



## JRC TECHNICAL REPORT

# Measuring and understanding individual resilience across the EU

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2022



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JRC130485

EUR 31264 EN

PDF ISBN 978-92-76-58446-9 ISSN 1831-9424 [doi: 10.2760/434622](https://doi.org/10.2760/434622) KJ-NA-31-264-EN-N

Luxembourg: Publications Office of the European Union, 2022

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How to cite this report: Joossens, E., Manca, A. R., Zec, S., *Measuring and understanding individual resilience in the EU*, Publications Office of the European Union, Luxembourg, 2022, doi:10.2760/434622, JRC130485.

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## **Abstract**

Recent events have underlined the importance of the ability to cope with shocks and societal transitions. Within this context, our paper proposes a novel strategy to build an indicator of individual resilience and to explore its determinants. The unique data of this exercise, combined into a novel Individual resilience index, allows us to compare resilience at the individual level within the European Union and to understand its distribution.

The results provide a deeper understanding of the characteristics of more resilient people in comparison to less resilient ones, and it highlights important differences in terms of resilience across the EU countries. Heterogeneity in resilience is explained by individual characteristics such as age, education and social status, but the country context matters: resilient people thrive in more prosperous places. Results show how fostering individual resilience is not only beneficial in terms of achieving positive life outcomes and wellbeing, but it promotes community inclusiveness and social cohesion.

## **Acknowledgements**

The authors would like to thank Péter Benczúr, Jessica Cariboni, Béatrice d'Hombres, Etleva Gjonça, Stefano Filauro, Virmantas Kvedras, Julia Le Blanc, Bálint Menyhért, Andrea Pagano, Alina-Mihaela Sandor and Sylke Schnepf for their insightful comments and support. The report has also benefited from the comments received at the presentation to DG EMPL and at the ISQOLS Conference in Granada, Spain 2019. Many thanks for the review by the JRC editorial board, as well as other JRC colleagues and seminar participants for their comments and useful discussions.

## Executive summary

- The report presents a new approach to measuring individual resilience. Understanding the resilience of individuals and its determinants is the first step towards enhancing the mechanisms that strengthen people's ability to cope with shocks. Moreover, a resilient society has its roots in the strength of its individuals. The unique data of this exercise, combined into a novel Individual resilience index, allows us to compare resilience at the individual level within the European Union and to understand its distribution.
- The framework considered to measure individual resilience includes three main factors: the ability to bounce back after difficulties, personal attitude and the ability to cope. The combination of all three components allows capturing the resilience of individuals, intended as an underlying latent trait that drives the resilience behaviour.
- The methodology was built using the Special Eurobarometer 88.4 on fairness, inequality and inter-generational mobility. The survey has the exceptional feature of including microdata covering 28 countries (27 member states and the United Kingdom) allowing to get insights on resilience across the EU.
- We identify underlying socio-economic features and country characteristics that may be associated with resilience. As such, these could indicate entry points for policies to increase countries' resilience by creating stronger individuals.
- The exercise has led to the following results and conclusions.
  - The resilience index averaged by Member States shows a heterogeneous European Union. Individuals living in Denmark, Finland, Sweden, Luxembourg and the Netherlands appear to be the most resilient, while the south-eastern block appears to be the least resilient.
  - Age, education and socio-economic background play an important role in resilience, while the area of residence and neighbourhood seem to have less impact.
  - Variance decomposition shows that most of the variation in resilience score comes from within-country variation (around 84%).
  - Focusing on the young Europeans, they exhibit overall higher levels of resilience in comparison to their older compatriots, although their coping capacities are lower. However, these differences vary across the EU.
  - The role of education cannot be neglected: the higher the educational attainment of a person, the lower the contribution of resilience to positive life outcomes (such as life satisfaction).
  - A group of people expressed an extreme vulnerability in terms of their ability to cope in case of an income shock. While more than 10% of Bulgarians, Greek, Hungarians Italians, Portuguese, Romanians and Slovak do not see any way how to cope, only a very few Dutch, Germans, Luxembourgers and Swedes seem to struggle with this.
  - Individuals are more resilient in those countries where gender equality balance and active aging are high, where people are more engaged in voluntary activities, where the quality and trust in institutions is higher and with less financial indebtedness.
  - The analysis, finally, confirms that more resilient individuals contribute to better community values, stronger ties and more active societal engagement and participation.

## 1. Introduction

No life can be lived without challenges, adversities and falls<sup>1</sup>, but the ability of people to overcome the difficulties can make a huge difference in terms of their wellbeing. This ability of individuals to face adverse life events has been intriguing to a vast community of psychological researchers, since the early '70<sup>2</sup>, who have tried to uncover why certain individuals are more resilient than others. Resilience has been described as an ability to recover from or adjust to distress and changes (Meredith et al., 2011). Individual resilience is considered the opposite of vulnerability (Waugh and Koster, 2015). When individuals are exposed to risks and substantial stress, they can still function positively and recover from setbacks (Rutter, 2012) or can even flourish when challenged (Ryff and Singer, 2003). This latter conceptualisation is in line with the Commission's reflections, where resilience is not intended only as an ability to recover from the shock, but also as an ability to "bounce forward" and use challenges as windows of opportunity (Manca et al., 2017).

So what makes an individual thrive despite difficulties? Literature suggests that resilient behaviour depends on individual capacities (Connor and Davidson, 2003), but also on how individuals cope in terms of the access and use of their resources (Meadows et al., 2015). Examples of individual capacities were an easy temperament, good self-esteem, planning skills, and a supportive environment (Fletcher and Sarkar, 2013). Individuals are not passive recipients of the environment but they do interact triggering a dynamic and reciprocal process, where social support and family congruence play an important role (Wagnild and Young, 1993). Also, the nature of the shock itself plays an important role, and the way individuals react is a result of interaction between inter and intrapersonal factors, and the socio-economic environment (Tusaie and Dyer, 2004; Waugh and Koster, 2015).

Although there might be an agreement on what individual resilience is about, there have been several different proposals on how to capture and measure resilience. Some focus more on measuring hardiness and are related to the pathological aspect of resilience (Waysman et al., 2001) others relate to perceived stress (Cohen et al., 1983), while others focus on aspects of well-being and health (Martin et al., 2015).

The most commonly used scales to measure psychological resilience rely on self-reported information. They are specifically designed to conduct studies on smaller groups of individuals to assess their reaction to a narrowly defined shock or trauma. This is the case for the Connor-Davidson Resilience Scale (CD-RISC), which aims at measuring the resilience of a clinical population as a response to trauma or post-traumatic stress disorder (Connor and Davidson, 2003). The Resilience Scale for Adults (RSA), developed by Friborg et al. (2003) uses a self-reporting scale to measure whether protective resources such as family support, psychological disposition and external support have a positive impact on the development of psychiatric disturbances. The Brief Resilience Scale (BRS) analyses the recovery phase after distress and studies those determinants which foster the ability to bounce back from distressful situations. It employs a self-rating questionnaire aimed at measuring an individual's ability to "bounce back from stress" (Smith et al., 2008). More recent work examines the relationship between potential resources for resilience and resilience itself (Smith et al., 2013), where the resources include active coping, mindfulness, mood clarity, optimism, purpose in life, spirituality, positive relations with others, and social support.

This study proposes a broader and more holistic approach for measuring individual resilience across EU countries. The unique data of this exercise, combined into a novel Individual resilience index, allows us to compare resilience at the individual level within the European Union and to understand its distribution. This is, up to our knowledge, the first attempt to provide large-scale evidence about the resilience of individuals across the EU and to frame it within the given socio-economic context. The goal of this research is: (i) to build a novel indicator for individual resilience (ii) to explore the socio-economic determinants of individual resilience within the EU; (iii) to identify and understand the most vulnerable groups, (iv) to understand what are the features of the countries where people exhibit higher resilience characteristics.

Why should we measure resilience? Resilient individuals are central to building resilient communities and wider socio-economic systems. Within a wider ambition to embrace resilience thinking in policy-making, several EC documents point to the central role of individuals in building community, region and countries' resilience. Already back in 2012, the Commission recognized the role of resilience in sustaining progress<sup>3</sup>. In the first Commission's conceptual framework on resilience (Manca et al. (2017)), the authors reflect on the idea of individual resilience

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<sup>1</sup> Bonanno and Mancini (2008)

<sup>2</sup> See for instance the review in Fletcher and Sarkar (2013)

<sup>3</sup> COM(2012) 586 final ([https://ec.europa.eu/echo/files/policies/resilience/com\\_2012\\_586\\_resilience\\_en.pdf](https://ec.europa.eu/echo/files/policies/resilience/com_2012_586_resilience_en.pdf))

as a building brick of the community/system rebound capacity in facing crises and challenges. A resilient society has its roots in the strength of its individuals, as explained in the first of the six foundations, in Lerch (2017). The recent Covid-19 crisis made evident the importance to settle the seeds of resilience at the societal level to harness individuals and countries amidst future challenges, as reported by the Commission's Strategic Foresight Report<sup>4</sup>.

## **2. Measuring individual resilience: the methodological approach**

We start from the assumption that resilience is both an intrinsic personal trait as well as the ability to mobilize resources in times of need. Based on this, we propose a measurement strategy based on the combination of the three elements closely linked to resilience, partially building upon the methodology developed by Connor and Davidson (2003). The first one refers to the self-perceived ability to bounce back from hardship in life. The second component relates to personal attitude (also referred to as personal traits). The third dimension highlights the availability of coping strategies related to potential economic distress. It is important to note that we do not measure resilience in terms of the response to an actual shock/life adversity, but the approach is based on a hypothetical scenario and a set of personal characteristics that are most commonly associated with resilient behaviour.

There are several contributions to our work in this domain. First, we provide a holistic overview of resilience by not considering resilience only as an intrinsic personal trait but also as an ability to mobilize resources in times of need. We also give a prominent role to the self-perceived ability to recover. Third, we extend this analysis to a cross-national context, providing a picture of individual resilience in 28 EU countries, which is the first attempt of its kind.

### **2.1. Ability to bounce back**

Within the field of psychology, individual resilience has also been defined as *an individual's stability or quick recovery (or even growth) under significant adverse conditions*" (Leipold and Greve, 2009), or – to put it in other terms – to bounce back from stress (Smith et al., 2010). The Brief Resilience Scale, tested and widely used in clinical practice, includes questions that reveal self-perceived ability to recover from a stressful situation both in terms of necessary recovery time and the hardness of the recovery (Smith et al., 2013).

