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The meaning of social resilience: Interdisciplinary status or a new viewpoint?

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In recent decades, resilience has risen in economic and social sciences, especially after the worldwide financial and pandemic crises. According to the interdisciplinary status, several points of view about resilience are not precisely defined in the studies. Furthermore, resilience indicators are very diverse, and no standard agreeable indicator is set in economic or sociological studies. At the same time, it is arguable whether it needs any proper indicator set. This paper considers the social and economic indicator set of the studies of the last couple of years to cluster them and analyse the meaning of social resilience from a sociological and economic point of view. Based on the analysis, the study's results aim to enlighten the role of social resilience in the current economic and sociological studies and search for the answer to the following question: Is resilience a new interdisciplinary way or 'just' a unique viewpoint in current social sciences and economics?

Keywords: resilience, social resilience, indicators, interdisciplinary, social sciences, definition

1. Introduction

In the last decade, especially in the wake of various natural and economic crises, scientific discourse has increasingly focused on attempts to define and measure resilience. However, the literature gives a rather differentiated picture of the phenomenon of resilience, depending on the perspective of the discipline (e.g. economic, social, natural sciences, etc.) and on what is meant by it. Although attempts have been made to define different frameworks and to classify the phenomenon in different ways, these are not necessarily reflected at the level of measurement. At present, we can say that everyone understands resilience in terms of what they really want. This is of course not a problem in the ever-changing scientific environment, but it is worthwhile to examine from time to time what exactly the measurements are actually aimed at, and from this we can draw conclusions about what is actually at the root of resilience.

The aim of this study is therefore to examine the measurement of resilience, and specifically social resilience. The focus of this study is on social resilience primarily because both economic and environmental responses to disasters can be interpreted in economic or social terms, but social resilience is the less tangible of the two. It can be interpreted from different perspectives, and thus can be measured with a wide range of indicators, and its representation in the literature is accordingly quite differentiated. It must be emphasized, however, that because of the different theoretical bases it is difficult to compare the indicators of studies.

In this study, therefore, after presenting the literature, I will attempt to group the sets of indicators used to study social resilience, both to provide a framework for

interpreting the concept and to highlight the aspects from which science currently interprets this phenomenon.

The main aim of this study is to contribute to the ongoing discourse on the role and interpretation of resilience in social sciences and economics, and to provide a new contribution to the framing and interpretation of the concept through the results of this research.

In the first part of the paper, I will review the scientific understanding of resilience, then I will present a theoretical framework for peer resilience, followed by some examples of its measurement in practice. The present paper is based on a literature review of studies published between 2021 and 2023 and attempts to categorize the indicators used in them. A total of 21 studies were examined and the results are presented in Section 4. The methodological description of the research is presented in Section 3.

2. Theoretical background

2.1. Resilience theories

In the last two decades, the concept of resilience has achieved significant "success" in both scientific and everyday discourse. A term originally originating in engineering, it has gained ground in the humanities (Szabó, 2017), then in ecology (Békési, 2002), social sciences, regional and economic sciences, and has become an interdisciplinary notion (Békési, 2002).

Resilience, in its original meaning, refers to the resilience of an object, organism, ecosystem, or even a regional economic system or a well-defined functional part of it, the labor market, to the extent to which it can respond to, adapt to, and recover from challenges, either by returning to its original state or by partially adapting and changing its characteristics to a new state of stability (Martin, 2012).

It is important to highlight the protection factor ability of resilience (Maclean et al. 2014), i.e. the interpretative framework that resilience can always be defined in terms of a disaster that is occurring or has already occurred. However, it should also be noted that the majority of studies have generally understood it in terms of a specific, sudden-onset and fast-evolving disaster, but following the COVID-19 pandemic, this interpretation has been reassessed (Champlin et al., 2023) and can be considered valid for explaining the effects of protracted crises.

The evolution of the concept initially sought to describe society's relationship with nature, as continuous development implied a degree of adaptability on the part of social relations, but today resilience is used to describe the transformation associated with global and environmental changes and challenges (Keck–Sakdapolrak, 2013).

