

Recommendations for changes in the methodology of public EU funds allocation in the context of economic crises, including the COVID-19 pandemic

Karina Bedrunka*, Ireneusz Dąbrowski#

Submitted: 6 September 2022. Accepted: 3 November 2022.

Abstract

The article presents the national allocations of EU funds under the Next Generation fund and two selected financial instruments: RRF and REACT EU, which were then interpreted due to the COVID-19 pandemic. Studies have shown that Spain, Italy and France have received more than 50% and, in the case of the REACT EU programme, 64% of the European public intervention value under the RRF instrument to combat the effects of COVID-19. It should be noted that in the current algorithm for the distribution of EU funds, the values of the identified amounts of support in selected financial instruments depend on population, GDP and unemployment. In the second part of the research, which focused on satisfaction indicators, it was shown that citizens of European Union countries value having a job more than high earnings, and this means that they value life stability more than the amount of remuneration. It has also been shown that for EU citizens, social ties are rated higher than spending free time. Taking into account the results of the research, the authors believe that when developing future methodologies for the allocation of European funds, the amount of support from European public funds should be additionally relativized to the indicator of life and time satisfaction, as well as the types and intensity of global asymmetric jumps. The pandemic or the unjustified aggression of the Russian Federation against Ukraine and the related energy crises clearly demonstrate that public funds should not be allocated from the point of view of only indicators determining the socio-economic situation of the country. Based on the research, the authors believe that quality of life indicators (finance, employment, social contacts and leisure activities) should be included as a new insight in the criteria for the distribution of EU funds.

Keywords: EU funds, economic crises, pandemic, methodology, satisfaction indicators

JEL: E71, O11, O15, O18

* Marshal Office of the Opolskie Voivodeship; e-mail: karbed74@gmail.com.pl; ORCID: 0000-0003-3495-3822.

Warsaw School of Economics; ORCID: 0000-0001-5353-7985.

1. Introduction

The COVID-19 pandemic has sparked a global crisis and has left its mark on all economies (Szczepański 2020), and has had the infamous effect of the global economic and social crisis. In the EU countries, economies have been shaken. There has been a decline in business sentiment, as evidenced by the rise in unemployment (OECD 2020). When we focus on the twenty-seven EU member states, in such conditions the intervention of the EU in public life became a necessity.¹ In the first half of the previous century, the market mainly regulated economic crises (Dudziński 2013, pp. 19–32). However, the economies in EU countries have evolved to become more and more socially oriented. For decades, this process has been promoted by increasing amounts allocated in the EU budget, including on the Cohesion Policy. The structural funds of the EU (Ryszkiewicz 2012, pp. 5–29) offer a significant source of support for socio-economic activities of the member states. Practical developments demonstrate that EU projects are designed and used to provide funding at the central level of individual countries, as well as by the authorities of individual regions.

In the consideration of the above facts, the aim of the research is to carry out an analysis of the specific dimensions of life quality among the societies of the twenty-seven EU Member States from the point of view of the EU public funds provided as the recovery package following the COVID-19 pandemic. While the research objective was implemented, an assumption was made that the quality of life of the citizens taken in terms of the examined dimensions and thus, the finance provided under the Next Generation Fund, should be considered jointly.

The first section of the paper focuses on a literature review in which various viewpoints on economic crises over the years are explored, including a variety of aspects related to the COVID-19 pandemic. Subsequently, a statistical analysis is presented of the funds allocated by the EU to combat the pandemic under the Next Generation EU comprising several instruments that have been designed to mitigate the effects of the crisis, support regions and increase the resilience of the economies of EU Member States. The research focuses on funds derived from the Facility for the Reconstruction and Resilience of Europe – grants (Recovery and Resilience Facility – RRF grants) and REACT EU (Recovery Assistance for Cohesion and the Territories of Europe) for 2021 and a forecast of funding allocation for 2022.²

The article presents hypotheses for the indicated research purpose, which were verified by the results of the research performed with such as purpose. Detailing the research process, research hypothesis H1 and two supporting hypotheses SH1 and SH2 were formulated:

H1. The value of the support from European public funds should be relative to the time and intensity of the COVID-19 pandemic, and not only to the indicators that determine the social and economic conditions in the specific member states.

SH1. On the basis of investigations of the indicator's satisfaction, the population of the EU member states appreciate having a job more than wages, thus stability of life is valued more than the amount of remuneration.

¹ Regulation (EU) 2020/558 of the European Parliament and of the Council of 23 April 2020 amending Regulations (EU) No 1301/2013 and (EU) No 1303/2013 as regards specific measures to provide exceptional flexibility for the use of the European Structural and Investments Funds in response to the COVID-19 outbreak, p. 1.

² <https://www.bruegel.org/2020/11/next-generation-eu-payments-across-countries-and-years/>

Commission ImplementinDecision (EU) 2021/182 of 12 February 2021 setting out the breakdown by Member State of REACT-EU resources for the year 2021 (OJ L 53, 16.2.2021).

SH2. When a comparison is made with regard to the indicators of social interaction and the use of free time in the EU Member States, social ties are rated higher than spending free time.

The parameters identified in the supporting hypotheses are important and, in the opinion of the authors, should be used as a new approach when building criteria for the distribution of EU funds.

The authors are aware that the life satisfaction of residents can be examined by application of various aspects and therefore the selected factors do not offer an exhaustive tool for the purposes of realization of the goals of the current research. This enables the follow-up of the present study by taking into account other aspects, such as health condition, housing conditions as well as education.

2. Faces of economic crises, including COVID-19 pandemic – review of literature

Every crisis has its reflection in the economy (Kundera 2015, pp. 297–310; Bochenek 2012, pp. 147–159). Its occurrence is related to the need to implement measures that relate to enterprises and other areas related to performance of a country, including social aspects (European Commission 2009, pp. 23–50) as well as financial ones (Claessens, Klose 2013, pp. 22–41). The literature in the area contains many examples of research on various areas affected by the effects of crises, one of them is, for example, the level of fuel prices (Baumeister, Kilian 2015, pp. 3–26). Research shows various forms and possibilities of rebuilding economies using, among others, modern technologies and the environment (Ponsiglione et al. 2018, pp. 4–15; Kangas, Aarrevaara 2020, pp. 7–12; Serafy 1991, pp. 168–175), or sustainable development as a concept of building a competitive economy (Bedrunka 2020, pp. 11–18; Bedrunka et al. 2021; Mach et al. 2021).

In a speech delivered on 11 March 2020, the Director General of the World Health Organization (WHO) concluded that COVID-19 should be characterized as a pandemic and that it constitutes a crisis that does not only affect public health, but every sector of global economies. The world is changing during and following COVID-19. It will contain elements of both old and new, known and unknown (Gaub, Boswinkel 2020, pp. 6–35).

Specific countries should adopt an approach that is oriented around a comprehensive strategy designed to prevent infection, save lives, and minimize the economic and social impact. By analysing selected European countries, it is possible to identify the reasons why the economies of some countries have suffered to a greater extent from COVID-19 compared to the economies of other countries. There are several reasons for this, including the number of deaths per million inhabitants, the severity of the applied restrictions, the structure of the economy, and the government's ability to counteract the collapse of economic activity (Sapir 2020, pp. 1–13).

Policymakers throughout the world entered the COVID-19 crisis in a state of uncertainty. Quite evidently, uncertainty forms the decisive characteristic of any crisis. However, in the case of most crises, it is quickly reduced by applying already established methods of gathering and analysing information. The COVID-19 crisis was unique in this respect as it continued to generate new uncertainties (Gaub, Boswinkel 2020, pp. 6–50). One of the critical factors was associated with an inability of testing existing solutions. Another factor was related to the difficulty in identifying people with whom an infected person has come into contact. Experts – on the one hand, decision makers relied on them,

but on the other – experts themselves were just learning to interpret emerging data and research. Most governments proved unprepared to deal with the COVID-19 crisis. The majority of European countries and the United States provided financial support to their citizens and businesses, although the amount and duration of this support varied considerably. To a large extent, there is no international coordination of these activities (Boin, Longe, Luesinek 2020, pp. 189–204). European funds have gained a role as an effective instrument for supporting EU Member States. Unfortunately, there is a scarcity of examples with research conducted in this area in the literature; one of the examples may be the authors' deliberations on the flexibility of regional EU funds during a pandemic from the point of view of the labour market, among other areas (Arbolino, Di Caro 2020, pp. 1–16).

