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The World Poverty Index

Between 2012 and 2020 the average value of the poverty index \$ 2.15 decreased by -0.65%

The World Bank calculates the value of the poverty index as \$2.15. The poverty index at \$2.15 a day is the percentage of the population living on less than \$2.15 a day in 2017 purchasing power-adjusted prices. Following PPP exchange rate revisions, poverty rates for individual countries cannot be compared with poverty rates reported in previous editions.

Ranking of countries by poverty index value in 2020. Colombia ranks first by poverty index value in 2020 with a value of 9.4, followed by Ecuador with 6.5 and Peru with a value of 5.9. In the middle of the table are Armenia, Hungary, and Sweden with a value of 0.4 units. Slovenia, Thailand and Ukraine close the ranking with a value of 0.00. On average, the poverty index value of \$2.15 was equal to an amount of 1.19.

Ranking countries by value of percent change in poverty index \$2.15 between 2012 and 2020. Colombia ranks first by value of change in poverty index with a change of 2.7%, followed by Ecuador with +2.00%, and from Chile with +0.7%. In the middle of the table are the Netherlands, Sweden and Thailand with a value of -0.1%. The ranking is closed by Bolivia with -3.4%, Georgia with -4.9%, and Indonesia with -9.9%. Overall, between 2012 and 2020, the value of the variation in the poverty index decreased by an average of -0.65%.

Clusterization with k-Means algorithm using the Silhouette coefficient. A clustering with the Silhouette coefficient is proposed below. Two different clusters are identified, namely:

- Cluster 1: Dominican Republic, Paraguay, Bulgaria, Chile, Kyrgyz Republic, Costa Rica, Italy, Albania, Armenia, Argentina, Greece, United States, Lithuania, Spain, Latvia, Hungary, Estonia, Austria, Slovenia, Russian Federation, Belarus, Czech Republic, Portugal, Sweden, Cyprus, Ukraine, Thailand, United Kingdom, Ireland, Luxembourg, France, Finland, Netherlands, Denmark, Belgium, Uruguay;
- Cluster 2: Colombia, Georgia, Peru, Bolivia, Indonesia, Brazil, Ecuador.

From the point of view of clustering, it results that the value of $C2=5.8 > C1=0.2$. From a geographical point of view, we can see that the level of the poverty index tends to be high in Central and South America. On the contrary, the poverty index tends to be low in Europe. However, there are also countries in Central and South America in cluster 1, i.e. in the cluster with a lower level of the poverty index.

Network analysis with Manhattan distance. A network analysis using the Manhattan distance is presented below. Two complex network structures and a simplified network structure are thus identified. In particular, the following complex network structure is identified:

- France has a connection with Ukraine for a value of 0.056;

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- Russia has a connection with Ukraine for a value of 0.059, with the Czech Republic for a value of 0.00, and with Slovenia for a value of 0.00;
- Ukraine has a connection with Russia with a value of 0.059, with France with a value of 0.056, with the Czech Republic with a value of 0.059, with Belarus with a value of 0.059, and with Slovenia with a value of a value of 0.059;
- Slovenia has a connection with Russia worth 0.00, with Ukraine worth 0.059, with Belarus worth 0.00;
- Belarus has a connection with Slovenia worth 0.00 units, with Ukraine worth 0.059 units, with the Czech Republic worth 0.00 units;
- The Czech Republic has a connection with Ukraine worth 0.059, with Belarus worth 0.00, with Russia worth 0.00;

Furthermore, the following complex network structure is identified, namely:

- Uruguay has a connection with Belgium worth 0.047;
- Belgium has a connection with Uruguay for a value of 0.047 and with the Netherlands for a value of 0.06;
- The Netherlands has a connection with Belgium worth 0.06.

A simplified network structure is also identified below, namely:

- Cyprus and Thailand have a connection worth 0.053.

Conclusions. The poverty indicator decreased on average between 2012 and 2020 by an amount equal to -0.65%. However, it must be considered that there are countries such as, for example, Colombia where the number of poor people is significantly high. European countries have medium-low values in terms of poverty index. Poverty is difficult to assess with a single indicator. Indeed, there are many dimensions to poverty. In the Western world, for example, there is the case of the working poor, i.e. people who, despite working, remain essentially poor. Furthermore, poverty can also be measured in terms of lack of access to health care and education, or to a family. For example, in the Western world, especially in Italy, there is a large part of the population who find it difficult to create new families or to have children for strictly economic reasons. Furthermore, in the USA there is a large part of the population excluded from the world of work for reasons related to educational qualifications and the difficulty of having a network of professional social relationships. It follows that the problem of poverty must first be considered in a relative and not an absolute sense, and furthermore it must be connected to a set of socio-economic and environmental dimensions, which may be able to express the various forms of poverty and social inequality.

Declarations

Data Availability Statement. The data presented in this study are available on request from the corresponding author.

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Declaration of Competing Interest. The author declares that there is no conflict of interests regarding the publication of this manuscript. In addition, the ethical issues, including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication.

Software. The authors have used the following software: Gretl for the econometric models, Orange for clusterization and network analysis, and KNIME for machine learning and predictions. They are all free version without licenses.

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Appendix