A relevant and regularly cited economic approach to defining resilience has also been developed by Martin and Sunley (2015). According to their theoretical framework, three main definitions of resilience can be distinguished, these being (1) 'bouncing back' from shocks, i.e. technical or engineering resilience, which has been mentioned earlier; (2) 'extended ecological resilience', which assumes the absorptive capacity of a given system, such that the fundamental properties of the system remain

unchanged; and (3) "positive adaptivity", i.e. the system responds to shocks by incorporating them into itself, and thus its fundamental properties change.

The typological approach is taken a step further by Davidson et al. (2016) who reviewed a large spectrum of literature to establish a systematic principle and investigated whether resilience can ultimately be considered a kind of pre-paradigmatic theoretical framework. Their results distinguish three types of resilience, based on different conceptual elements: (1) basic, (2) adaptive and (3) transformative. In their view, resilience can be considered as a phenomenon in its present state as preparadigmatic, mainly because it is a rather differentiated field both in terms of conceptual frameworks and methodological approaches, and the lack of consensus and unclear positions make it difficult to represent it as a discipline.

The next step, based on the experience of the literature in recent years, was differentiation. In the academic discourse, resilience has emerged in relation to different socio-economic subsystems. Today, we can talk about economic, social, socio-ecological, community, community disaster, urban, and regional resilience (Bueno et al., 2021; Davidson et al., 2016; Kwok et al., 2016; Lester–Nguyen, 2016; Maclean et al., 2014; Martin, 2012; Saja et al., 2019; Stone-Jovicich, 2015; Suleimany et al., 2022). This has been accompanied by a different dimensional division of the concept, namely, personal and social resilience (Keijzer et al., 2021), which aims to approach the notion from an individual and collective perspective.

Some theories suggest a hierarchy and grouping of different types of resilience, such as social, demographic, economic, community, institutional, infrastructural, and environmental resilience as sub-systems of urban resilience (Yang et al., 2022).

A further aspect of the interpretation of resilience is its dynamics, i.e. whether it is seen as a process or an output (Keck–Sakdapolrak, 2013; Saja et al., 2021). The vast majority of analyses tend to focus on a particular state, i.e. they disregard its dynamic aspect, while several theorists have argued that the process capability cannot be separated from the resilience (Keck–Sakdapolrak, 2013). However, the study of both aspects provides important contributions to the understanding of resilience.

It can be argued that there is no single theoretical framework, if only because resilience balances on the intersection of several disciplines (e.g. economic and social sciences, natural sciences, disaster management, geography, and behavioral science, etc.) (Champlin et al., 2023), so that contributions from several places add color but also complicate a single interpretation.

2.2. Types of Resilience

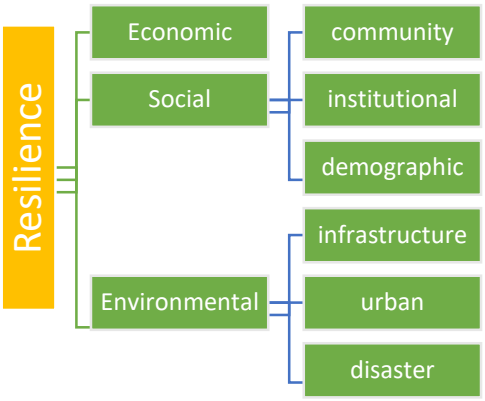
For a better overview of the different types of resilience, it is useful to frame the theoretical approaches from a social science perspective.

In my interpretation, contrary to Yang et al.'s (2022) view that urban resilience has a kind of integrating function, assuming a hierarchical system, I distinguish three broad categories of resilience: economic, social, and environmental.

In the present breakdown, economic resilience has not been further subdivided, but it can be extended in the future. Social resilience builds on the resilience built up by social relationships, and, as mentioned above, it includes

community resilience, demographic resilience, and institutional resilience. Environmental resilience refers primarily to existing physical assets, which is why infrastructure, urban and disaster resilience are included.

Figure 1. Species of resilience



Source: own construction

2.3. Social resilience

As mentioned in the introduction, I will now narrow the theoretical overview to social resilience. The interpretative framework of social resilience, like that of resilience in general, is not well developed in the literature. Moreover, according to Keck and Sakdapolrak (2013), there is some doubt as to whether social resilience is a suitable description of social concepts at all. Some authors see the interdisciplinary nature of the subject as a positive element, while others criticize it for obscuring the social, power, or essentially sociological nature of the processes.