The lockdown crisis in 2020 can be compared to the crisis lasting from 2007 to 2009. Both crises are linked by a sharp decline in economic activity and a sharp rise in unemployment. However, COVID-19 led to much deeper recessions both on the national and global scale (Schmidhuber, Qiao 2020, pp. 1–10). When we refer to the example of the countries of Central and Eastern Europe, there is a visible decrease from month to month of quantitative and qualitative measures that describe the economic conditions, based on the reactions of economic activity of stakeholders that need to adapt to the existing situation (Adamowicz et al. 2020, pp. 61–70). When an analysis is performed with regard to the main economic indicators of Poland, there is a visible impact of the pandemic on their values (Staniszewski 2020, pp. 3–15).

The COVID-19 pandemic provides clear evidence that human well-being and the Earth's condition are in a close relation (World Economic Forum 2020). When we compare the COVID-19 crisis by applying certain criteria to the climate crisis, we can come to the conclusion that these are two different types of crises, although there are numerous links between them – global warming and the reduction of forests may lead to another global pandemic (van der Ven, Sun 2021, pp. 13–22). The COVID-19 pandemic has also had unprecedented effects on the environment (van der Ven, Sun 2021, p. 19) in terms of its extent, complexity and even uniqueness. For the first time in history, the urban metabolism marked in all agglomerations with more than 1 million inhabitants in Europe practically stopped in terms of traffic and economic activities. The social and economic measures adopted to contain the pandemic have provoked local, regional and global impacts, both negative and positive, ranging from immediate to long-term. A full impact assessment is far from possible due to the ongoing catastrophe of epic proportions and immense complexity (Cheval et al. 2020, pp. 5–10).

3. Contribution of EU public intervention to recovery following COVID-19 pandemic

The public intervention of the European Union that was agreed and initiated in 2020 formed a response to the global crisis that affected individual member states. The European Commission, in cooperation with the European Parliament, issued a decision regarding the allocation of money from current EU funds for the purposes of the combat against outcomes of COVID-19, as well as for purposes related to economic recovery following the pandemic. In this respect, exceptional flexibility was provided in the use of European structural and investment funds.³

³ Regulation (EU) 2020/558 of the European Parliament and of the Council of 23 April 2020 amending Regulations (EU) No 1301/2013 and (EU) No 1303/2013 as regards specific measures to provide exceptional flexibility for the use of the European Structural and Investments Funds in response to the COVID-19 outbreak, p. 1.

All EU Member States received support under the Cohesion Policy from the EU budget in 2014–2020 in the total amount of over EUR 463 billion.⁴ These funds support the socio-economic development of individual Member States on the basis of the objectives of the Europe 2020 Strategy (European Commission 2010, p. 5). Currently, funds that have not yet been transferred are being utilized to strengthen European economies in the COVID-19 pandemic.

In order to mitigate the effects of the crisis, strengthen regions and increase resilience, the European Union has allocated EUR 750 billion for the purposes of the recovery of the European economy after the COVID-19 pandemic until 2026. In addition, countries have secured funds in the amount of over EUR 1 trillion under the Multiannual Financial Framework at their disposal, i.e. the seven-year EU budget for 2021–2027 aimed for developing the EU's socio-economic competitiveness. The amounts are shown in Table 1. These funds must be utilized until 2029. The table contains the lists of the measures developed for the goals related to the needs of the 27 Member States. In their research, the authors took into account the two most important instruments from the point of view of combating the effects of the COVID-19 pandemic, namely: Recovery and Resilience Facility – RRF grants and REACT EU.

The European Parliament has adopted appropriate allocation methods. The method of allocating funds for the RRF Grants Facility in terms of the maximum financial contribution available for each Member State takes into account, for each Member State: population; reverse of GDP per capita; the mean unemployment rate over the last five years compared to the EU average (2015–2019), as well as the fall in real GDP in 2020 and the fall in real GDP in 2020 and 2021 combined. In turn, the REACT-EU allocation method distributes the funds among the Member States according to the following method: GDP indicator, unemployment rate, youth unemployment rate. Appropriate weights were utilized in the calculations.⁵

4. Analysis of allocation of public funds of the EU in terms of economic crises, including COVID-19

4.1. Study goals, phases of the study

Taking into account the specific purpose of the research, as well as the conclusions derived from the review of literature and following an attempt to answer the research hypotheses identified for the purposes of the study, three stages of the research process were distinguished.

The first stage of the research, which aims at the diagnosis and introductory analysis in the field of the research, aimed to identify and examine the values of the funds transferred to combat against COVID-19 for 27 countries belonging to the EU, in particular, the values of the funds transferred, taking into account the Fund: Next Generation EU, and under it two instruments: Recovery and Resilience Facility (RRF) and REACT-EU 2021. In order to offer a better insight into the research, the estimated

⁴ Dataset, [https://cohesiondata.ec.europa.eu/2014-2020/ESIF-2014-2020-FINANCES-PLANNED-DETAILS/e4v6-qrrq\)%0A%0A](https://cohesiondata.ec.europa.eu/2014-2020/ESIF-2014-2020-FINANCES-PLANNED-DETAILS/e4v6-qrrq)%0A%0A).

⁵ Regulation (EU) No 1303/2013 of the European Parliament and of the Council of 17 December 2013 laying down common provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund, the European Agricultural Fund for Rural Development and the European Maritime and Fisheries Fund and laying down general provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund and the European Maritime and Fisheries Fund and repealing Council Regulation (EC) No 1083/2006, p. 320; Regulation (EU) 2021/241 of the European Parliament and of the Council of 12 February 2021 establishing the Recovery and Resilience Facility (OJ L 57, 18.2.2021, pp. 17–75).

values of support for 2022 under the REACT-EU programme were also presented. In the next stage of the research, the indicators of life satisfaction of EU citizens, which were measured in 2013 and 2018 in the surveyed Member States, were analysed. In the third and final stage of the research, analysis was carried out with the purpose of exploring areas concerned with the significance of the relations in the aspects described above. First, the magnitude of the relation and its statistical significance of the funds granted under the described COVID-19 support instruments were identified, and then the dependence of the support value on the satisfaction indicators (quality of life) was verified. The aim of this stage was to confirm the statistical significance of the relations explored in stages 1 and 2.

4.2. Study results

When an analysis is performed with regard to the value of support under the RRF EU instrument, we can note that Spain and Italy receive significantly greater amounts than other countries. The next Member State in terms of the value of the programme is France. These countries received financial funds in the amounts of EUR 68.9 billion, EUR 68.5 billion and EUR 39.4 billion, respectively, to fight the effects of the COVID-19 pandemic. The three indicated countries received over 50% of the funding provided for all 27 Member States. Malta and Luxemburg are the two countries that received the least support for the combat against outcomes of COVID-19 (less than EUR 1 billion) – see Figure 1.

Bearing in mind the importance of the REACT-EU instrument in supporting the 27 economies of the Member States in the fight against COVID-19, a detailed breakdown of the support granted in 2021 and projected for 2022 is presented in Figures 2 and 3. We should note that also the same three countries, i.e. Italy, Spain and France, receive the greatest support, which, expressed in cumulative values, amounts to as much as 64% of the funds projected for all twenty-seven Member States.

When we intend to give a summary of the first stage of analysis, we can note that all support instruments for the twenty-seven European economies are characterized by the same allocation algorithm for financial support. In each of the presented situations, the highest amounts of support are project to support the economies of Italy, Spain and France.

In the subsequent stage of the study, the indicators of life satisfaction of residents were analysed. They were measured in 2013 and 2018 in the twenty-seven Member States as part of the research available in Eurostat.⁶ The comparative analysis provides details of satisfaction indicators related to the perception of work and remuneration as well as in the area of satisfaction with social contacts and the use of free time. The detailed analysis of satisfaction indicators aims to show why an important aspect during the COVID-19 pandemic and following its cessation is the support of individual EU countries in the areas of economic and broadly understood health-related issues.

Figure 4 presents a matrix with the comparison of satisfaction indicators in the areas related to work and remuneration. On the other hand, in Figure 5 presents a comparison of the indicators of satisfaction with maintaining social contacts and the use of free time.

On the basis of the data presented in Figure 4, we can clearly notice that for the 26 surveyed countries, having a job is rated higher than the remuneration for the work that is performed. Of course, both analysed indicators form important aspects in terms of the view of the performance

⁶ Eurostat, Personal well-being indicators, 2013, 2018, https://ec.europa.eu/eurostat/databrowser/view/ILC_PW01__custom_1197150/default/table?lang=en.

of households; however, the security of having a job exceeds the financial effect achieved for it. Sweden forms the exception to this example.

On the basis of the analysis of the second pair of satisfaction indicators, i.e. the importance of social contacts and spending free time, we should note that social ties are rated very highly in each country.

When we intend to offer a summary of the above analysis regarding indicators of satisfaction, it can be stated that having a job forms a superior value in comparison to remuneration obtained for it, and interpersonal contacts and time spent are important from the point of view of social satisfaction. It is worth concluding here that the time of the COVID-19 pandemic shook these two factors to a considerable extent. Therefore, public support for the European economies forms a very important aspect in the rapid recovery of the economies and strengthening of their resilience against crises.

