

Defining resilience in economic policymaking

Origins and current uses

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Authors

Sonia Kuhls, Nicole Kormann da Silva, Marvin Memmen, Nina Schulze, Jakob Hafele, Ravi Tripathi, Feri Temory, Elizabeth Dirth, Jonathan Barth

Editors

Laure-Alizée Le Lannou

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Executive summary

In recent years, the notion of economic resilience has gained considerable momentum in both academia and policymaking. Compounding crises such as the COVID-19 pandemic and the war in Ukraine have placed economic resilience at the core of the EU's recovery strategy, making **resilience a central landmark for economic policy**.

However, the concept of resilience originated outside of economics. Initially, the term emerged in ecological sciences and has since spread to other fields such as engineering, psychology, and economics. During this transition, the definition of resilience underwent several alterations. As a result of its diverse areas of application and frequent use, resilience has become a buzzword with **little analytical precision**. Hence, we aim to discern the origins of resilience and evaluate its use in different academic disciplines to clarify its application to economic policy.

The literature review constituting the first part of this policy brief specifies six universal aspects of resilience: **'exposure & sensitivity', 'recovery', 'flexibility', 'capacities', 'wellbeing', and 'sustainability'**. Based on this general analysis, we show how economic resilience in particular extends the 'beyond GDP' discourse and underscore its potential as a **policy objective that mirrors the complexity of today's overlapping socio-economic challenges**.

Additionally, in the second part we discuss the **measurement of economic resilience** since suitable indicators are necessary to monitor and evaluate policy impact. We consider different indicators that are part of the beyond GDP approach as well as recent policy developments in the EU such as the 2020 Strategic Foresight Report, the Recovery and Resilience Facility, and the REPowerEU plan. The assessment carried out in this section employs the analytical lens developed in the first part of the policy brief: We scrutinise the respective definitions of economic resilience to analyse their value for mainstreaming economic resilience in EU policymaking.

The conclusion of our assessment is that policymakers need to account for the concept's rich academic origins and multifaceted character to engage with its full potential for economic policy. For example, its economic understanding should include positive adaptability, which facilitates *bouncing forward* after a crisis. In this light, we identify three crucial aspects for a **comprehensive conceptualisation of economic resilience**: It should 1) be based on a common understanding of the key functions of our economy that must be upheld in times of crisis, 2) be sufficiently precise to allow a successful translation into policies, and at the same time 3) do justice to its multidimensional character.

1. Introduction

Since the turn of the century, Europe has continuously faced economic shocks such as the Eurozone crisis, political challenges like the strengthening of far-right parties, and geopolitical conflicts that resulted in refugees fleeing to European countries. Still today, **we are experiencing an era of overlapping crises** (Sultana, 2021) – from recent ones such as the war in Ukraine, exposing detrimental economic dependencies, or the COVID-19 pandemic and its ensuing health, social and economic crises, to older looming ones such as the ecological crisis manifesting itself in biodiversity loss, reduction in ecosystem services, and mass extinctions (IPCC, 2022). Such times of crisis impose a burden on individuals, communities, and economies, disrupting existing structures and fragile institutions. Moreover, the disruptions are exacerbated by the structure of today’s economic system: Increasing global interconnectivity of inter alia supply chains contributes to a quick diffusion of crises across the globe, such that they can spread uncertainty and instability far beyond the region of origin (Wilson, 2021).

Facing such critical situations, it is essential how we maintain the core functions of the social, ecological, and economic systems that we depend on. This is reflected in the political discourse which has shifted to accentuate **economic resilience as an overarching principle to cope with crises and absorb their immediate effects**. The more resilient an economy, the more likely adverse shocks can be managed and dampened. For example, the 2008 global financial crisis exposed a negative relationship between financial globalisation and economic resilience. It demonstrated that a massive international financial sector may spread economic instability across the globe and lead to a collapse of basic functions of the economy (Mishra & Spilimbergo, 2022). If individual economies had been more resilient in the face of financial instabilities, e.g., through more institutional control and regulation or less excessive risk-taking, the effects on employment and social protection systems would not have been as detrimental.