Keck and Sakdapolrak's (2013) literature review concluded that three aspects of social resilience can be described: (1) coping capacity, (2) adaptive capacity, and (3) transformative capacity. In addition to these, they took into account the main determinants of social resilience, which are:

A) Social relations and network structures (social capital, trust, reciprocity, mutual support, and informal social interactions).
B) Institutions and power relations (means of access of individuals to resources, the role of institutional determination in relation to socio-economic system and structure, cultural capital, losers and winners in the construction of resilience).
C) Knowledge and discourses (the role of culture, perception of danger, preferences, knowledge and experience at individual and social level).

Besides the various typological experiments, an important finding is that social or societal resilience can be described as a dynamic process rather than as a statement of fact or a characteristic of a social group and is, therefore, more difficult to capture. In the same way, resilience can be understood in relation to the economic,

social, institutional, and ecological context rather than in isolation, which illustrates the complexity of the concept. Furthermore, social learning, participatory decision-making, and the capacity for collective transformation are seen as central to social resilience, while technological innovation and power relations naturally have a significant impact on such transformation. It also follows that resilience can also be understood in terms of political or power relations.

From the above, it is clear that a kind of definition of the conceptual framework has begun in the literature, a theoretical mapping of the concept and its integration into different theoretical frameworks. It also appears that, from the perspective of several disciplines, resilience, and within this, of social resilience, can be conceptualized mainly as a new methodological approach, or even more as a way of looking at things, a perspective of investigation, rather than as a complex structure. The question is, however, whether a uniform interpretation is needed at all? Is there a set of criteria on the basis of which this can be done, and is there a rational reason why?

2.4. Resilience in practice

A substantial body of social and economic literature on the practical measurement of resilience, and, within it, social resilience, has developed over the last two decades. Due to the conceptual dissonances discussed above, this research is rather scattered in terms of its nature, methodology, and, where relevant, subject matter. In what follows, I will illustrate, mainly with examples from the economic and labor market field, that the extent of resilience is usually measured using a methodology of statistical modelling based on economic theories.

Some of the analyses were based on a single country or on a comparison between two countries. The labor markets of Belgium and the Netherlands coped well with the economic crisis of 2008-2010 compared to the EU average, as examined by Fenger et al. (2014).

Only one country was studied by Håkansson and Bejaković (2020), who analyzed the Croatian labor market and explained its inertia by low mobility. A country-wide study was also conducted for Romania, measuring the resilience of the economy in terms of the ratio of employed to unemployed (Șerban–Tălângă, 2020), as was a provincial-level study for Spain, measuring the economic downturn (Villaverde–Maza, 2020).

Comparative studies have also been carried out at the European level (Czeczeli et al., 2020; Giannakis–Mamuneas, 2022), comparing the labor markets and economies of different countries using different methodologies. There have also been quantitative, questionnaire-based comparative studies of European business executives (Lengyel et al., 2017).

The ambiguity of measuring resilience is well illustrated by the results of Palaskas and colleagues (2015) comparing urban and rural areas in Greece, and the study on the economic resilience of Hungarian settlements (Szép et al., 2021). While the former measured the greater resilience of lagging regions to urban areas, the latter identified the North Transdanubian region and Budapest – i.e. the most economically developed regions – as the most resilient regions of Hungary.

The above examples also confirm that resilience is not a well-defined, conceptualized thesis, neither in a theoretical nor in a practical sense, but that a resilience approach can help in the understanding of different social problems and finding answers to challenges. It is also important to note that the impact of crises is complex, and the responses to them are differentiated, territorially, socially, and economically alike.

The above also confirms the idea that the indicator sets used to measure resilience are heterogeneous in nature, and that a conceptual analysis of these indicator sets could contribute to further clarifying the conceptual framework and standardizing measurements.