In the third stage of the research, analysis was carried out with regard to the significance of the relationship in the aspects described above. First, the magnitude of the relations and the statistical significance of the funds granted under the described COVID-19 support instruments were identified, and then the dependence of the support value on the satisfaction indicators (general life quality) was established. Throughout the research process, more than 300 charts were developed to analyse the correlation dependencies; however, in order to maintain the clarity of the analysis and descriptions offered in this study, the article presents only a selection of them. The ones that are included can be considered as representatives of all the calculated dependencies.

Figures 6 and 7 demonstrate the correlation for the payment instruments described in the first stage of the analyses. Figure 6 shows the correlation between REACT-EU 2021 and RRF, whereas Figure 7 demonstrates the correlation between REACT-EU and Next Generation 2021. The study demonstrated very high correlation values (equal to nearly 1) between the values of the support that was granted, which confirms the results obtained throughout the initial stage of the research (cf. Figures 1, 2, 3). The value of the p parameter is below the significance level, which was assumed as 0.05, so the identified relations are statistically significant.

In turn, Figures 8–11 indicate the correlation dependencies between the selected satisfaction indicators. All the calculated correlations are statistically significant, so they suitably describe the relationships between individual satisfaction indicators. The relationship between the indicator describing the financial side and the overall quality of life is highly correlated, as the correlation coefficient was found to be $R = 0.949$. The lowest value of the correlation coefficient equal to $R = 0.659$ is observed between the possessed financial funds and interpersonal relations. The values of the correlation coefficients between work and general quality of life as well as interpersonal contacts are equal to, $R = 0.782$ and $R = 0.793$, respectively.

No significant correlation relationships were observed in the subsequent examined correlations, i.e. in the correlation analysis of the value of financial instruments with the values of the obtained satisfaction indicators (see Figures 12–13). This demonstrates that the allocation of funds for REACT EU or RRT was not dependent on the identified variable describing satisfaction. As these indicators play a significant and recognizable role for society and the economy, in the opinion of the authors, they may have prompted the shaping of subsequent methodologies for allocating EU financial aid funds.

5. Conclusions

The conducted research formed an attempt at describing the European funds transferred under the Next Generation fund and two selected financial instruments: RRF and REACT EU. In order to obtain the most systemic research inference, a literature analysis of the issue was carried out in the first place. The analysis presents the faces of economic crises over the years, including the COVID-19 pandemic and the growing role of public intervention. In the EU member states it has been very visible in recent years.

When we take into account the utilitarian dimensions of the analysis that was carried out, the results of the study demonstrate that the following countries: Spain, Italy and France received over 50%, and in case of the REACT EU programme – 64% of the European value of public intervention in the RRF instrument for individual EU countries to combat the effects of COVID-19. The authors consider that, when the future methodologies of allocating European funds are developed, the amount of support from European public funds should additionally be relative to the life and time satisfaction index as well as the severity level of the pandemic (e.g. COVID-19), and not only on the indicators determining the socio-economic situation of the country.

At the stage of research on satisfaction indicators, the citizens of the EU member states appreciate having work rather than high wages, and this means they value life stability more than the amount of remuneration. On the basis of the comparison of the indicators of social contacts and the use of free time in the EU Member States, social ties are rated higher than spending free time. This is illustrated by the relevant drawings in the research part (see Figures 4–5). Therefore, looking at these results from the point of view of the COVID-19 pandemic, the role of these indicators should be further enhanced.

Based on the research, the authors believe that quality of life indicators (finance, employment, social contacts and spending free time) should be taken into account as a new insight, in the criteria for the distribution of EU funds.

The values of identified amounts of the support in selected financial instruments demonstrate that the greatest proportion of funds was allocated to countries in which the population, GDP and unemployment indicators played a significant role in the methodology applied for assigning funding.

Throughout the study concerned with examining the indicators from the point of view of correlation dependencies for financial instruments, the author demonstrated considerable correlation values (close to nearly 1). Figures 8–11 demonstrates the correlation relations between selected satisfaction indicators. All the calculated correlations are statistically significant, so they reliably describe the relationships between individual satisfaction indicators. The relation between the indicator describing the financial side and the overall quality of life is highly correlated, as the correlation coefficient is equal to 0.949. In the correlation analysis of the value of financial instruments with the values of the obtained satisfaction indicators, no significant correlation was observed (see Figures 12–13). This indicates that the allocation of funds in individual instruments, i.e. REACT and RRT, was not dependent on the satisfaction indicators.

Further research should be conducted for other components of life satisfaction of citizens for those countries for which this support was relatively large and for those which received less than EUR 1 billion.

The assessment of the impact of EU funds on the economy of the EU Member States in crisis poses a difficult task. The authors are aware that in practice it is often difficult to indicate to what extent public intervention is the direct cause of eliminating the effects of the crisis, and thus whether it has

an impact on socio-economic development. When we interpret the results described in this study, we should be aware of the approach adopted in the model, i.e. an approach that shows a simplified image of the reality, which, by definition, examines only correlation and regression relationships, without explaining the cause-effect relations occurring in the economy.

It is worth emphasizing that the reaction of the European authorities was immediate. The funds from the available programmes were allocated to combat the immediate effects of the pandemic, and their distribution was made more flexible, and the Reconstruction Fund was introduced. The results derived from this research may have a practical decision-making aspect for the authorities at the European level, individual countries or regions of the EU responsible for the distribution of EU funds.

The economic and social position of the European Union on the global arena, as well as the already visible effects of the pandemic, form the determinants in favour of coordinated actions of the European authorities. The Member States face enormous challenges: funds from the 2014–2020 perspective allocated by the European Commission for the reconstruction of the European economy, spending over EUR 750 billion from the Next Generation Fund and over EUR 1 billion from the seven-year financial perspective 2021–2027, will this time continue to create new barriers that need to be eliminated quickly in order to achieve the best possible results in the recovery of the European economy while the EU funds are expedited.

References

- Adamowicz E., Dudek S., Konat G., Majchrzak K., Ratuszy E., Walczyk K. (2020), Koniunktura gospodarcza w Europie Środkowo-Wschodniej w dobie epidemii, *Raport SGH i Forum Ekonomicznego 2020*, <https://doi.org/10.33119/978-83-8030-386-7.2020>.
- Arbolino R., Di Caro P. (2020), Can the EU funds promote regional resilience at time of Covid 19? Insights from the Great Recession, *Journal of Policy Modeling*, 43(1), 109–126, <https://doi.org/10.1016/j.polmod.2020.10.001>.
- Baumeister Ch., Kilian L. (2015), *Forty years of oil price fluctuation: Why the price of oil may still surprise us*, Center for Financial Studies, Goethe University, 525, www.hdl.handle.net/10419/125831.
- Bedrunka K. (2020), Concepts of the sustainable development of the region, in: G. Królczyk, A. Król, O. Kochan, J. Su, J. Kacprzyk (eds.), *Sustainable Production: Novel Trends in Energy, Environmental and Materials Systems*, Springer, <https://doi.org/10.1007/978-3-030-11274-5>.
- Bedrunka K., Mach Ł., Kuczuk A. (2021), Identification and analysis of structural fund support mitigating the effects of the COVID-19 pandemic in the EU – a case study of health unit funding, *Energies*, 14(16), 1–15, <https://doi.org/10.3390/en14164976>.
- Bochenek A. (2012), Rozważania historyczno-semantyczne na temat kryzysów ekonomicznych, *Ekonomia*, 43(2), 147–159, https://doi.org/doi:10.12775/AUNC_EKON.2012.011.
- Boin A., Longe M., Luesinek M. (2020), Learning from the COVID-19 crisis: an initial analysis of national responses, *Policy Design and Practice*, 3(3), 189–204, <https://doi.org/10.1080/25741292.2020.1823670>.
- Cheval S., Mihai A.C., Goorgiadis T., Mathew H., Piticar A., Legates D.R. (2020), Observed and potential impact of COVID-19 pandemic on the environment, *International Journal of Environmental Research and Public Health*, 17, 5–10, <https://doi.org/10.3390/ijerph17114140>.

