	5.1	76.1	58.9	18.4	84.6	59.5	0.5	49.8
	Max	82.5	25524.0	82.8	17.9	31711.0	77.8	89.3	79.3	63.4	23.7	96.3	65.4	1.0	79.3
CZ	2021/2005	1.1	1.4	1.1	0.7	1.4	1.0	17.6	1.0	1.1	0.8	1.1	1.0	0.7	1.5
-															·
	Mean	77.9	17724.4	69.7	6.9	22756.0	80.2	62.0	75.1	55.8	31.8	89.8	66.1	1.3	58.7
	Stand. Dev.	1.2	2127.2	6.4	3.9	1536.6	1.0	24.2	1.1	4.9	9.2	3.9	2.6	0.4	7.4
	Min	76.0	15616.0	62.9	0.4	21031.0	77.8	10.9	73.0	45.3	23.1	81.2	61.8	0.8	47.0
	Max	80.2	22204.0	81.7	12.8	26268.0	81.3	90.8	76.5	62.0	50.8	94.5	69.7	2.0	73.7
НU	2021/2005	1.1	1.3	1.3	3.1	1.2	1.0	8.3	1.0	1.3	0.5	1.0	1.0	0.5	1.3
			1	1	1		1	1	1		1			1	
	Mean	78.0	18939.6	69.4	10.3	27143.4	79.4	61.7	76.7	58.0	22.5	89.2	56.3	0.9	66.2
	Stand. Dev.	2.2	3188.3	4.4	1.4	3589.0	1.2	23.2	1.0	1.9	4.8	3.2	5.5	0.3	4.5
	Min	74.6	14047.0	61.7	7.2	22731.0	77.3	15.6	75.0	54.3	16.7	83.6	46.0	0.5	59.5
	Max	81.0	24244.0	77.7	13.0	33566.0	81.5	91.7	78.0	61.6	28.9	94.0	68.2	1.5	73.9
PL	2021/2005	1.1	1.7	1.3	0.8	1.5	1.0	5.9	1.0	1.1	0.6	1.0	0.9	0.4	1.1
			1	1	1		1	1	1		1			1	
	Mean	77.1	19119.2	71.5	15.2	20945.3	70.6	59.6	76.1	62.5	19.3	91.3	58.5	1.0	58.0
	Stand. Dev.	1.8	2300.7	3.2	2.2	2319.4	1.3	26.4	1.2	5.2	5.9	2.1	4.7	0.4	9.5
	Min	74.0	14875.0	67.2	11.0	17064.0	68.6	7.1	74.1	52.0	13.4	88.1	44.5	0.4	47.0
	Max	79.9	22626.0	78.0	20.1	24805.0	72.9	89.9	77.8	67.0	29.4	95.1	65.8	1.7	75.9
SK	2021/2005	1.1	1.5	1.2	0.6	1.5	1.0	12.6	1.0	1.3	0.5	1.0	0.8	0.3	1.6

Appendix: Descriptive statistics of individual countries