3. Methodology

3.1. Literature review of methodology

In order to define the interpretative framework of social resilience within the current scientific discourse, a systematic review of the current literature is necessary (Petticrew–Roberts, 2006). To this end, in this study I conducted a systematic search focusing on indicators found in scientific articles from a specific period. Such research has been done recently (Saja et al., 2019; Tariq et al., 2021), which, similar to the present work, aimed at defining an interpretative framework for peer resilience, but interpreting it from a broader perspective.

I used the ScienceDirect database for data collection. Three filters were set for the search criteria: first, the search term was "social resilience", second, the period under study was 2021-2023, and third, three "subject areas" were selected, namely (1) social sciences, (2) business, management and accounting, and (3) economics, econometrics and finance. The ScienceDirect database returned a total of 231 relevant hits based on the above search criteria within the time frame of the data collection, which were screened and filtered one by one according to the methodological criteria presented below. The screening criteria were as follows:

- Only articles that investigated (also) social resilience based on some existing data, databases or statistics were included in the final analysis
- No scientific papers were included in the analysis that had the above objectives but where the full range of indicators used was not clearly indicated in the article and its annexes (partial excluded).
- Only English language articles were selected.
- Only papers published in the period under review were included.

After the first round of screening, only 26 scientific articles were selected that fully met the above criteria. The next step was to analyze the selected articles in detail, one by one, by extracting the research topic, the definition of social resilience and the indicators used, and then collating, grouping and summarizing the information gathered.

A detailed analysis of the articles revealed that a further five studies were not suitable for the final analysis (e.g. the full set of indicators could not be identified, the research topic did not meet the preliminary criteria).

As mentioned in discussing the theoretical underpinnings above, since the interpretative framework of resilience was not sufficiently institutionalized, it was necessary to separately assess and classify certain reporting similarities according to analytical criteria during data processing. The words 'socio' and 'socioeconomic' were considered as such a semantic match, given that the latter, although having a broader semantic content, has a data content that is appropriate for the purposes of this study. In these cases, the obvious economic indicators were not analyzed, but the social measures were.

The analyzed papers cover a rather broad spectrum of different disciplines, from social resilience measurement in water supply systems in Tanzania (Sweya et al., 2021) to socio-economic resilience in US cities (Kumar–Mehany, 2022) to social resilience measurement in smart cities in China (Zhou et al., 2021), to name the most prominent examples, covering a wide range of fields. Nevertheless, no methodological limitation has been placed on the scope of the studies, as each valid study that understands social resilience has produced data relevant to this paper.

It is important to note that the aim of this paper is not to discuss the methodological approach or application of specific research, and therefore the scientific publications analyzed have not been narrowed down on this basis.

4. Results

4.1. Characteristics of studies[1]

The characteristics of the studies are that most of them aim at a natural science theme, including disaster prevention, and they also subordinate the issue of social resilience as a sub-area of urban or community resilience. The measurement of social resilience was mostly based on mathematical statistical methods using existing databases.

Among the studies analyzed, despite the fact that the database filtering mechanism selected only social, economic and business topics, a surprisingly high number of papers, more than half of them, are in the natural sciences (disaster risk, geography, and environmental engineering) and much fewer in the social sciences or economics.

The dominant type of resilience targeted for analysis was community and urban resilience for a total of 13 studies, in most of which the researchers categorized social resilience as part of these and measured it accordingly. In terms of methodology, I distinguish between the following:

[1] The data presented in this section are presented in tabular form in the annex.

- dominated by model building statistical analysis, e.g. the resilience of smart cities or the use of a pre-developed set of indicators (e.g. BRIC) (Javadpoor et al., 2021; Zhou et al., 2021);
- questionnaire-based survey, e.g. measuring resilience in rural settlements among the local population, or in a metropolitan environment (Alizadeh–Sharifi, 2021; Farahani–Jahansoozi, 2022; Rana et al., 2021);
- two studies used mixed (qualitative and quantitative) methodologies;
- two case studies, while
- one used a literature review only.

Of the 21 studies, 15 did not provide a clear definition of what they meant by social resilience, while the remaining six either presented their own definition or referred to definitions by other authors.

Measuring social resilience can be interpreted primarily as a response to various natural or economic impacts, but this response can always be articulated as some kind of social or economic response, and thus, for example, natural problems are also measured as economic or social resilience, as the grouping of indicators in the next subsection shows.