- Claessens S., Klose M.A. (2013), *Financial crises: explanations, types and implications*, IMF Working Paper, WP/13/28.
- Dudziński J. (2013), *Kryzys surowcowy, paliwowy i żywnościowy lat 70. XX wieku a boom surowcowy XXI wieku – podobieństwa i różnice*, *Zeszyty Naukowe Uniwersytetu Szczecińskiego, Studia i Prace Wydziału Nauk Ekonomicznych i Zarządzania*, 33.
- European Commission (2009), *Economic Crisis in Europe: Causes, Consequences and Responses*, *European Economy*, 7, https://ec.europa.eu/economy_finance/publications/pages/publication15887_en.pdf.
- European Commission (2010), *Europe 2020. A Strategy for Smart, Sustainable and Inclusive Growth*, <https://eur-lex.europa.eu/LexUriServ.do?uri=COM:2010:2020:FIN:EN:PDF>.
- Gaub F., Boswinkel L. (2020), *The geopolitical implications of the COVID-19 pandemic*, <https://doi.org/10.2861/526114>.
- Kangas R., Aarrevaara T. (2020), Higher education institutions as knowledge brokers in smart specialisation, *Sustainability*, 12, 3044, <https://doi.org/10.3390/su12073044>.
- Kundera E. (2015), Ład ekonomiczny po wielkim kryzysie gospodarczym w koncepcji Stanisława Grabskiego, *Miscellanea Historico-Iuridica*, 14(1), <https://doi.org/doi:10.15290/mhi.2015.14.01.18>.
- Mach Ł., Bedrunka K., Dąbrowski I., Frącz P. (2021), The relationship between ROP funds and sustainable development – a case study for Poland, *Energies*, 14(9), 1–19, <https://doi.org/10.3390/en14092677>.
- OECD (2020), *The territorial impact of Covid -19: managing the crisis across level of government*, www.oecd.org/coronavirus/policy-responses/the-territorial-impact-of-covid-19-managing-the-crisis-across-levels-of-government-d3e314e1/.
- Ponsiglione C., Quinto I., Zollo G. (2018), Regional innovation systems as complex adaptive systems: the case of lagging European regions, *Sustainability*, 10, 19, <https://doi.org/10.3390/su10082862>.
- Ryszkiewicz A. (2012), Wybrane instrumenty polityki gospodarczej Unii Europejskiej w zakresie przezwyciężenia skutków kryzysu gospodarczego, *Zeszyty Naukowe*, 34, 5–29 https://ssl-kolegia.sgh.waw.pl/pl/KGS/publikacje/Documents/ZN_34.pdf.
- Sapir A. (2020), Why has COVID-19 hit different European Union economies so differently?, *Policy Contribution*, 18, Bruegel.
- Schmidhuber J., Qiao B. (2020), *Comparing Crises: Great Lockdown versus Great Recession*, Food and Agriculture Organization of the United States, <https://doi.org/10.4060/ca8833en>.
- Serafy S.E. (1991), The environment as capital, in: R. Costanza (ed.), *Ecological Economics: The Science and Management of Sustainability*, Columbia University Press.
- Staniszewski R. (2020), Polish economy in quarantine-analysis of economic and social indicators as well as formal and legal solutions related to counteracting COVID-19, <https://doi.org/10.13140/RG.2.2.12309.55524>.
- Szczepański M. (2020), Epidemia koronawirusa jako wydarzenie typu “czarny łabędź”, *Przegląd Ekonomiczny*, 20, 8–12, <https://docplayer.pl/197944374-Pandemia-skutki-ekonomiczne-i-spoeczne.html>.
- van der Ven H., Sun Y. (2021), Varieties of crises: comparing the politics of COVID-19 and climate change, *Global Environmental Politics*, 21(1), 13–22, https://doi.org/https://doi.org/10.1162/glep_a_00590.
- World Economic Forum (2020), *The deadly link between Covid-19 and air pollution*, <https://www.weforum.org/agenda/2020/04/the-deadly-link-between-covid-19-and-air-pollution/>.

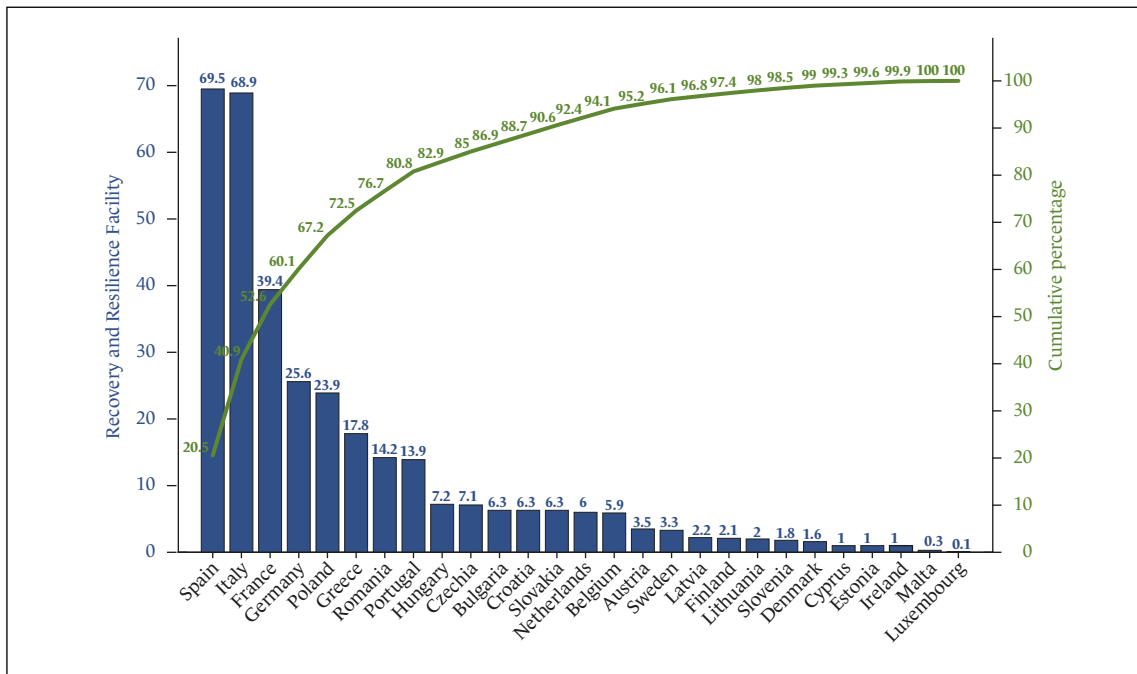
Appendix

Table 1
Allocation of EU funds for period 2021 to 2027

EU budget	Allocation for 2021–2027 (EUR billion)
Multiannual Financial Framework, EU budget over 7 years	1 074.3
Next Generation Fund EU includes several instruments, namely:	750.0
Recovery and Resilience Facility – RRF grants	390.0
REACT EU	50.4

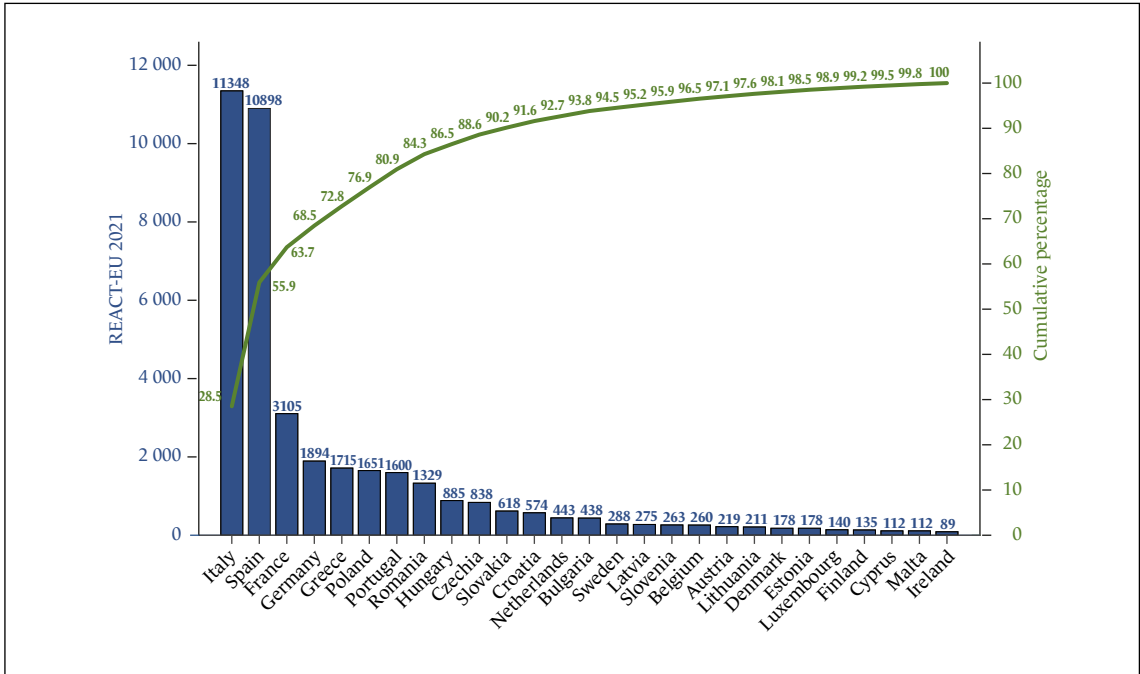
Source: study results based on data from the EU Council Regulations that specify the multiannual financial framework for 2021–2027 of 16 December 2020, <https://data.consilium.europa.eu/doc/document/ST-9971-2020-INIT/pl/pdf> of 26 March 2021.