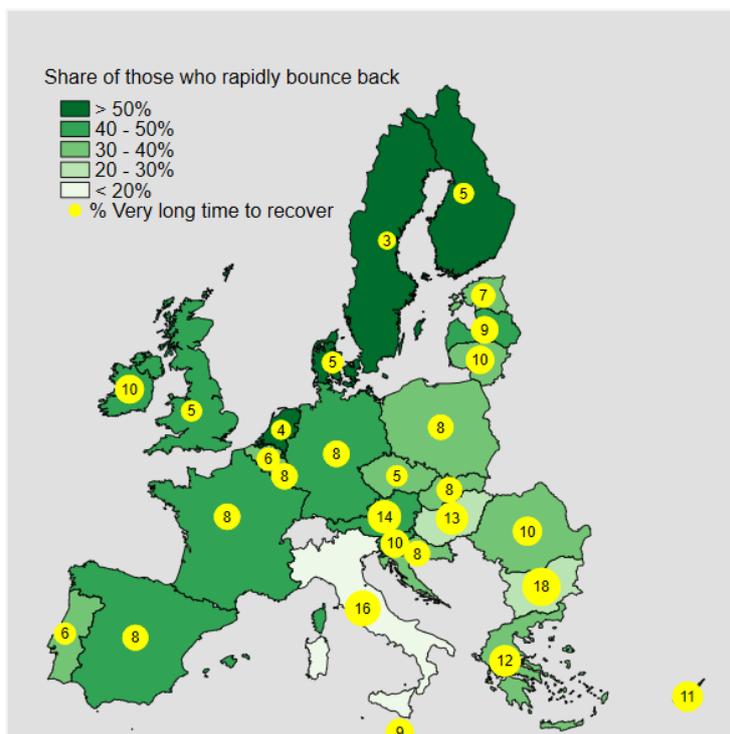
Even beyond the psychological research, there are examples of measuring bounce back capacity from an international perspective like the European Social Survey (2006 and 2012) and the European Quality of Life Survey (2016). The Eurobarometer 88.4 (European Commission (2017)) replicates the examples from the ESS and EQLS and captures the ability of individuals to bounce back from distress through the question *When things go wrong in my life, it generally takes me a long time to get back to normal*. (see Annex 7.1 for more details).

The ability to bounce back is the first component of our indicator of Individual resilience. It points directly to one's perception of own ability to recover, and it requires calling upon own past experience. In Figure 1 we can observe how European citizens respond to the question about their ability to bounce back after difficulties.

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<sup>4</sup> [https://ec.europa.eu/info/strategy/strategic-planning/strategic-foresight/2020-strategic-foresight-report\\_en](https://ec.europa.eu/info/strategy/strategic-planning/strategic-foresight/2020-strategic-foresight-report_en)

Figure 1: Self-perceived ability to recover after difficulties across the EU



There is substantial heterogeneity among the Member States in the way people respond to this question: people are least likely to recover rapidly after difficulties in Italy, Bulgaria, Poland and Hungary while in Sweden, Denmark, Finland and the Netherlands they are more likely to recover rapidly (see Figure A1 in Annex 7.2).

When considering polarized positions, strong agreement vs strong disagreement with the bounce back, one can see that for Sweden, people are 8 times more likely to be strongly confident of bouncing back after difficulties, than not. This position is in contrast with Italy, where a person is 8 times less likely to perceive ease in recovery, than not.

Moreover, Austria presents a particular case where more people feel they can recover rapidly (responding disagree and strongly disagree), but at the same time, there is a high proportion of those who respond strongly agree that it takes them a long time to bounce back (see the yellow circles in Figure 1).

## 2.2. Attitude

Attitude is a characteristic of a person which results from the interaction of personal, intrapersonal and environmental factors and is highly related to individual resilience (Waugh et al., 2008). It can be understood as a set of cognitive factors such as optimism, purpose in life or belief system based on the essence of cohesive life (Schweizer et al., 1999). The second component of the individual resilience indicator focuses on these cognitive factors that help individuals to thrive despite adversity.

Over the last twenty years, practitioners and academics relied on many different scales to measure the personal traits of resilient individuals (Wagnild and Young, 1993). Some focus more on measuring the relationship between hardiness and positive changes (Waysman et al., 2001) others relate to perceived stress (Cohen et al., 1983), while others focus on aspects of well-being and health (Martin et al., 2015). Even though the scales are adapted to the examination of specific case studies and are typically based on self-reported questions, they tend to present a common part related to beliefs, personal traits and engagement (Salisu and Hashim, 2017) which we capture within this component of the individual resilience measure.

In this work, we have built upon the existing most commonly used scales such as the RSA developed by (Friborg et al., 2003) and the Connor-Davidson Resilience (CD-RISC) scale (Connor and Davidson, 2003). Personal traits most commonly found to be linked to individual resilience were identified in the pan-European Eurobarometer survey (European Commission, 2017). The motivation for the inclusion of specific elements of personal traits is as follows.

- The inclusion of the question on *loneliness* finds its base in the RSA which considers the importance of family support and cohesion as one determinant of resilience (Friborg et al., 2003).
- *Optimism* can be defined as the general attitude toward future expectations, and there is a direct and positive link between optimism and resilience (Smith et al., 2010); Panchal et al., 2016).
- In the literature, *self-esteem*<sup>5</sup> which deals with the duality of feeling competent to face challenges and worthy of respect from others is one of the components of resilience (Connor and Davidson, 2003; Jindal-Snape and Miller, 2008; Reyes et al., 2019) .
- *Physical fitness* and *physical activity* are strongly related to resilience by inducing positive psychological and physiological benefits, mitigating stress reactivity and protecting against diverse behavioural and physical consequences of stressful events (Silverman and Deuster (2014)). Self-perceived health here is intended as a proxy of physical fitness and an important determinant of adult resilience, as also found in Friborg et al. (2003) and Solcova et al. (2017).
- *Locus of control* is another important driver of resilience and it determines how strongly people believe they have control over the experiences that affect their lives (Rotter, 1966). Kronborg et al. (2017) use a longitudinal study to show that locus of control is fundamental in explaining resilience in students: individuals with an internal locus of control, that believe to be in control of their life, have shown better resilience.
- Cohn et al. (2009) discusses extensively how positive emotions build psychological resiliency, which led to the inclusion of the question on *happiness* – not as an outcome, but as a driving element of resilience.
- *Fairness* perception is an important aspect of building resilient communities<sup>6</sup>. Psychological research found that children who were able to overcome difficulties were those who felt treated *fairly* by their teachers (Cohen, 2013). Although fairness perception is not strictly speaking a personal trait, it accounts for the interaction between personal and contextual factors, that influence resilience.
- *Trust* is another important component of resilience. Community resilience is built on social capital which is grounded on interpersonal trust (Putnam, 2000; Poortinga, 2012). Although the ability to trust may not be strictly speaking a personal trait, it accounts for the interaction between personal and contextual factors, that influence resilience.

The selection of the variables discussed so far is the result of a compromise between the theory as discussed above and the availability of data in the Eurobarometer 88.4. One important consideration is the fact that the survey was not explicitly designed to measure resilience, but instead it was designed with a strong focus on intergenerational mobility, inequality and fairness, hence there was no possibility of fully comply with the scales used in the literature.

The specific questions and answer scales finally used within this work are included in Annex 7.1. In Figure 2, we can see an overview of these personal traits across the European Union.<sup>7</sup>

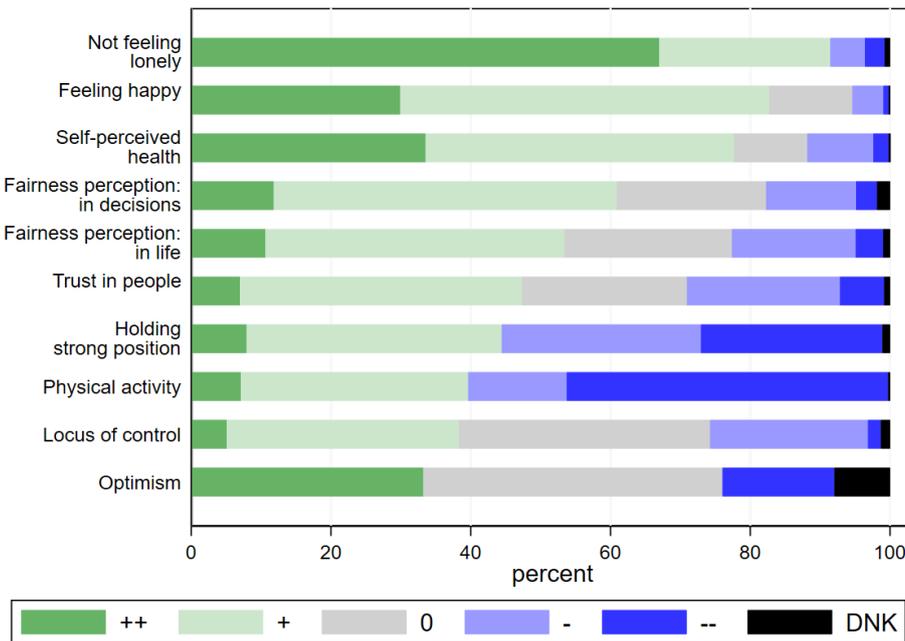
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<sup>5</sup> We used a question from the Eurobarometer related to the ability to hold a strong position as proxy of self-esteem.

<sup>6</sup> [http://www.cedarscenter.com/resources/Community\\_Capacity\\_to\\_manage\\_change--Resilience\\_approach\\_to\\_social\\_assessment.pdf](http://www.cedarscenter.com/resources/Community_Capacity_to_manage_change--Resilience_approach_to_social_assessment.pdf)

<sup>7</sup> Most Eurobarometer questions included have responses on a 5 point Likert scale. Loneliness, sport and optimism are measured on a 4 points scale. Locus of control is a build variable computed as the difference between working hard and being lucky. It provides a measurement of whether a person feels her/his life depends on her/his own actions more than from external uncontrolled factors as in Rotter (1966).

Figure 2: Distribution of elements of individual attitudes at EU level



Note: Details of categories of reply are reported in Annex 7.1. The order of the indicator reflects the frequency in terms of positive answers. ++ indicates most positive answer, + indicates positive answer, 0 indicates uncertainty, - indicates negative answer, -- indicates most negative answer.