4.2. Analysis of social resilience indicators

From 21 studies, a total of 177 indicators were collected, with one study having the fewest, three, and one the most, 29, the latter being a questionnaire survey measuring indicators with a single attitudinal question. On average, researchers measured social resilience with 8.5 indicators per study.

The indicators have been given their final names after a series of rounds of reduction in order to make them comparable and analyzable. During the reduction process, I tried to keep most of the information content, reducing it only to the extent that the meaning of the indicator was not affected by the process (i.e. from community awareness to awareness, or from population composition to composition). During the reduction process, I ignored the sign of the indicators (i.e. 'disability' or 'without disability'), aiming only to keep the meaning.

The 177 indicators are classified in a total of 15 categories, with the most prominent being those related to demographic (18.1%), economic (11.3%) and social disadvantage (11.3%).

Table 2. Indicator groups

Indicator groups	Frequency	Percent
demographic	32	18.1
economic	20	11.3
social deprivation	20	11.3
social capital	16	9.0
personal	16	9.0
disaster specific exp	14	7.9
cooperation	12	6.8
health	12	6.8
education	10	5.6
physical	6	3.4
communication infr.	5	2.8
social network	5	2.8
organizations	4	2.3
public	2	1.1
wealth	3	1.7
Total	177	100.0

Source: own construction

The indicators in each group and the description of the groups are presented in the following table.

Table 3. Indicator set of indicator groups and descriptions

Indicator group	Related indicators	Description
communication infrastructure	internet access households with a telephone	A collection of indicators related to communication infrastructure.
cooperation	participation social capacity and adaptability social transformation and strength social cohesion social education social collective efficacy relationship social embeddedness social preparation social exchange of experiences and information	Social cooperation, including cooperation based on different social relationships and their outcomes, e.g. cohesion, embeddedness, knowledge transfer.

Indicator group	Related indicators	Description
demographic	population composition total population population over 65 years old population below age 65 age 15-64 demography (Youth - Aging) population density male-female ratio population growth college students population changes family type racial diversity teen pregnancy rate age dependency ratio urbanization rate households household size housing first responders female employment migrant crime	In addition to the basic demographic indicators (population data, age groups), the set of demographic indicators also includes various household data, urbanization rates and crime. The indicators refer to a wide range of demographic observations.
disaster specific experience	mitigation plan preventive health measures amount of risk-sharing disaster related experiences cooperation in disaster response households with swimming skill households with first aid skills preparedness risk awareness and training risk perceptions	Knowledge and experience related to disasters include different disaster prevention plans, risk-sharing ratios, and the existence of skills related to prevention and survival. All community knowledge and experience that can play a role in preventing risks and minimizing impacts.
economic	per capita GDP per capita taxes per capita income total Exports unemployment rate energy employment in tertiary industry total retail sales of social consumer goods savings purchasing power income public expenditure	In addition to economic data in the traditional sense, this includes individual economic expenditure and savings.

Indicator group	**Related indicators**	**Description**
education	Level of education and skills diversity higher education entities people in higher education high school dropout rate Education of the household head education level education expenditure education level	This group focuses on the overall level of education at the societal level, with a focus on the share of highly educated people, based on the indicators classified, both at the individual and household level. It also includes educational infrastructure and education-related expenditure as measures of educational attainment.
health	doctors hospitals health psychological diseases health infrastructure health workers health services health infrastructure	The set of health indicators covers the existence of health human capital, health infrastructure and various health services.
organizations	faith organizations public management and social organization organization	One measure of social cohesion is the existence of social (mainly religious) organizations and public support service organizations.
personal	adoption of new technologies awareness attitudes creativity experience education and awareness insurance leadership use of knowledge sense of identity	The personal group includes measures of the individual's level of skills and knowledge and certain capacities. It also includes an assessment of the existence of individual care.
physical	location of house water facilities affordable housing transport infrastructure community spaces and amenities	This group includes indicators measuring the physical infrastructure of the human environment.
public	public related employee	Although it only appeared in a small number of cases, I considered the existence of public sector resources as a separate group.
social capital	social capital social tension social trust social innovation social coping style social responsibility and commitment social support social motivation and hope social positiveness cultural/religious norms and practices trust in authorities collections of public libraries social knowledge and skills	The social capital group consists primarily of indicators measuring the experience, strength and cohesion of the local community, but also includes cultural indicators.