Figure 1
Values of support for 27 EU countries under the Recovery and Resilience Facility



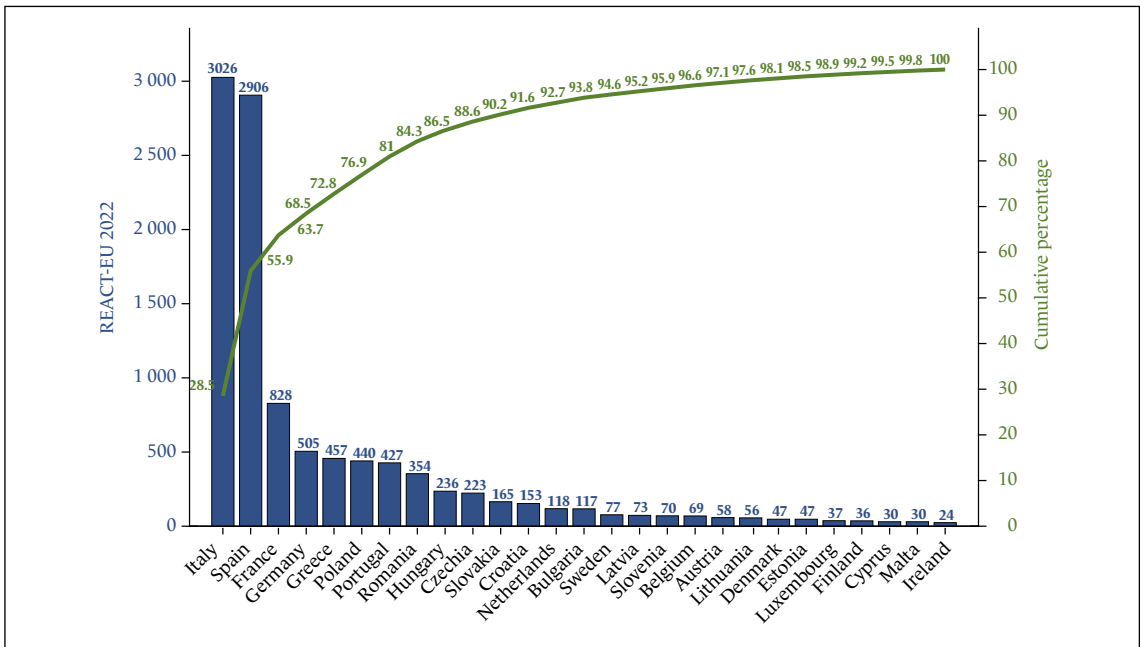
Source: own study.

Figure 2
Support projected within REACT-EU 2021



Source: own study.

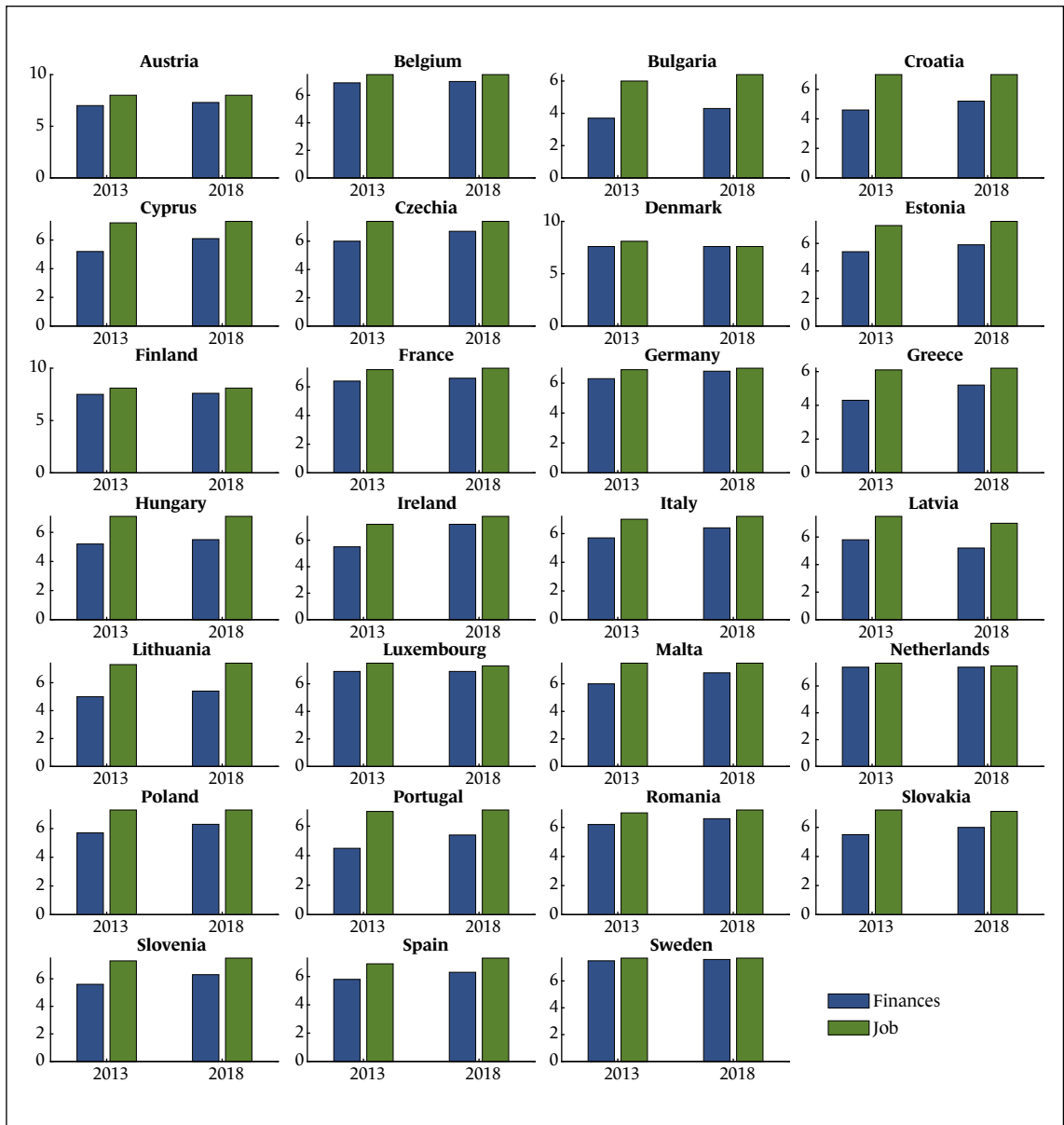
Figure 3
Support projected within REACT-EU 2022