Less than 10% of Europeans seem to suffer from persistent loneliness (being lonely most or all of the time), with Bulgaria having the highest percentage of people feeling lonely (24%) (see TableA2 in Annex 7.2 for detailed country distribution of percentages). A high share of Europeans claims to be mostly happy (83%) and have a rather good health status (78%). Irish respondents are the happiest (97%) and healthiest (92%) while these percentages are much lower in Romania, where only 59% of people feel mostly happy. Overall 40% of Europeans declared they practise sport at least with some regularity while Finnish (69%), Swedish (67%) and Danish (67%) result to be most physically active. Roughly 60% of the Europeans have a positive perception of fairness, slightly more when decisions are taken into consideration than when talking about life in general. However, this percentage varies a lot across the countries. More than 80% of Danish and Irish respondents have a positive perception of fairness, while the percentage goes down to 50% in the Baltic countries, arriving at only 30% in Greece. This implies that there could be a significant role of the context in shaping the perception of fairness. Similarly, for trust: while overall in the EU, less than one in two persons declared that most people can be trusted, the variation in countries spans from 85% in Finland to 23% in Greece, Cyprus and Slovakia. Holding a strong position at the EU level is rather low – only 44% and the peak is found in the Netherlands, where 77% answered positively to this question. Surprisingly, only 38% of people in the EU think work is more important than luck in getting ahead in life, but Sweden and UK are exceptions where 62% and 72% of people, respectively, show internal locus of control. Finally, this survey shows that on average 33% of Europeans are optimistic about the future with the highest percentages being in Latvia (52%), Cyprus (51%) and Malta (51%).

### 2.3. The role of having strategies

The ability to cope is a multidimensional self-regulation construct that represents the behavioural and cognitive mechanism used to manage stressful episodes (Lazarus and Folkman, 1984). Although individuals may respond to stressful situations in a variety of coping responses, researchers categorize coping strategies into three main groups: problem-solving, social support seeking and avoidance (Li and Nishikawa, 2012; Sahler and Carr, 2009). Individuals with active coping tend to adopt strategies aimed to change the nature of the stressor while others with an avoidant coping style do not change behaviour, perception, or response. Active coping strategies are positively related to the ability to adapt to stressful situations as they measure one important aspect of resilience (Pizzolato, 2004).

Measuring the potential coping strategy in case of a specific shock provides direct insights into the adaptation and resilience attitude of an individual. Previous questionnaires like the Living Standards Measurement Study Integrated Agriculture Module (LSMS-ISA) investigate this aspect at the household level where respondents are asked to choose among different options concerning various shocks. The Eurobarometer 88.4 builds on LSMS-ISA questionnaire and specifically asks: 'Imagine that you or your household face a substantial fall in your income. How would you cope?' (see Annex 7.1 for more details). The coping response here is linked to a specific type of economic shock, and cannot be generalized to other potential adverse experiences. However, income drop is a frequent stressor, that can span vertically across different groups of people, and the availability of strategies and support is an important proxy of how an individual would and could deal with the adverse situation.

The possible answers can be divided into two main categories: active strategies (finding one or more solutions to the challenge) and avoidant strategies (not knowing how to cope and not selecting any of the proposed strategies). Furthermore, active strategies can be implemented by relying on own resources (like using savings, adapting the lifestyle by spending less or taking up more work) or by relying on external resources. The external resources can be determined by social networks (like family and friends) or institutional resources (like accessing credit from a bank, state support or private insurance). Every respondent could indicate up to 4 choices.

Across Europe, an average of 2.4 options was selected per respondent. Spending less was selected by more than 60% of the respondent, followed by using savings, working more and relying on help from relatives or friends (see Table A1A1).

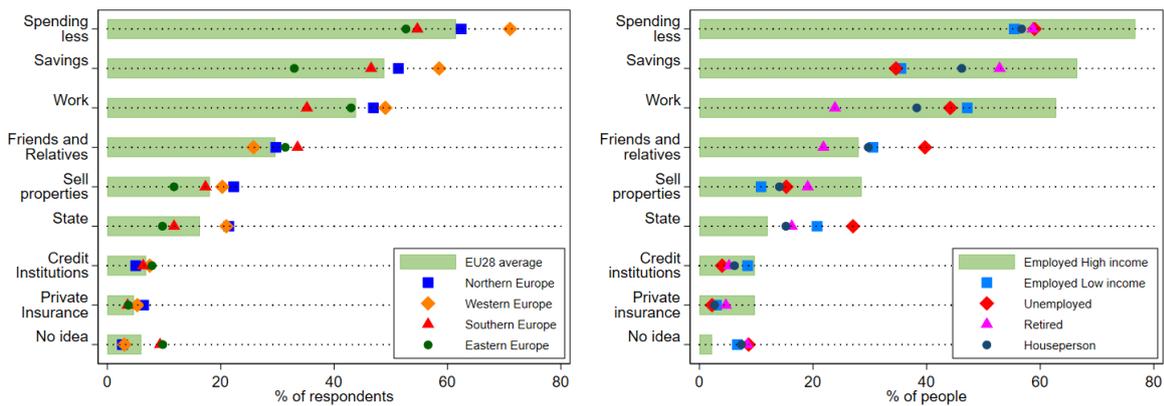
Seeking help from charitable organisations or using private insurance and credit from financial institutions are among the least popular choices, with some exceptions. In Bulgaria, 14% would choose to obtain credit from financial institutions, much more often than anywhere else in the EU. In Denmark and Sweden people rely on private insurance more frequently than the EU average while French and Austrians on average rely on charitable organisations more than the rest of the Europeans.

Across the European Union, state support was the sixth most chosen choice over the eleven available, however there is a great variation in the way individuals answered this question. In Italy and central-eastern European countries, close to or less than 10% would seek help from the state. These are also the countries where the average reported the number of selected strategies was lower. On the contrary, in countries such as Finland, Denmark, the Netherlands and Sweden more than 30% of respondents tend to select this specific choice. These are also the countries where fewest people have replied that they would not know how to cope, and the number of selected strategies is, on average, higher. Although state support is considered a strategy that does not act upon own resources, its most frequent use is in those countries where people actually can draw upon their own resources, hence spending less, buffering the difficulties with savings or taking up more work.

Results show that almost 6% of the Eurobarometer respondents declared that they would not know how to cope ('no idea') in case of a substantial fall in income. This group can be of particular interest since they are potentially the least prepared and with the fewest resources to face an economic shock. Most of these people are in Eastern Europe, and are among the unemployed, retired or house persons. They are discussed in more detail in Section 3.3.

Finally, the socio-economic background plays a role in the way people behave. Comparing individuals who are employed and have a high income with the unemployed at the EU level, we find that the unemployed are half as likely to rely on savings as the employed. They are much more likely to seek help from friends and relatives and claim government support. A very similar pattern is depicted among individuals who are employed but in the bottom income quintile. Among all socio-economic groups considered, the retired are least likely to ask for help from friends and relatives.

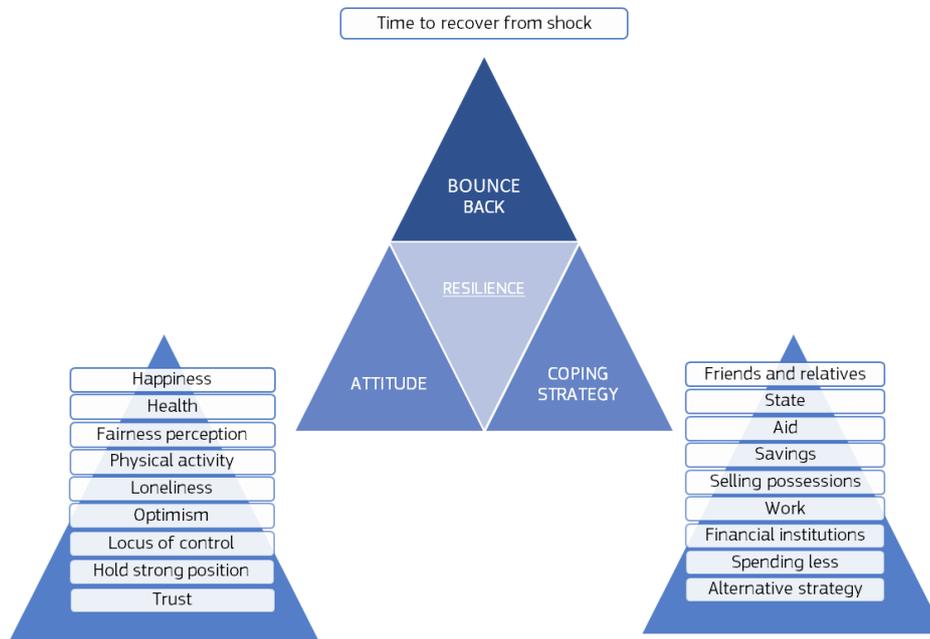
Figure 3: Coping strategies for dealing with an income drop by regions<sup>8</sup> and professional status<sup>9</sup>



## 2.4. The individual resilience index

In previous sections, we have seen that single components represent different aspects of resilience. The first component refers to the self-perceived ability to bounce back from hardness in life. The second component relates to the set of personal characteristics that form a general attitude of a person. For the third dimension, a set of coping strategies related to potential economic distress such as a substantial drop in personal income are considered. Within this framework, we combine these three components to have a holistic and multidimensional measure of individual resilience (see Figure 4). It is important to note that this approach is based on a hypothetical scenario, without anchoring to a specific life event and the actual reaction to a shock.

Figure 4: Components of Individual Resilience



<sup>8</sup> Geographical areas are defined as follows: Northern Europe (Denmark, Finland, Ireland and Sweden); Western Europe (Austria, Belgium, France, Germany, Luxembourg and the Netherlands); Southern Europe (Cyprus, Greece, Italy, Malta, Portugal and Spain); Eastern Europe (Bulgaria, Croatia, Czechia, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovenia and Slovakia).

<sup>9</sup> A very small amount (452) of individuals declared not to know what to answer at all to this question.

Starting from the assumption where individual resilience is considered a latent trait (ability), we employed the **Item Response Theory (IRT)** model. Although the roots of IRT have a long-standing history (e.g., Lord, 1953; Rasch, 1960), only relatively recently it has been developed as an alternative way of measurement in the behavioural field. The model provides an overall score to individuals based on their responses to a set of attitude questions, linked to the individuals' resilience (van der Linden and Hambleton, 1997; Embretson and Reise, 2000). The model is largely employed in educational economics to analyse survey data to assess student achievements and teacher effectiveness as in labour economics. The methodology allows for instance to understand the effect of schooling conditional on cognitive ability or to measure the single latent dimension of health-related quality of life (Hansen et al., 2004; Hays et al., 2007).

The advantage is to link a function to the responses to the relevant questions. More specific, the **IRT Function** explicitly models the individual performance of each response to an item (i.e. question) as a function of a latent trait (theta) and item parameters (difficulty and discrimination). The resulting **Item Characteristics Curve** then describes the probability that a person "succeeds" on a given item (individual test question), for each level of ability. By the **Item Information Function**, it provides for each item its ability to differentiate among respondents.

The Item Response Theory uses several assumptions:

1. For a given set of multicomponent responses, we can capture the individual ability;
2. There is only one ability latent dimension behind the performance in the items;
3. The underlying trait is assumed to be continuous;
4. Local independence assumption: for the fixed level of individual resilience, the responses across the items are independent.