Indicator group	Related indicators	Description
social deprivation	inequality level poverty percentage homeless population not dependent on social assistance female headed household social - related resource dependency persons with special needs food assistance language related problems literacy status of HH persons with special needs child labor disability poverty youth dependency elderly dependency percentage of disadvantaged groups	Social deprivation is primarily a group of indicators measuring social deprivation, poverty, single-parent families and people with special needs, but also includes indicators measuring addictions, social services and language difficulties.
social network	communication social networks	Social networks are partly different from both communication- and social capital groups, this measures primarily the existence of communication between actors and the relationships between individuals.
wealth	cars per 1,000 persons own vehicle households with at least one vehicle	There are three different indicators in this group, some of which can be considered as part of the personal group, or economic indicators, based on the research, but these indicators give a better sense of the economic potential of the group under study.

Source: own construction

Each group refers to a different aspect of resilience, and the typology reveals the diversity of the notion. The analysis resulted in several sets of indicators with relatively few indicators (e.g. wealth, social network, public, organization, community infrastructure), but the studies seem to indicate that these are important segments of the measurement of social resilience, as are the groups with a much wider range of indicators (e.g. demographic, social deprivation, etc.). The grouping highlights that the measurement of social resilience has been implemented across a rather broad spectrum in the studies analyzed.

5. Conclusions and discussion

In this paper, I have reviewed the main theoretical approaches to resilience, including social resilience, and then systematically reviewed the literature to examine and group the social resilience indicators used in studies published in the years 2021-2023.

1. The results detailed in Section 4 show a broad spectrum approach, despite the fact that the concept of social resilience has not yet spread in the literature. In the analysis, I have tried to avoid over-reduction, but the result is that the types of indicator sets used to measure social resilience are quite broad, ranging from personal knowledge and values to social knowledge and the existence of a physical human infrastructure. This confirms both the diversity of theoretical approaches and the lack of a centripetal force field to bring together and articulate the phenomenon.
2. The results partly reflect the characteristics of resilience identified by Keck and Sakdapolrak (social relations and network structures, institutions and power relations, knowledge and discourse), but the indicators also shed light on new aspects such as human capital and related built infrastructure, or economic aspects. These are all elements of social resilience that are measured, but not or only peripherally addressed by theoretical approaches.
3. The methodology used was appropriate in the sense that it provided a better overview of what exactly is measured in the different studies under the heading of social resilience. Accordingly, it should be considered as a way forward and a larger sample should be further tested in the future.

One of the limitations of this study is the scope of the data extracted, as it focused only on the indicators and the definition of social resilience, so neither the results nor the conclusions drawn from them were processed. This also represents an opportunity for further work in the future. The study did not cover it, but the definitions of resilience extracted from the studies will be processed, which will allow another aspect of the phenomenon to be investigated.

In conclusion, the results of the present study add to the academic discourse on resilience, and although the attempt contained herein cannot be considered complete, it is nevertheless a way forward and an opportunity to partially systematize the interpretative problems raised by the topic of resilience.

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Annex

*Table A-1.*Field of discipline of analyzed studies

Discipline type	**Frequency**	**Percent**
disaster risk	10	47.6
economic	2	9.5
geography	2	9.5
regional	2	9.5
social	2	9.5
environmental engineering	1	4.8
socio-economic planning	1	4.8
tourism	1	4.8
Total	21	100.0

Source: own construction

Table A-2. Dominant type of resilience targeted by studies

Resilience type	**Frequency**	**Percent**
community	8	38.1
urban	5	23.8
social	4	19.0
regional	2	9.5
socioeconomic	1	4.8
disaster	1	4.8
Total	21	100.0

Source: own construction

Table A-3. Applied methods in studies

Applied methodology	**Frequency**	**Percent**
model building statistical analyses	11	52.4
questionnaire survey	5	23.8
Literature review, questionnaire	2	9.5
case study	2	9.5
literature review	1	4.8
Total	21	100.0

Source: own construction