Source: own study

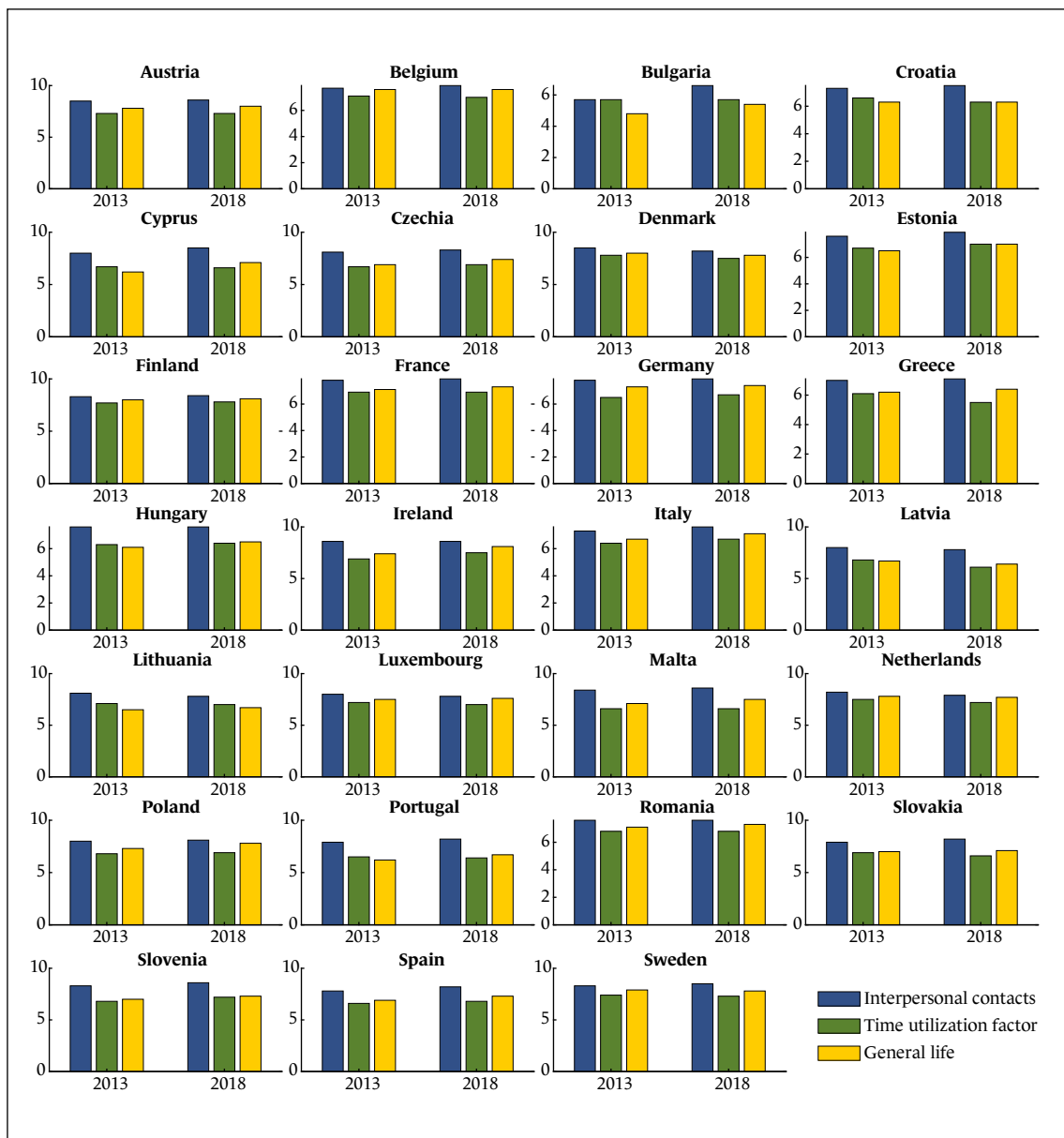
Figure 4

Satisfaction indicators (life quality factor) for 27 EU members in the area: finances and job



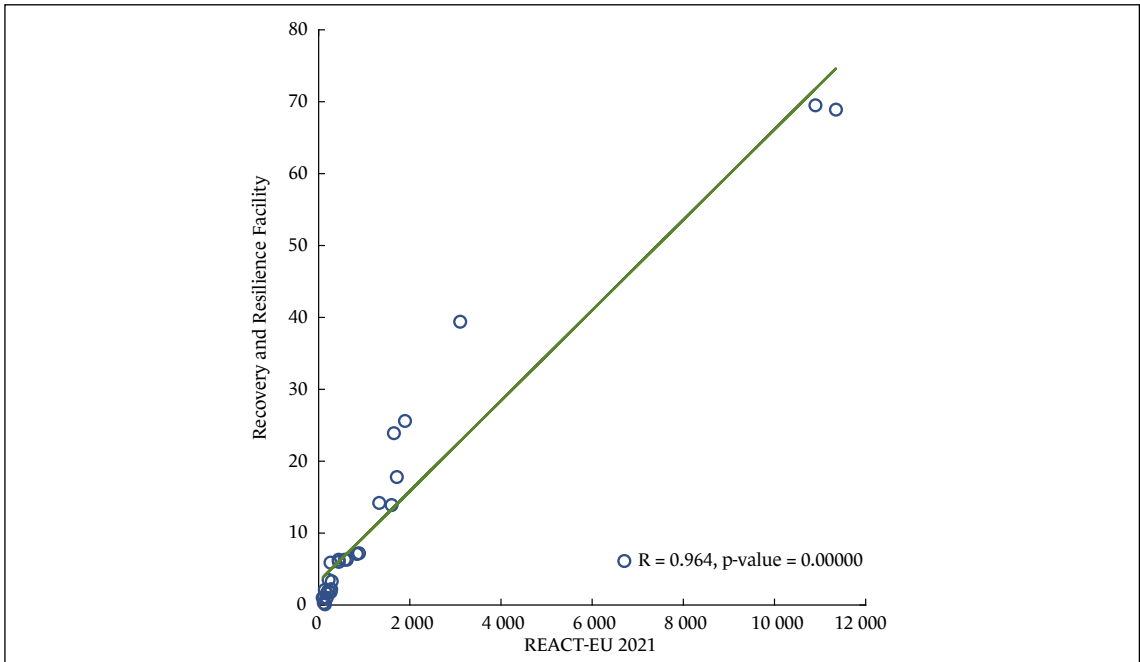
Source: own study.

Figure 5
Satisfaction indicators (life quality factor) for 27 EU members in the areas: interpersonal contacts and time utilization factor



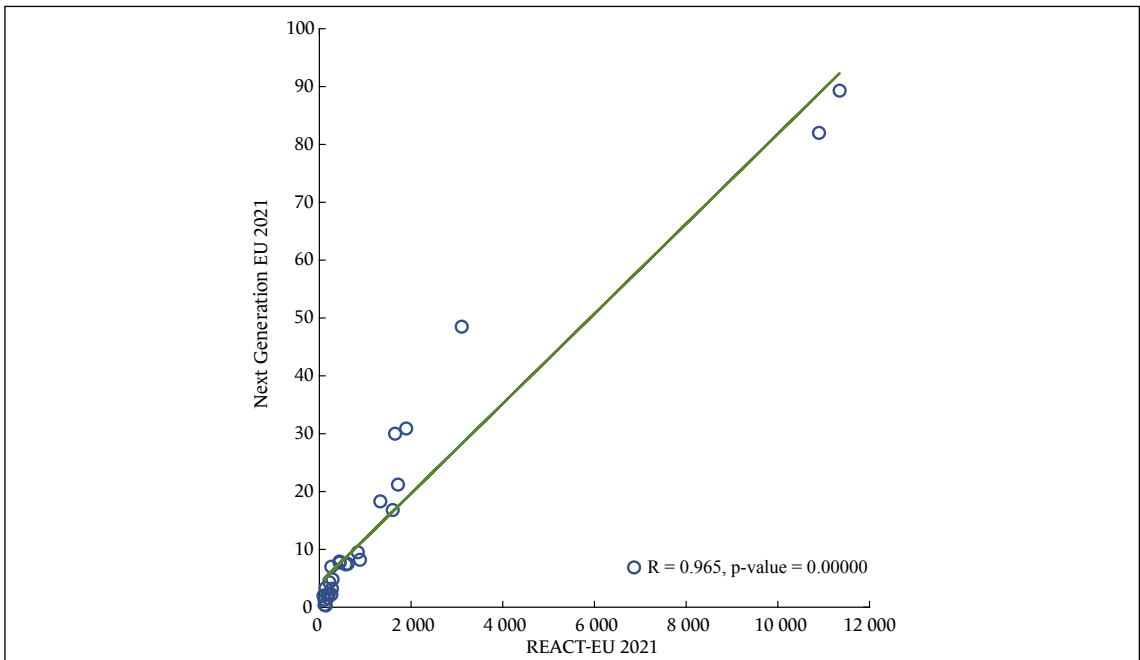
Source: own study.

Figure 6
Correlation dependency between REACT-EU and RRF



Source: own study.

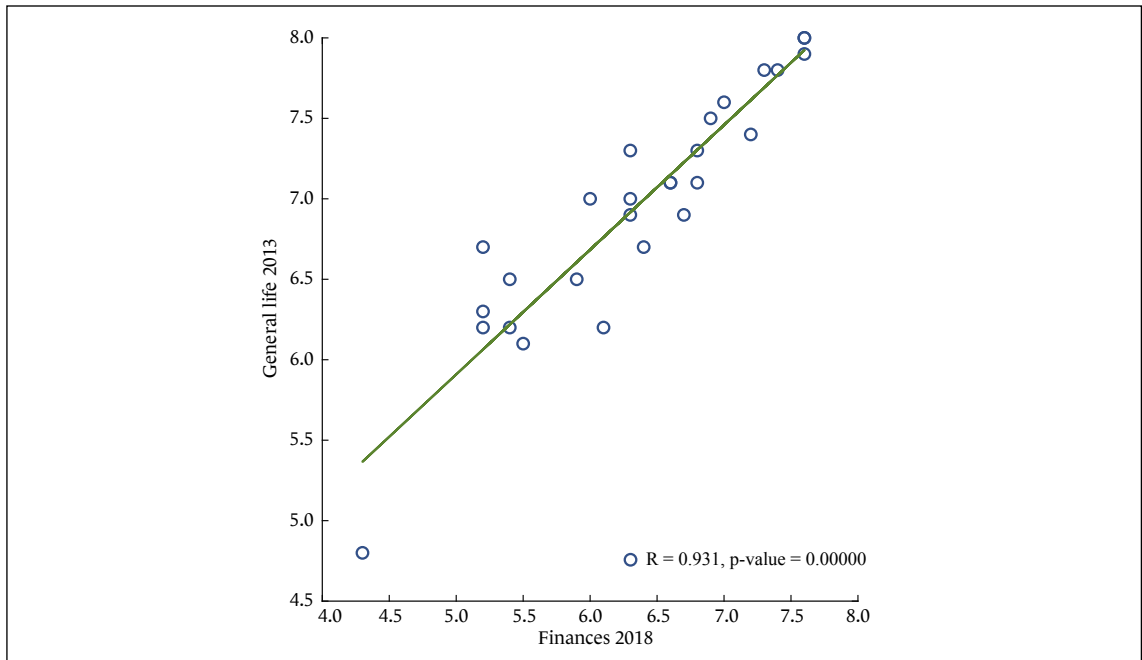
Figure 7
Correlation dependency between REACT-EU and Next Generation 2021



Source: own study.