In a function this can be noted as:

- $Y_{ij}$  - response to a question item  $i$ ;
- $\theta_j$  - the ability of a person  $j$  (person location);
- $b_i$  - the difficulty of item  $i$  (item location);
- $a_i$  - discrimination of item  $i$ .

The general response function, which is the likelihood that a person  $j$  would respond to item/question  $i$  with a score higher than or equal to  $k$  with its given ability, can be written as:

$$P(Y_{ij} \geq k | \theta_j) = \frac{\exp\{a_i(\theta_j - b_{ik})\}}{1 + \exp\{a_i(\theta_j - b_{ik})\}}, \theta_j \sim N(0,1) \quad (1)$$

It is applicable for binary responses ( $k=1, 0$ ) or for ordinal ones ( $k=1, \dots, 5$ ). Our case study includes both, since the coping strategies are measured on a binary scale and the component of attitude on a Likert scale. The function is defined in terms of cumulative probabilities but by applying the differences the probability for a response is obtained (difference model) as:

$$P(Y_{ij} = k | \theta_j) = P(Y_{ij} \geq k | \theta_j) - P(Y_{ij} \geq k + 1 | \theta_j). \quad (2)$$

The unknown overall ability  $\theta_j$  of a person  $j$  is obtained via maximum likelihood estimation.

The person's ability  $\theta_j$  represents the magnitude of latent trait of the individual  $j$ , which is the human capacity or attribute measured by the test. The individual's total number or score is not the actual score but is rather based on the item information functions, leading to a weighted score when the model contains item discrimination parameters.

The computation or interpretation of the score or estimated person's ability parameter is different from the traditional scores like a number or percentage of correct answers. It is obtained by multiplying the item response function for each question to obtain a likelihood function. The point at which this likelihood function reaches its highest value provides the maximum likelihood estimate of  $\theta_j$ . This highest point is estimated in Stata applying the Newton-Raphson method.

We followed this approach for each of the individual resilience pillars leading to  $\theta_j$  (attitude),  $\theta_j$  (coping). The component of bounce back,  $\theta_j$ , is simply a nonlinear transformation of the response variable, with the mean 0 and standard deviation 1. Individuals that have replied positively to the questions on happiness, self-esteem,

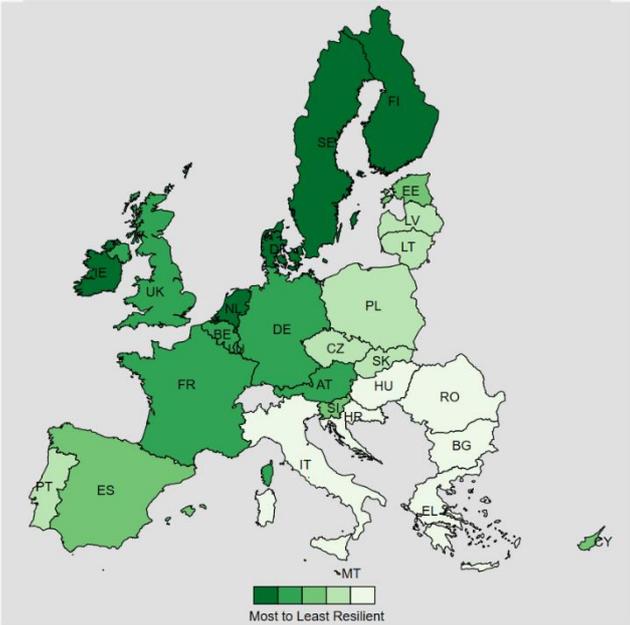
fitness and physical activity, fairness and trust and that have an internal locus of control are the ones that will have higher scores in terms of  $\theta_j$  (attitude). Individuals that have access to their own resources in terms of coping strategies (savings, work-related strategies, spending less) have higher  $\theta_j$ (coping) than individuals that rely on external resources (such as friends and relatives, institutions), and higher than individuals that have no strategy at all (no idea how to cope). The bounce back component  $\theta_j$  (bounce) assigns a higher score to individuals that replied that they would not require a long time to get back to normal after a shock.

Combining the latent traits for attitude, coping and bounce back, an **overall individual resilience score** for an individual  $j$  is obtained:

$$\theta_j = \text{average}(\theta_j(\text{attitude}), \theta_j(\text{coping}), \theta_j(\text{bounce}))^{10} \quad (3)$$

The synthetic Individual resilience index reflects the multidimensionality of resilience. The analysis of this index, averaged by the member state, shows a heterogeneous European Union. There is a marked diagonal division. Individuals living in Denmark, Finland, Sweden, Luxembourg and the Netherlands appear to be the most resilient, while the south-eastern block appears to be the least resilient.

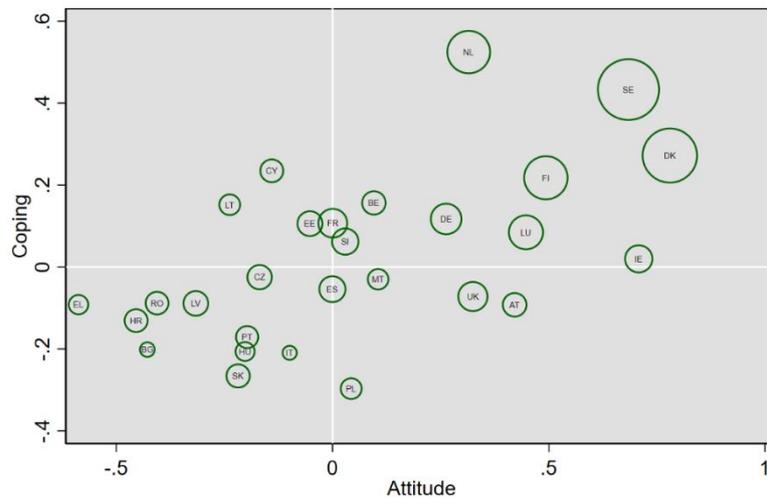
Figure 5: Distribution of the average Individual resilience index across the EU countries



How the three dimensions relate can be visualized in Figure 6 while the detailed country level and individual level correlations can be found in the tables in Annex 7.3. We can observe that the three dimensions move in the same direction: countries like Sweden, Denmark and Finland score high for the ability to bounce back, personal traits and coping strategies, while countries in Eastern Europe have low resilience scores, for all the three components. However, for the countries that are positioned in the middle of the graph, we can see how each component might play a distinct role. As an example, the score on the attitude component is rather high for the Irish and not so much for the coping ability, while in the Netherlands the component on coping strategies is the highest in the EU, but only a medium-high score in terms of resilience attitude. Moreover, while for the full sample the correlation between the three dimensions is strong, young people lack coping capacities while they have a very high performance on attitude at the same time (see section 3.1 for more details). This highlights the true multidimensionality of individual resilience, as suggested by the literature.

<sup>10</sup> Resulting values of theta fall between -2 and 2.

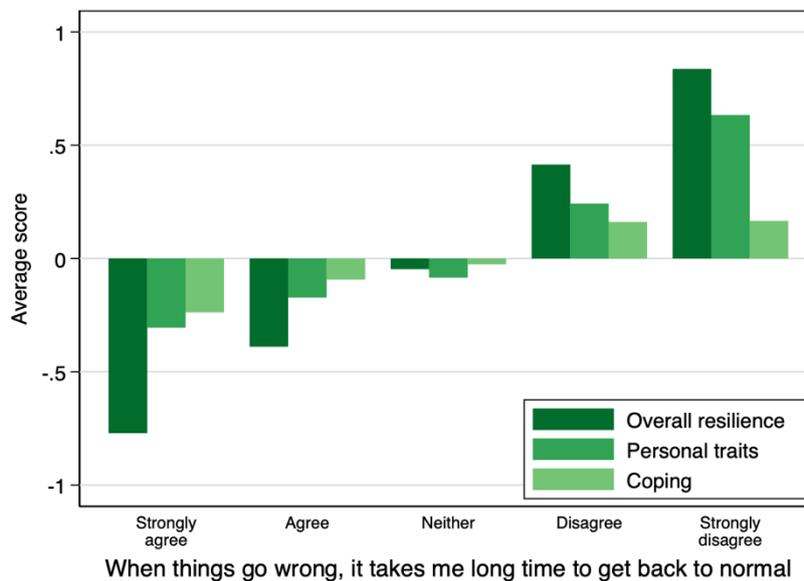
Figure 6: Relationship of the bounce back, attitude and coping components of the Individual resilience index



Note: larger bubbles indicate a larger share of population that declares to take short time to bounce back after difficulties

The multidimensionality can also be grasped when comparing the overall Individual resilience index, the overall latent traits for attitude and coping capacity against the individual's outcome for the bounce forward capacity. Agreeing strongly that it would take a long time to bounce back is linked to a negative score on the overall resilience indicator, the attitude latent trait and the coping latent trait while disagreeing strongly corresponds to positive scores. The strongest link can be seen on the overall resilience indicator while for coping the results are not that strong.

Figure 7: Attitude and coping scores by bounce back capacity



In our data and in accordance with the main resilience scales, (Connor and Davidson, 2003; Friberg et al., 2003; Smith et al., 2008; Windle et al., 2011) all the characteristics of attitudes considered are positively correlated with bounce back ability, with loneliness, happiness and healthy lifestyles exhibiting higher correlations.

### **3. Profiling individual resilience**

This section shows the socio-economic features that characterize individuals with higher resilience. In Figure 8 we assess the descriptive statistics in terms of distribution (mean and standard deviation) of the individual resilience score across the key socio-economic background indicators. Younger people are more resilient than the older population. Being divorced or widowed makes someone less resilient with respect to the respondents that are unmarried or married. The longer someone is educated the higher the resilience score. Regarding the professional status, we find that house persons, unemployed and retired respondents yield the lowest resilience score. The area of residence has very little impact but having a poor family neighbourhood makes it more difficult to be resilient.

As expected, individuals with income and positive self-perceived social status tend to have a positive and higher resilience score compared to the others.

Also, the difference between the geographical regions is clear. Individuals in Northern and Western Europe tend to have a much higher individual resilience score than those in Southern and Eastern Europe.