Figure 8

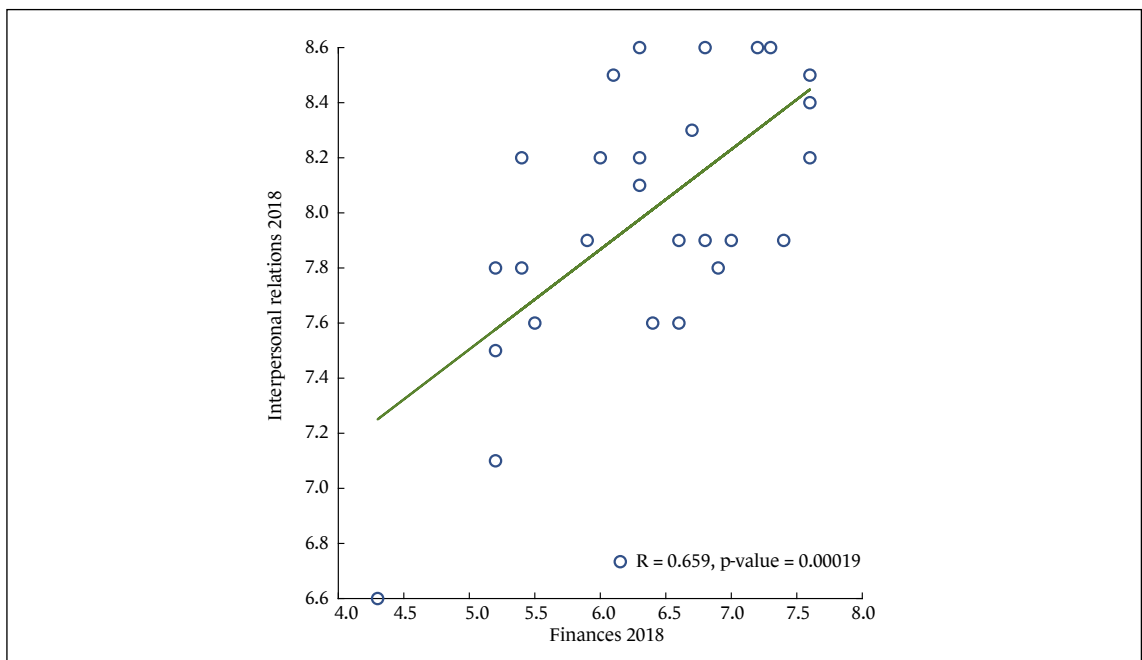
Correlation dependency between general life and finances



Source: own study.

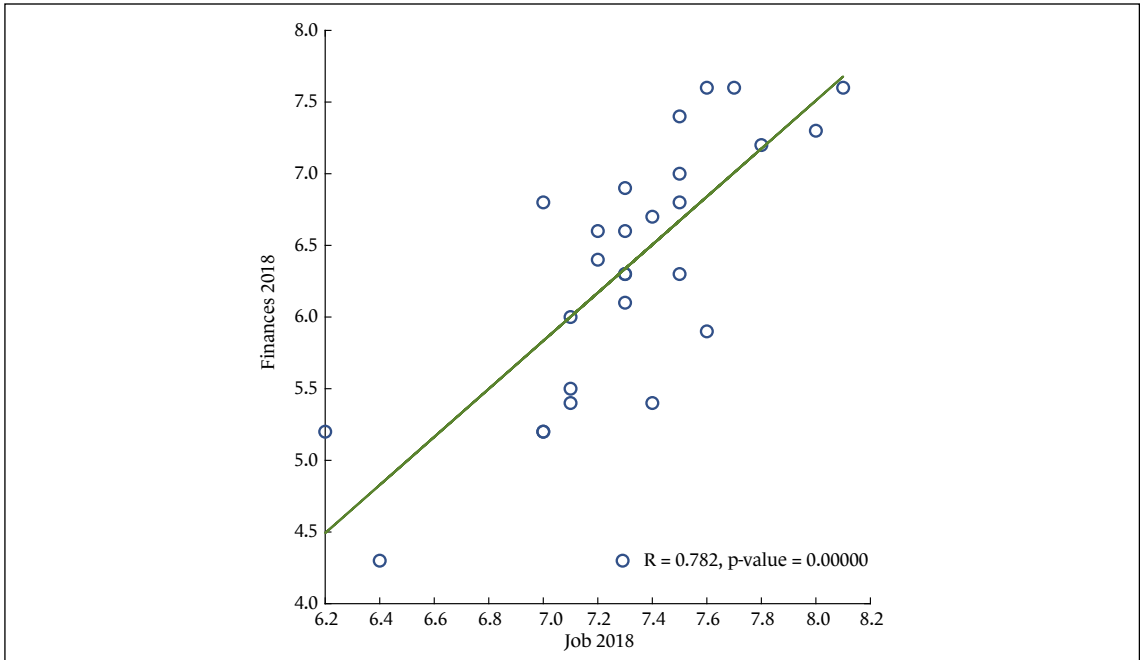
Figure 9

Correlation dependency between interpersonal relations and finances



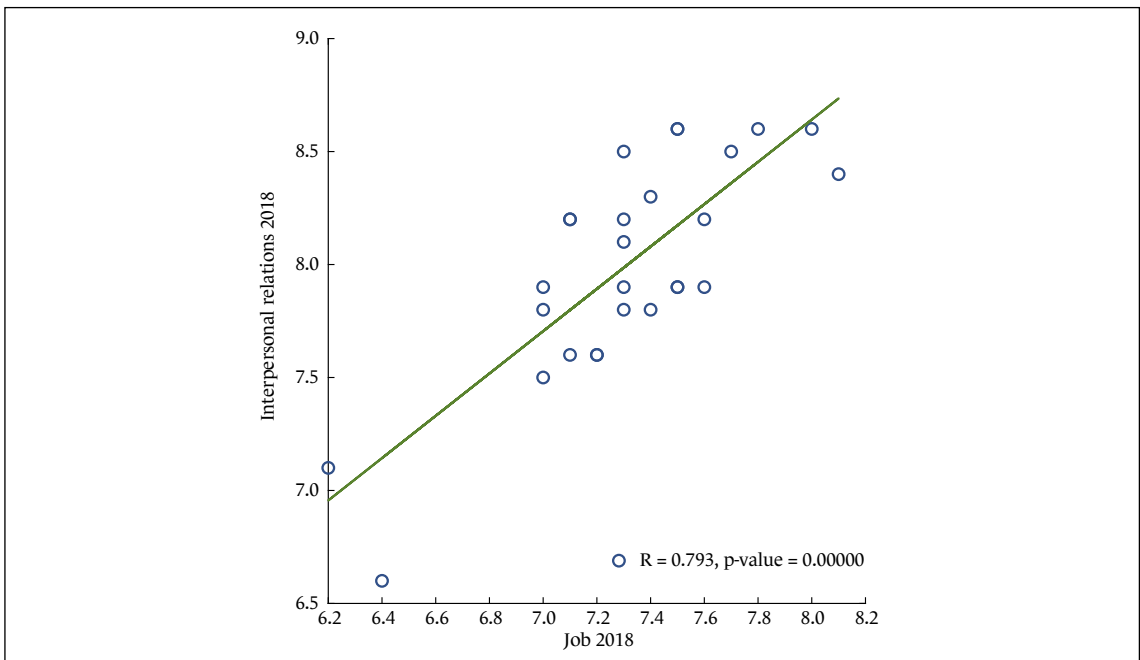
Source: own study.

Figure 10
Correlation dependency between finances and job



Source: own study.

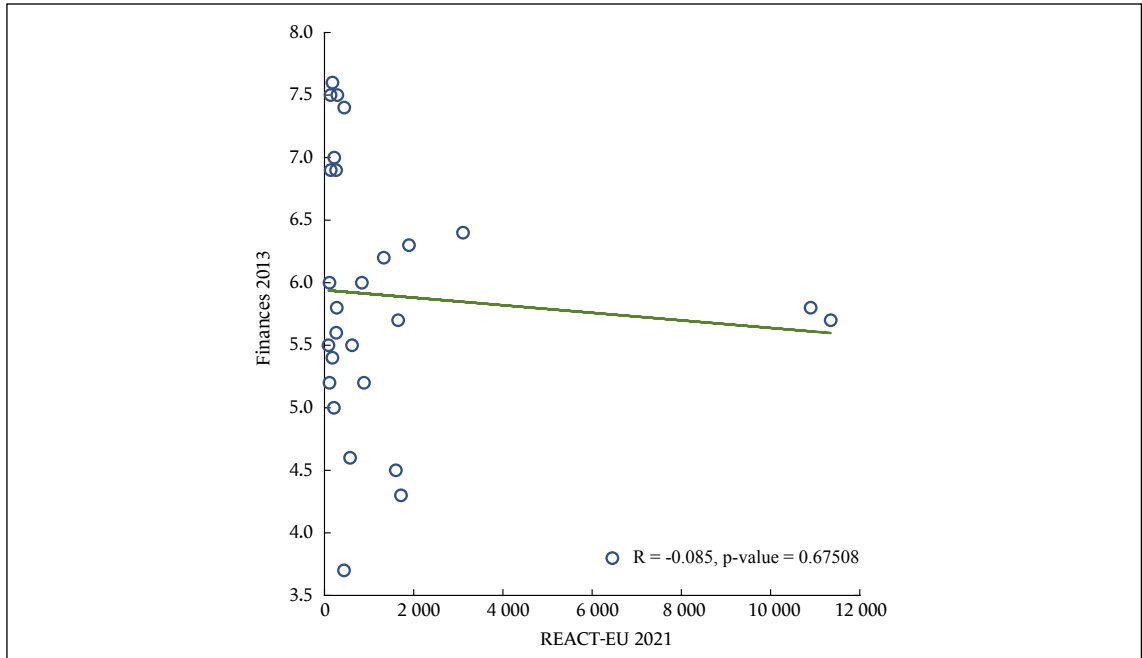
Figure 11
Correlation dependency between interpersonal relations and job



Source: own study.

Figure 12

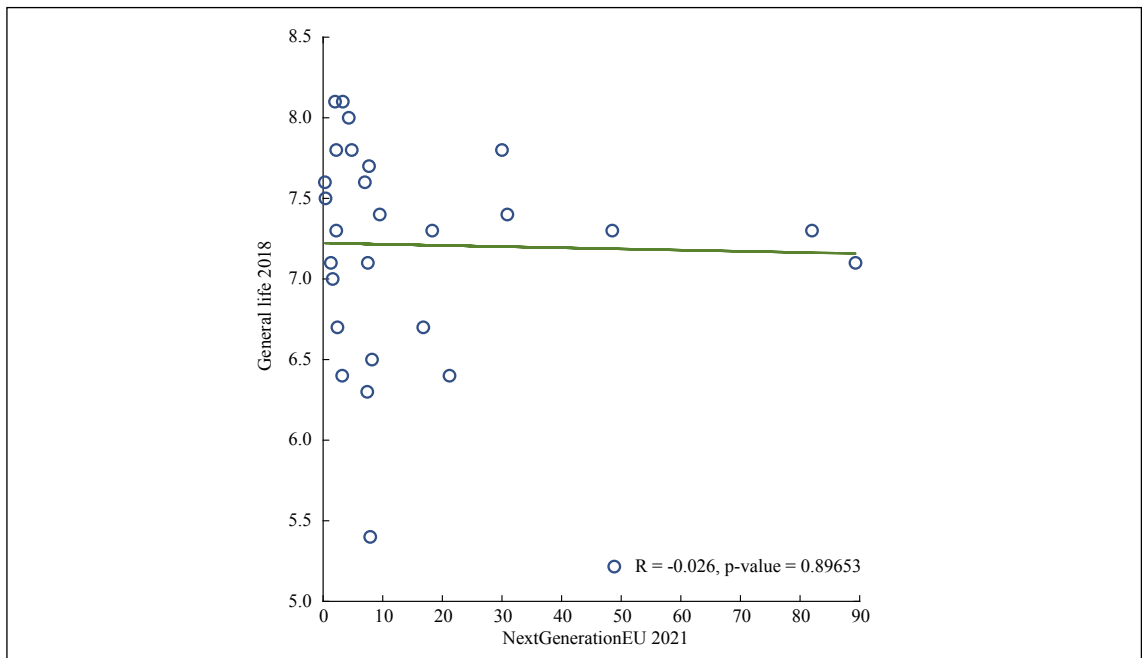
Correlation dependence between finances and REACT-EU



Source: own study.

Figure 13

Correlation dependence between general life and Next Generation EU



Source: own study.

Rekomendacja zmiany kryteriów podziału funduszy UE w warunkach kryzysów, w tym kryzysu pandemicznego COVID-19

Streszczenie

Celem artykułu jest zaproponowanie zmodyfikowanego algorytmu podziału funduszy Unii Europejskiej w warunkach kryzysowych, wywołanych asymetrycznymi szokami popytowymi i/lub podażowymi. Modyfikacja ta sprowadza się do uwzględnienia w procedurze podziału środków dodatkowego czynnika, którym powinien być wskaźnik jakości życia (*satisfaction indicator*).

W przeprowadzonym badaniu przeanalizowano kryteria podziału funduszy unijnych przeznaczonych na walkę z COVID-19 między poszczególne kraje członkowskie Wspólnoty. Następnie uzależniono dostęp do nich od wskaźnika jakości życia mieszkańców w jego czterech wymiarach: finanse (wynagrodzenie), praca (zatrudnienie), kontakty społeczne oraz korzystanie z czasu wolnego. W artykule sformułowano następujące pytanie badawcze: „Czy wskaźnik jakości życia w określonych wymiarach dla społeczeństw 27 krajów członkowskich UE powinien być brany pod uwagę przy opracowywaniu przyszłej metodyki alokowania funduszy europejskich?”

Przeprowadzono weryfikację następujących hipotez:

H1 – Wysokość europejskich środków publicznych dla poszczególnych krajów członkowskich powinna być uzależniona od wskaźnika jakości życia, a także od rodzajów i intensywności globalnych szoków asymetrycznych. Wskaźniki opisujące sytuację społeczno-gospodarczą kraju są bowiem niewystraszające.

H2 – Ludność krajów członkowskich UE bardziej ceni sobie pracę niż płacę, a zatem preferowana jest stabilność życia (zatrudnienie), a nie wysokość wynagrodzenia.

H3 – W zakresie kontaktów społecznych oraz korzystania z czasu wolnego w krajach członkowskich UE więzi społeczne są wyżej cenione niż czas wolny.

W artykule przedstawiono analizę podziału środków europejskich opartą na danych liczbowych, natomiast wskaźnik jakości życia zbadano, wykorzystując metodę korelacji i regresji. Następnie, stosując metodę indukcji, powiązano dane liczbowe z różnymi wymiarami wskaźnika jakości życia. Wyniki badań pokazują, że trzy kraje – Hiszpania, Włochy i Francja – w ramach Instrumentu na rzecz Odbudowy i Zwiększenia Odporności (Recovery and Resilience Facility – RRF) otrzymały ponad 50% wartości unijnych środków publicznych przeznaczonych na walkę ze skutkami COVID-19. W przypadku instrumentu REACT EU (Recovery Assistance for Cohesion and the Territories of Europe) było to aż 64%.

Z kolei jeśli chodzi o wskaźnik jakości życia, to ludność krajów UE przykłada większą wagę do posiadania pracy niż wysokości wynagrodzenia. Bardziej ceni zatem stabilność niż korzyści finansowe. Z porównania dwóch pozostałych wymiarów wskaźnika jakości życia, tj. kontaktów interpersonalnych i czasu wolnego, wynika, że w krajach Unii więzi społeczne są wyżej cenione niż możliwość korzystania z wolnego czasu.

Autorzy rekomendują, by przy kształtowaniu przyszłych kryteriów podziału funduszy europejskich wysokość wsparcia z europejskich środków publicznych dodatkowo uzależnić od wskaźnika jakości

życia mieszkańców oraz czasu, rodzaju i intensywności zewnętrznych szoków asymetrycznych o charakterze globalnym (np. pandemia COVID-19). Ograniczenie kryteriów jedynie do wskaźników powiązanych z demografią i sytuacją społeczno-gospodarczą w dobie globalizacji szoków zewnętrznych jest niewystarczające.

Słowa kluczowe: fundusze unijne, kryzys ekonomiczny, pandemia, szoki zewnętrzne, wskaźnik jakości życia