Figure 8: Socio-economic background and average resilience score

Characteristics	Average resilience score	Standard deviation
<b>Gender</b>		
Man	0.057	0.579
Woman	-0.019	0.590
<b>Age</b>		
15-24	0.185	0.557
25-34	0.145	0.551
35-44	0.086	0.559
45-54	0.037	0.594
55-64	-0.078	0.589
65+	-0.153	0.577
<b>Marital status</b>		
Unmarried	0.046	0.581
Married/partnership	0.066	0.568
Divorced/separated	-0.134	0.625
Widowed	-0.311	0.567
<b>Stopped education at age</b>		
<15	-0.252	0.562
16-19	-0.038	0.557
20+	0.215	0.563
Still Studying	0.196	0.544
No full-time education	-0.394	0.527
<b>Professional status</b>		
Self-employed	0.151	0.567
Managers	0.279	0.554
Other white collars	0.107	0.540
Manual workers	0.039	0.551
House person	-0.156	0.567
Unemployed	-0.177	0.612
Retired	-0.157	0.582
Students	0.196	0.544
<b>Area of residence</b>		
Rural area/village	0.018	0.587
Small/middle town	0.019	0.579
Large town	0.016	0.596
<b>Family neighbourhood</b>		
Poor	-0.103	0.608
Average	0.032	0.570
Rich	0.159	0.597
<b>Income</b>		
Lower quintile	-0.230	0.605
2nd quintile	-0.059	0.548
3rd quintile	0.117	0.542
4th quintile	0.253	0.535
Upper quintile	0.388	0.551
<b>Self-perceived social status</b>		
Top (7-10)	0.248	0.554
Middle (4-6)	0.009	0.547
Bottom (1-3)	-0.469	0.598
<b>Geographical region</b>		
Northern Europe	0.224	0.569
Western Europe	0.151	0.586
Southern Europe	-0.161	0.526
Eastern Europe	-0.161	0.551

Variance decomposition shows that most of the variation in resilience score comes from within-country variation, with the intra-class correlation coefficient being 0.16. This means that roughly 84% of the overall variation in resilience score is explained by within-country variation.

Table 1 shows which variables explain most of the variability in the resilience score. While the country of origin plays an important role, a large fraction of variation is explained by age, length of education, income and difficulties paying bills, type of current neighbourhood in which the person is living and social status. Among significant but less relevant factors to explain resilience are parents' education and their social status. We found that gender, the area of residence and grandparents' social status were not so important.

This is well confirmed in the regression analysis (see Annex 7.4)

*Table 1: Results of the ANOVA decomposition of the resilience score*

Source	Partial SS	df	MS	F	Prob>F
<b>Model</b>	<b>2327.65</b>	<b>74.00</b>	<b>31.45</b>	<b>133.22</b>	<b>0.00</b>
Gender	0.62	1.00	0.62	2.63	0.11
Age	35.66	5.00	7.13	30.20	0.00
Household size	5.18	3.00	1.73	7.31	0.00
Marital status	7.45	3.00	2.48	10.51	0.00
Stopped education	21.85	4.00	5.46	23.13	0.00
Mother education	1.94	3.00	0.65	2.74	0.04
Father education	3.56	3.00	1.19	5.02	0.00
Professional category	20.72	6.00	3.45	14.62	0.00
Income	36.42	4.00	9.11	38.57	0.00
Difficulty paying bills	90.17	1.00	90.17	381.89	0.00
Fast neighborhood (15 years ago) <sup>11</sup>	2.84	2.00	1.42	6.01	0.00
Current neighborhood	32.17	2.00	16.09	68.13	0.00
Area of residence	0.26	2.00	0.13	0.56	0.57
Own social status	97.32	2.00	48.66	206.09	0.00
Parents social status	0.31	2.00	0.15	0.66	0.52
Grandparents social status (father)	3.07	2.00	1.54	6.51	0.00
Grandparents social status (mother)	1.15	2.00	0.58	2.44	0.09
Country	411.01	27.00	15.22	64.47	0.00
Residual	<b>4234.7</b>		<b>0.24</b>		
Total	6374.19		0.37		<b>N=17897</b>

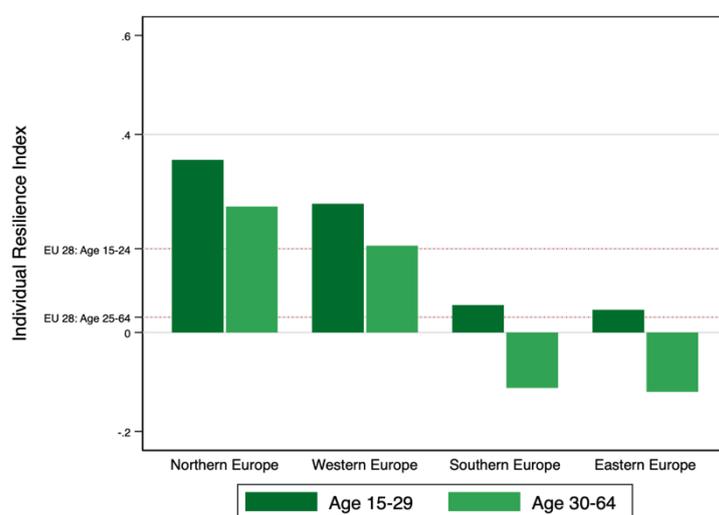
### 3.1. Youth resilience

In this section, the focus is on the younger population and their resilience, because understanding and enhancing the resilience of young people is a way of investing in long-term societal resilience.<sup>11</sup> Results show that by looking at the distribution of resilience by age groups, on average the young population (15-29) exhibits higher levels of resilience than the rest of the adult population<sup>12</sup>. However, this difference varies across the EU. It is higher in Eastern and Southern Europe (more than 16% difference in score), while it is more moderate in Western and Northern Europe (respectively 9% and 4% difference in resilience score).

<sup>11</sup> To explore the relation between resilience and young people we have used the age breakdown of 15-29 as in the EU youth report COM(2021) 636 final (<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52021DC0636>)

<sup>12</sup> The older population (age 65 and above) has been excluded because of their peculiar resilience characteristics with respect to rest of the interviewed.

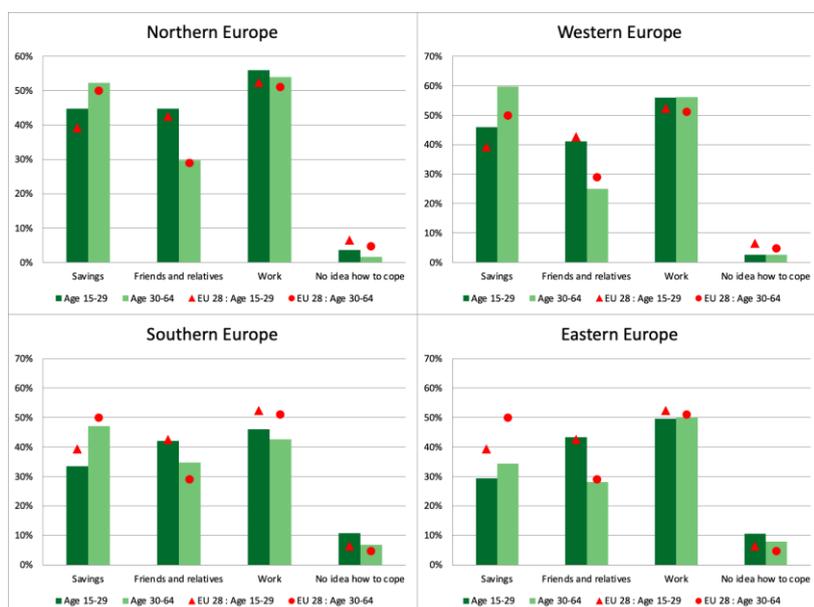
Figure 9: Individual resilience index by age groups and European regions



The component of personal traits mainly drives the overall resilience score, with the most remarkable difference being in the level of optimism for the future (in all the European areas, younger adults are 30% more likely to perceive the future as being better than the past). Self-perceived bounce back capacity is similar between the older and younger adults, while the picture relative to the coping capacities is mixed and differs among the age groups.

One resilience aspect where age plays an important role is in terms of coping strategies. Not surprisingly, across the 28 countries, the results show that the younger population would choose to work more, rely less on savings and more on their network than the adult population, as evidenced in Figure 10. However, several geographical patterns can be noticed. In Northern Europe, it is more frequent that young people chose the work-related strategy (taking up more paid work and/or starting or returning to work) than in Southern Europe (56% vs 46% respectively). Despite saving largely depending on age in all of the regions, the biggest differences by age group were reported in regions of Western and Southern Europe. Still, there is a substantial share of the young population that would not rely on savings, implying a potentially low level of financial buffers, as evidenced in Le Blanc (2020). Finally, the share of respondents who would not know how to cope in the case of a substantial fall in income is particularly pronounced for the youth residing in Southern and Eastern Europe. Within these regions the percentage is higher than in the older adult population and amounts to slightly more than 10% (see also the discussion in Section 3.3).

Figure 10: Most frequent coping strategies in case of income drop by age groups and across European regions



### **3.2. The role of resilience for individual wellbeing**

The role of resilience for wellbeing and leading fulfilling life can be extremely important. High resilience is associated with positive outcomes, such as active and healthy ageing, lower depression, and longevity (MacLeod et al., 2016). We have tested this hypothesis on the role of resilience for overall life satisfaction – as an indicator of wellbeing and fulfilment. What we find is that, given all the other characteristics constant, individuals with higher resilience are the ones who are more satisfied with their life (see Table 2). However, if we introduce an interaction effect between education and resilience, we find that the magnitude of the resilience effect diminishes. We can see from column (2) in Table 2, that the interaction effects are negative. This means that the higher the educational attainment of a person, the less important it becomes that a person has an “innate” or “matured” ability to deal with distress. Hence, in conclusion, both resilience and education matter for overall life satisfaction, but for better-educated people, the extra effect of resilience is smaller. Hence, education, in this case, can be interpreted as a protective factor that can mitigate the lack of resilience in individuals. Clearly, given the nature of the data and the complex endogenous relationship between life satisfaction, resilience and education, these are just intuitions and further research would be needed to confirm these findings.

Table 2: Interaction effects between resilience and years of schooling

VARIABLES	(1) Life satisfaction	(2) Life satisfaction
Resilience	1.284*** (0.064)	1.566*** (0.104)
Stopped education at age = 2, 16-19	0.166* (0.090)	0.089 (0.087)
Stopped education at age = 3, 20+	0.223** (0.092)	0.159* (0.085)
Stopped education at age = 4, Still Studying	0.546*** (0.175)	0.471*** (0.181)
Stopped education at age = 5, No full-time education	0.159 (0.172)	0.227 (0.197)
Resilience # stopped education at 15		0 (0)
Resilience # stopped education at 16-19		<b>-0.342***</b> <b>(0.091)</b>
Resilience # stopped education at 20+		<b>-0.329***</b> <b>(0.128)</b>
Resilience # Still studying		-0.315 (0.217)
Resilience # No full-time education		0.276 (0.312)
Observations	17,160	17,160
AIC	26205	26185

Controlled for age, gender, marital status, professional status, income, deprivation, neighbourhood poverty, family background. Robust standard errors in parentheses.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

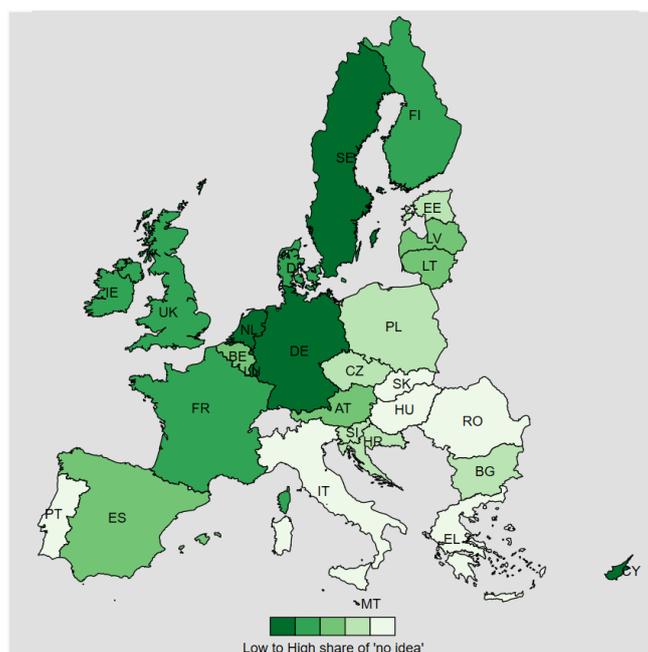
### 3.3. Vulnerabilities in terms of coping strategies

Managing stressful situations requires a cognitive and behavioural reaction. When it is not possible to manage stressful demands, the distressful situation exceeds the resources which persons can rely on (Lazarus and Folkman, 1984) making them more vulnerable than others. Vulnerable groups make society weaker and overall less prepared to respond to unexpected shocks. The first step is to have a sense of who they are in order to implement effective and inclusive social policies. This section analyses a specific group of individuals who state that they would not know how to cope in case of a substantial fall in their income<sup>13</sup>. This group represents overall almost 6% of the respondents and comprises the least prepared individuals with the fewest resources to face an economic shock. Potentially, this group represents the most marginalised individuals in society.<sup>14</sup> Across member states the share of individuals without any strategy varies. While more than 10% of Bulgarians, Greek, Hungarians, Italians, Portuguese, Romanians and Slovak do not see any way how to cope, only very few of the Dutch, Germans, Luxembourgers and Swedes seem to struggle with this (see Figure 11 and Table A1).

<sup>13</sup> "Do not know" was also an optional answer that could be provided to the coping question, but these were not considered in the analysis because of the ambiguity of interpretation (2% of the population). Hence only individuals that claimed explicitly that they would not know how to cope were included in the analysis. In the graphs, these are represented with "no idea" label.

<sup>14</sup> The average resilience index of this group is only -0.68 (with respect to 0.044 of those with a coping strategy).

Figure 11: Share of people without a coping strategy across the EU



People which stopped with education at an early age (less than 15 years) are more likely to have ‘no idea’ how to cope than their peers which stopped education after 20 years. Being in the bottom two income quintiles increases the chances of not knowing how to cope. People living in a poor neighbourhood have higher chances of having ‘no idea’ (see Annex 5 for more details). Moreover, professional status matters: house persons, manual workers, the retired and unemployed have at least 50% higher probability of having ‘no idea’ compared to the self-employed, as can be seen from the Figure 3.

The importance of this group who have ‘no idea’ is considerable, since they presumably represent the most vulnerable in the case of an economic shock and they exhibit a low Individual resilience index. If this estimate can be projected to the total European population, it means that roughly 30 million people may be in a condition of not knowing how to cope in case of economic difficulties.

### 3.4. Contextualising individual resilience

In section 3, we have seen that the country-level effects account for 16% of the overall variation in the resilience score. Given the potential relevant country-level effects which can drive the average resilience across the EU, we have performed a simple descriptive correlation analysis, building upon the two-step approach from Bryan and Jenkins (2016)<sup>15</sup>. The purpose of the analysis is to highlight the predominant country-level factors which are associated with higher resilience scores. The results show that the country-level fixed effects correlate strongly with different indicators of a country’s social progress<sup>16</sup>. Countries where individuals are more resilient are also those that score higher in terms of gender equality balance, active ageing, where people are more engaged in voluntary activities, where the quality and trust in institutions are higher, social benefits are more represented and where the household debt is lower.<sup>17</sup>

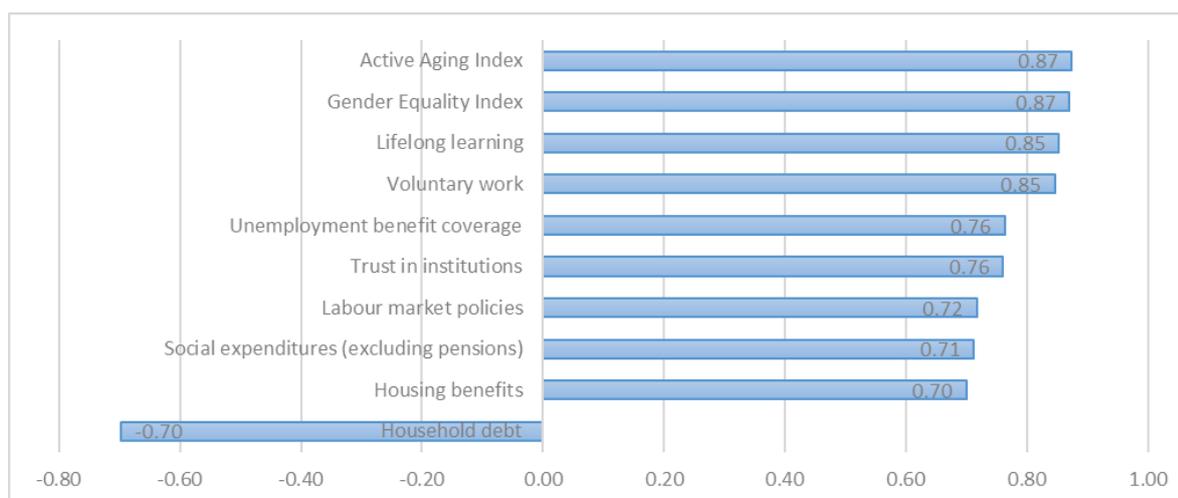
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<sup>15</sup> We have first used the country fixed effects regression, which takes into account all the relevant observable individual characteristics, and extrapolated the fixed effects. These fixed effects can, then, be put in relation with other relevant country level characteristics to see what are the country features associated with better overall country resilience score. This was proposed as an alternative to random effects model, to explicitly model between country variability. The only difference here is that we use it for an explorative research to understand what type of country level features correlate the most with the country fixed effects.

<sup>16</sup> Several country level indicators were considered from the EU monitoring frameworks (Resilience Dashboards – Social and Economic dimension, Social Scoreboard). Here we present the most significant and meaningful associations.

<sup>17</sup> The coefficients of the fixed effects regression can be found in Annex 4

Figure 12 Individual resilience – country fixed effects and their correlation with selected country features



#### 4. Why does individual resilience matter?

A resilient society rests on the shoulders of resilient individuals – those with the capacity to deal with shocks and structural changes without compromising their own or their community’s values. Our starting hypothesis is that especially more resilient individuals contribute to better community values, stronger ties, more active engagement and societal participation. We test this by assessing the effect of individual resilience on different types of community-related attitudes. The first is whether a respondent believes that migration in their country is a positive phenomenon, as a proxy of openness and attitude towards the inclusion of the more vulnerable groups. The second one is the level of political interest, as a proxy for societal participation and engagement. The third and fourth relate to the own perception about one’s voice in the EU and own country, with the idea that individuals who perceive that their voice counts are the ones who are more motivated to take part in social and community life (see detailed questions in Annex 7.1.)

Results show a positive and significant association between individual resilience and the attitude towards community values. This correlation is robust, even after controlling for most of the socio-economic characteristics and family background. Given the notable influence of how people get informed about their society, we have included internet use as one of the controls, and the results remain stable (See Table 3 for details).

Table 3: Association between individual resilience and attitude towards community values

VARIABLES	(1) Migration perception	(2) Political interest	(3) Voice in EU	(4) Voice in country
Resilience	0.164*** (0.0366)	0.126*** (0.0349)	0.230*** (0.0349)	0.419*** (0.0377)
Internet use	0.0114 (0.0544)	0.341*** (0.0492)	0.0457 (0.0496)	0.0584 (0.0519)
Constant	0.0698 (0.200)	0.190 (0.196)	0.142 (0.191)	1.135*** (0.212)
Observations	16,960	17,215	16,455	16,780
AIC	19153	20562	20565	18432

After controlling for age, gender, marital status, professional status, education, income, material deprivation, social status, family education and social status, and after controlling for country effects and allowing for country clustering effect. Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## 5. Conclusions

This paper contributes to the discussion on measuring individual resilience by proposing an innovative methodology which encompasses the ability to bounce back from economic difficulties, attitude to life and coping strategies. The unique data of this exercise, combined into a novel Individual resilience index, allows us to compare resilience at the individual level within the European Union and to understand its distribution.

People in Europe who tend to be most resilient are the Danish, Finish, Swedish, Irish and Dutch. Ireland is an example where resilience is mostly driven by a strong attitude while the Irish are middle performers both for bounce back and coping strategy but overall remain resilient.

The Individual resilience index allowed to profile individuals and revealed that age, education, gender, marital status, household composition, income and social status do play a role in a person's resilience capacity. Yet, family background, namely parents and grandparents' social status and education are also important determinants of own individual resilience.

There is an interesting interaction between resilience and educational attainment in explaining life satisfaction. We found that the higher a person's educational attainment, the less important it becomes that a person owns an innate ability to deal with distress. Hence, education becomes the winning card to thrive in life on top of resilience.

To grasp a better picture of individual resilience, we deepen the analysis by certain key elements. Building individual resilience sets the seeds of a resilient society, but investing in the younger part of the population is a straightforward way to invest in the future.

The young may differ in their attitudes and capacities, but identifying and mitigating their vulnerabilities ensures that no one is left behind. The results show that young people exhibit higher overall resilience when psychological traits are taken into account. However, their coping capacities are less concentrated in their own resources, and this, with some heterogeneity, happens in all the EU countries. This suggests that the financial buffers of the European youth could be promoted and enhanced. Although it is somewhat physiological that the younger population is characterized by lower financial buffers. We have seen that education plays an important role – and this can be both due to ensuring access to better professional pathways, but also in terms of a better financial literacy, that ensures better awareness about the importance of savings and more sound investment decisions. Policies can play a crucial role in enhancing youth resilience and reducing the intergenerational and (macro)regional divide in their capacities. In the EU era of fostering green and digital transitions and undergoing increasing turmoil, it becomes extremely important to empower young people to be prepared for these challenges and fit for the future.

In a context where building individual resilience means also taking care of the disadvantaged groups, our research revealed a specific vulnerable group of the respondents in those that have no coping strategy in case of financial distress. They represent 6% of the total sample which, if projected to the EU population, represents roughly 30 million people who need more attention. Results show that a society that provides for the needs of its citizens has more resilient individuals, suggesting that it is more difficult to be resilient in places where the building blocks for quality of life are less solid. By contrast, in countries with a higher score in terms of gender equality, and active ageing, where people are more engaged in voluntary activities, the quality and trust in institutions are higher and those where the household debt is lower, are also those where individuals are more resilient.

Resilient individuals are also those who contribute more to better community values, stronger ties, more active engagement and societal participation. Results showed that the more resilient individuals have a more positive attitude toward the inclusion of vulnerable groups and diversity. Further, they tend to engage more in political participation and take an active part in social and community life. This implies that investing in the resilience of individuals leads to enhancing social capital and ensuring better social cohesion.

Overall, our findings suggest that from a policy perspective enhancing individual resilience by making sure that no one is left behind in terms of education, opportunities in the labour market, or by supporting the most marginalised groups might increase the chances of creating a responsive and engaged society that is better prepared to the challenges ahead.



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## 7. Annexes

### 7.1. Annex 1: Questions included from Eurobarometer 88.4

Code	Question and answer categories	Used in the analysis
QA1.1	Please tell me to what extent you personally agree or disagree with the following statements. "I am in good health" (Likert scale 1-5)	Individual resilience index
QA1.2	Please tell me to what extent you personally agree or disagree with the following statements. "In general I consider myself a happy person" (Likert scale 1-5)	Individual resilience index
QA1.3	Please tell me to what extent you personally agree or disagree with the following statements. "I believe that most of the things that happen in my life are fair" (Likert scale 1-5)	Individual resilience index
QA1.4	Please tell me to what extent you personally agree or disagree with the following statements. "I think that important decisions that are made concerning me are usually taken in a fair way" (Likert scale 1-5)	Individual resilience index
QA1.10	Please tell me to what extent you personally agree or disagree with the following statements. "Generally speaking, most people in (OUR COUNTRY) can be trusted" (Likert scale 1-5)	Individual resilience index
QA1.13	Please tell me to what extent you personally agree or disagree with the following statements. "I think immigration into (OUR COUNTRY) is a good thing" (Likert scale 1-5)	Other analysis
QA1.15	Please tell me to what extent you personally agree or disagree with the following statements. "When things go wrong in my life, it generally takes me a long time to get back to normal." (Likert scale 1-5)	Individual resilience index
QA2.3	How important do you think each of the following are for getting ahead in life? "working hard" (Likert scale 1-5)	Individual resilience index
QA2.6	How important do you think each of the following are for getting ahead in life? "being lucky" (Likert scale 1-5)	Individual resilience index
QA3	Imagine that you or your household face a substantial fall in your income. How would you cope with the situation? (MAX. 4 ANSWERS) The possible answers available are: (1) relying on own savings, (2) relying on help from relatives or friends, (3) relying on the state (e.g. social insurance or benefits), (4) relying on help from other sources like charitable organisations, (5) relying on private insurance payments, (6) obtaining credit from financial institutions, (7) selling possessions, (8) spending less, (9) taking up more paid work, (10) starting or returning to paid work, (11) do not know how to cope. (With the addition of Other (spontaneous) and DK)	Individual resilience index
QA5	During the past week you felt lonely (None or almost none of the time, Some of the time, Most of the time, All or almost all of the time)	Individual resilience index
C2	Political interest index (Strong, medium, low, not at all)	Other analysis
D72.1	Please tell me to what extent you agree or disagree with each of the following statements. "My voice counts in the EU" (Likert scale 1-5)	Other analysis
D72.2	Please tell me to what extent you agree or disagree with each of the following statements. "My voice counts in (OUR COUNTRY)" (Likert scale 1-5)	Other analysis
D77	When you hold a strong opinion, do you ever find yourself persuading your friends, relatives or fellow workers to share your views? Does	Individual resilience index

	this happen...? (Very satisfied, Fairly satisfied, Not very satisfied, Not at all satisfied)	
D79	In your opinion, in five years' time, do you think that your life conditions will be better, worse, or the same than today? (better/no change/worse)	Individual resilience index
QB1R	How often do you exercise or play sport? (Regularly, With some regularity, Seldom, Never)	Individual resilience index

Locus of control was constructed by taking the combined responses of QA2.3 and QA2.6 (both scaled with scores from 5 being "Essential", 4 "Very important", 3 "Fairly important", 2 "Not very important" to 1 "Not important at all"). The difference in score hard work minus lucky will then score the following way:

Difference equal to 4 or 3, new score 5 = "Hard work much more than luck"

Difference equal to 2 or 1, new score 4 = "Hard work more than luck"

Difference equal to 0, new score 3 = "work and luck equally important"

Difference equal to -1 or -2, new score 2 = "Luck more than work"

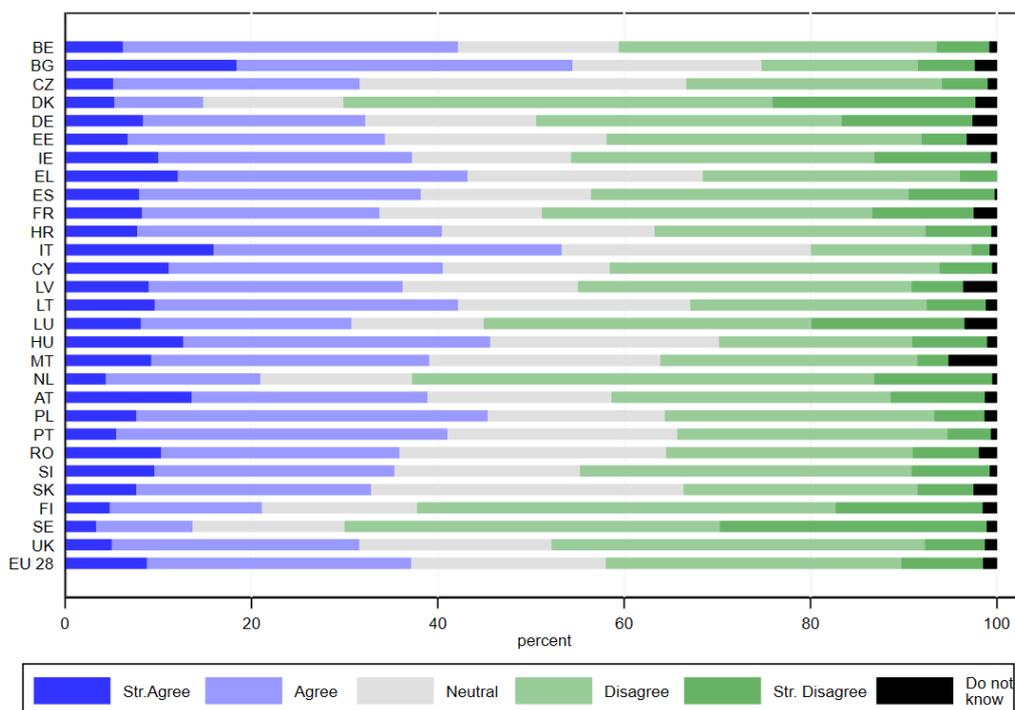
Difference equal to -3 or -4, new score 1 = "Luck much more than work".

Attitude on happiness, health, loneliness, trust, optimism, hold strong position and physical activity are based on the questions QA1.2, QA1.1, QA5, QA1.10, D79, D77 and QB1. Fairness perception is based on both QA1.3 and QA1.4.

Q1.15 specifically relates to the bounce back capacity and QA3 to the potential coping strategies one sees.

## 7.2. Annex 2: Results from Eurobarometer 88.4 questions

Figure A1: Member states<sup>18</sup> results on Eurobarometer QA1.15



<sup>18</sup> For the EU average, UK has been included as it was still part of the European Union at the time the survey was conducted.

Table A1: Overview of answers given on the question QA3 on coping by EU country

Country	Spending less	Saving	Work	Friends and relatives	Sell properties	State	Credit institutions	No idea	Private insurance	Charitable organisations	Other coping strategies	Do not know	Average number of answers per respondent
BE	74%	56%	45%	28%	19%	20%	10%	4%	7%	6%	1%	0%	2.71
BG	51%	34%	41%	42%	14%	7%	14%	11%	2%	3%	2%	2%	2.23
CZ	59%	52%	50%	34%	13%	17%	7%	6%	8%	4%	0%	0%	2.50
DK	81%	50%	48%	20%	32%	36%	6%	3%	15%	3%	4%	1%	2.98
DE	69%	60%	51%	21%	15%	20%	7%	2%	4%	4%	1%	2%	2.56
EE	70%	42%	48%	29%	20%	19%	3%	7%	1%	2%	3%	2%	2.46
IE	63%	49%	50%	27%	16%	26%	11%	3%	7%	5%	1%	1%	2.61
EL	60%	31%	41%	45%	15%	11%	3%	13%	1%	3%	2%	0%	2.25
ES	62%	55%	34%	41%	12%	16%	5%	5%	1%	4%	1%	1%	2.37
FR	71%	55%	44%	32%	23%	19%	8%	4%	6%	10%	1%	1%	2.73
HR	57%	20%	47%	35%	19%	6%	10%	8%	5%	7%	2%	3%	2.20
IT	48%	45%	34%	25%	23%	7%	8%	11%	6%	5%	1%	3%	2.18
CY	83%	30%	56%	22%	9%	15%	4%	2%	4%	2%	1%	2%	2.30
LV	60%	40%	43%	41%	9%	16%	8%	6%	4%	6%	5%	1%	2.39
LT	74%	38%	60%	34%	12%	15%	6%	5%	2%	6%	2%	1%	2.55
LU	69%	49%	40%	22%	27%	17%	7%	9%	3%	3%	3%	2%	2.49
HU	50%	30%	42%	39%	17%	9%	11%	12%	4%	6%	0%	1%	2.20
MT	59%	59%	43%	15%	12%	22%	4%	3%	8%	4%	1%	5%	2.34
NL	91%	65%	70%	22%	35%	31%	4%	1%	6%	3%	2%	0%	3.30
AT	56%	58%	41%	28%	19%	27%	12%	5%	8%	10%	3%	2%	2.68
PL	44%	26%	44%	30%	8%	9%	5%	10%	3%	2%	1%	5%	1.88
PT	54%	32%	41%	39%	11%	20%	3%	14%	2%	4%	0%	1%	2.22
RO	61%	34%	37%	23%	13%	7%	9%	12%	4%	4%	1%	1%	2.06
SI	64%	47%	54%	33%	23%	17%	5%	7%	4%	6%	1%	0%	2.62
SK	47%	45%	34%	31%	7%	11%	10%	12%	4%	2%	2%	4%	2.09
FI	77%	55%	43%	27%	36%	44%	9%	4%	6%	5%	1%	0%	3.08
SE	85%	71%	53%	27%	44%	30%	3%	1%	18%	1%	2%	1%	3.37
UK	56%	48%	46%	31%	17%	16%	4%	3%	4%	3%	1%	5%	2.35
EU28	61%	49%	44%	30%	18%	16%	7%	6%	5%	5%	1%	2%	2.44

Table A2: Attitude share of positive and strong positive answers by country

country	Not feeling lonely	Feeling happy	Self perceived health	Fairness perception in decisions	Fairness perception in life	Trust in people	Holding strong position	Physical activity	Locus of control	Optimism
BE	93%	87%	84%	65%	61%	52%	55%	49%	32%	30%
BG	76%	61%	62%	39%	38%	26%	46%	16%	13%	28%
CZ	90%	70%	67%	53%	49%	35%	34%	32%	22%	32%
DK	97%	95%	82%	83%	77%	82%	48%	63%	53%	35%
DE	96%	89%	80%	65%	61%	58%	43%	48%	31%	24%
EE	90%	77%	61%	55%	58%	51%	47%	35%	42%	44%
IE	94%	97%	92%	82%	78%	75%	48%	53%	51%	49%
EL	88%	64%	77%	28%	26%	23%	51%	23%	32%	27%
ES	94%	87%	82%	52%	39%	46%	40%	43%	41%	41%
FR	89%	88%	79%	58%	49%	30%	45%	42%	47%	31%
HR	87%	68%	61%	41%	36%	29%	60%	24%	11%	28%
IT	90%	72%	79%	64%	44%	47%	50%	28%	26%	31%
CY	88%	78%	80%	43%	39%	23%	63%	39%	30%	51%
LV	90%	70%	55%	46%	46%	45%	54%	28%	24%	52%
LT	90%	65%	59%	50%	50%	38%	56%	33%	23%	38%
LU	93%	94%	87%	74%	65%	61%	61%	56%	35%	46%
HU	89%	71%	67%	48%	46%	36%	33%	33%	27%	33%
MT	89%	90%	86%	64%	56%	37%	61%	30%	41%	51%
NL	97%	91%	81%	64%	64%	70%	77%	56%	46%	33%
AT	92%	87%	78%	72%	68%	67%	60%	38%	30%	20%
PL	88%	81%	76%	64%	60%	51%	35%	28%	28%	31%
PT	93%	78%	76%	54%	42%	40%	51%	26%	21%	45%
RO	84%	59%	57%	49%	44%	27%	34%	19%	20%	33%
SI	96%	88%	80%	54%	49%	33%	27%	51%	21%	38%
SK	93%	74%	68%	47%	47%	23%	25%	28%	22%	34%
FI	92%	88%	79%	74%	75%	85%	38%	69%	46%	34%
SE	95%	92%	83%	76%	72%	77%	56%	67%	62%	41%
UK	93%	91%	83%	70%	66%	50%	41%	46%	72%	44%
EU28	91%	83%	78%	61%	53%	47%	44%	40%	38%	33%

### 7.3. Annex 3: Details on resilience components

Table A3: Country average score if the overall resilience indicator and its tree pillars separate

Country	$\theta_{attitude}$	$\theta_{coping}$	Average bounce score	Average individual resilience
BE	0.096	0.156	-0.056	0.065
BG	-0.428	-0.202	-0.421	-0.352
CZ	-0.169	-0.025	-0.026	-0.073
DK	0.780	0.272	0.589	0.547
DE	0.263	0.117	0.151	0.178
EE	-0.052	0.106	-0.008	0.013
IE	0.708	0.020	0.060	0.262
EL	-0.587	-0.092	-0.203	-0.294
ES	0.000	-0.054	0.026	-0.010
FR	0.000	0.107	0.106	0.071
HR	-0.454	-0.131	-0.074	-0.220
IT	-0.099	-0.209	-0.453	-0.254
CY	-0.141	0.235	-0.074	0.008
LV	-0.316	-0.089	-0.015	-0.144
LT	-0.238	0.152	-0.152	-0.081
LU	0.447	0.085	0.233	0.257
HU	-0.202	-0.206	-0.219	-0.211
MT	0.105	-0.030	-0.160	-0.036
NL	0.315	0.525	0.404	0.415
AT	0.421	-0.092	-0.051	0.093
PL	0.043	-0.297	-0.148	-0.134
PT	-0.198	-0.171	-0.102	-0.157
RO	-0.406	-0.088	-0.079	-0.192
SI	0.029	0.062	0.035	0.042
SK	-0.218	-0.266	-0.061	-0.187
FI	0.493	0.218	0.416	0.375
SE	0.684	0.433	0.678	0.597
UK	0.325	-0.072	0.114	0.122

Table A4: Country level and individual level correlation of the components of the Individual resilience index

	Country level				Individual level			
	Attitude	Coping	Average bounce score	Average individual	Attitude	Coping	Bounce score	Individual resilience
Attitude	<b>1.000</b>	0.561	0.754	0.912	<b>1.000</b>	0.155	0.278	0.712
Coping	0.561	<b>1.000</b>	0.769	0.819	0.155	<b>1.000</b>	0.180	0.575
Average bounce score	0.754	0.769	<b>1.000</b>	0.932	0.278	0.180	<b>1.000</b>	0.763
Average individual resilience	0.912	0.819	0.932	<b>1.000</b>	0.712	0.575	0.763	<b>1.000</b>

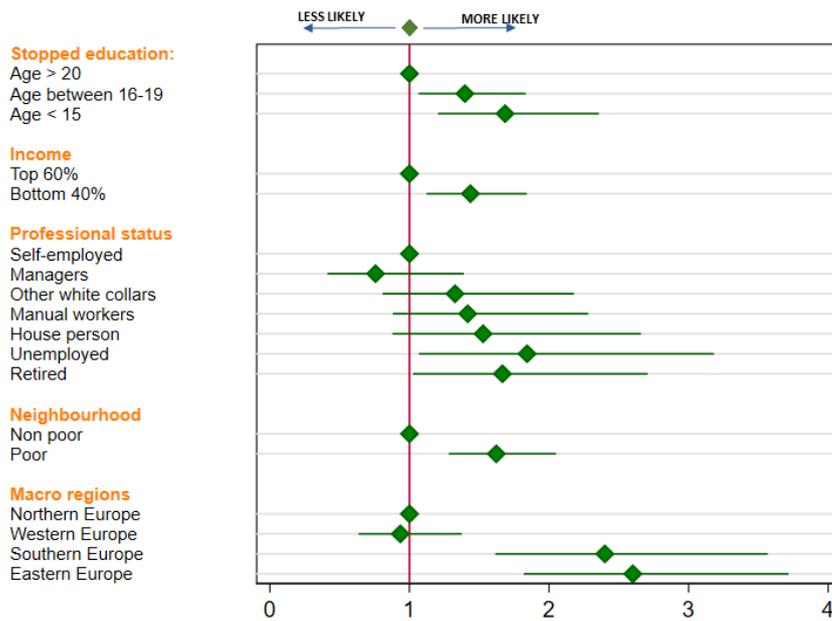
#### 7.4. Annex 4. Regression results for resilience characteristics

VARIABLES	(1)
Gender = 2, Woman	-0.01 (0.01)
Age = 2, 25-34	-0.09*** (0.03)
Age = 3, 35-44	-0.18*** (0.03)
Age = 4, 45-54	-0.20*** (0.03)
Age = 5, 55-64	-0.23*** (0.04)
Age = 6, 65+	-0.19*** (0.04)
Household composition = 2, 2	0.04** (0.02)
Household composition = 3, 3	0.05*** (0.02)
Household composition = 4, 4+	0.08*** (0.02)
Marital status = 2, Married/ In a relationship	0.05*** (0.01)
Marital status = 3, Divorced/Separated	-0.00 (0.02)
Marital status = 4, Widowed	-0.02 (0.02)
Stopped education at age = 2, 16-19	0.06*** (0.02)
Stopped education at age = 3, 20+	0.11*** (0.02)
Stopped education at age = 4, Still Studying	-0.02 (0.03)
Stopped education at age = 5, No full-time education	-0.03 (0.04)
Annual household income = 2, 2nd quintile	0.04*** (0.01)
Annual household income = 3, 3rd quintile	0.10*** (0.02)
Annual household income = 4, 4th quintile	0.15*** (0.02)
Annual household income = 5, Upper quintile	0.19*** (0.03)
Professional category = 2, Managers	-0.03 (0.03)
Professional category = 3, Other white collars	-0.05** (0.02)
Professional category = 4, Manual workers	-0.05** (0.02)
Professional category = 5, House person	-0.10*** (0.03)
Professional category = 6, Unemployed	-0.15*** (0.03)
Professional category = 7, Retired	-0.13*** (0.02)
Neighbourhood when 15 = 2, Average	0.00 (0.01)

Neighbourhood when 15 = 3, Total 'Rich'	-0.04*** (0.01)
Current neighbourhood = 2, Average	0.13*** (0.01)
Current neighbourhood = 3, Total 'Rich'	0.17*** (0.02)
Area of residence = 2, Small or middle sized town	-0.01 (0.01)
Area of residence = 3, Large town	-0.01 (0.02)
Social status: yourself = 2, Middle (4-6)	-0.10*** (0.01)
Social status: yourself = 3, Bottom (1-3)	-0.36*** (0.02)
Social status: your parents = 2, Middle (4-6)	0.01 (0.01)
Social status: your parents = 3, Bottom (1-3)	-0.00 (0.02)
Mother's education = 2, Completed primary	0.01 (0.02)
Mother's education = 3, Completed secondary	0.03 (0.02)
Mother's education = 4, Total 'Post-secondary'	0.05* (0.02)
Father's education = 2, Completed primary	0.06*** (0.02)
Father's education = 3, Completed secondary	0.05** (0.02)
Father's education = 4, Total 'Post-secondary'	0.08*** (0.02)
Ability to pay bills	0.18*** (0.02)
Constant	-0.18*** (0.05)
Observations	19,655
R-squared	0.36
AIC	27514

Robust standard errors in parentheses. Countries fixed effect included.  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

### 7.5. Annex 5: Likelihood of having no coping strategies across different groups



Note: Diamonds on the right with respect to the reference line (vertical red line) represent how much higher are the odds to have no idea how to cope for a given socio-economic group, in comparison to the reference one after running a general logit model. The horizontal lines through the diamonds represent the 95% confidence intervals.

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### **Open data from the EU**

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## The European Commission's science and knowledge service

Joint Research Centre

### JRC Mission

As the science and knowledge service of the European Commission, the Joint Research Centre's mission is to support EU policies with independent evidence throughout the whole policy cycle.



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