At the same time, **crises open windows of opportunity for transformation**. To give a historical example, the horrific Thirty Years’ War in Europe led to the negotiation of the Peace of Westphalia in 1648, settling prior territorial disputes. Importantly, this agreement marks the first time that conflict resolution was achieved by legal means instead of warfare, laying the foundations for the modern state system and formulating the concept of territorial sovereignty. To take advantage of these opportunities for transformation, resilient societies first need to address external shocks in a way that prevents a total collapse of society. How we, as individuals, communities, and economies, respond and adapt to the circumstances of the crisis while minimising its damage (Manca et al., 2017) – in short, how we build resilience – is key to building, rebuilding, or creating new structures from a moment of disruption.

Economic growth has been painted as synonymous of strength, preparedness, and recovery of economy and society for a long time. In recent years, however, the discussions about recovery and resilience accompanying the current socio-economic challenges have made it evident that this strategy alone may not suffice to enhance our capability to face current and future shocks. Instead, the **concept of economic resilience has evolved as a common organising principle for policy thinking** about stability and wellbeing (Martin & Sunley, 2015). For instance, by introducing the Recovery and Resilience Facility (RRF) to “mitigate the economic and social impact of the coronavirus pandemic and make European economies and societies more sustainable, resilient and better prepared for the challenges and opportunities of the green and digital transitions” (European Commission, 2021), the EU has placed resilience at the core of its crisis response for the first time. This new paradigm entails a shift of perspective: While the concept of recovery focusses

straightforwardly on the return to the pre-crisis status quo, the concept of resilience goes beyond that by examining which systemic capacities are needed to guarantee prosperity in periods of change.

As the concept of economic resilience spread into the social sciences and its prevalence in the policymaking sphere increased, it became a **buzzword with little analytical precision**. Consequentially, the growing frequency of usage of the term coupled with an imprecise understanding weaken its consolidation into economic policy. Recognising this **lack of a commonly shared conceptualisation of economic resilience**, we review the corresponding literature and map out current definitions and uses. Since economic research on resilience is scarce, **we draw on findings from various other academic disciplines to understand the origin of the concept**. In particular, we highlight six general dimensions of resilience that emerge from the literature as overarching principles: ‘exposure & sensitivity’, ‘recovery’, ‘flexibility’, ‘capacities’, ‘wellbeing’, and ‘sustainability’. These dimensions are valuable building blocks for bridging the gap between theoretical considerations regarding resilience and their application to economic policy. The publication thereby contributes to the literature of understanding and defining resilience in social-ecological-economic systems, which will in turn inform the practice of enhancing economic resilience.

Moreover, scholars have recently identified a **lack of useful and measurable indicators** to be used by policymakers in the operationalisation of economic resilience (Stanley, 2020). Since assessments of policies mainly follow quantitative measures, we recognise the urgency to create new ways to evaluate economic resilience. The present literature review contributes to this by delineating current indicators and their benefits and shortcomings as a basis for further discussions.

In the following, we begin by tracing back the origin of the notion of resilience and describe its manifold uses in distinct academic disciplines. Subsequently, we extract general dimensions of resilience as they are discussed in the literature, because these fundamentally also apply to economic resilience. In the third chapter, the theory of resilience building is considered in more detail. We present ways to enhance resilience on different governance levels, based on the assumption that resilience is not a fixed state but rather a continuous process. The fourth section zooms in on the political context of economic resilience by presenting a selection of indicators and tools used by policymakers and political institutions to measure economic resilience. Based on this review, it becomes clear that a new, comprehensive definition of economic resilience is required to serve as a fundament for a successful resilience-building strategy. Hence, we conclude with an outlook on how a precise conceptualisation of economic resilience is indispensable in the effort to address the multitude of crises we are experiencing and promote an economy centred around wellbeing.

2. Defining resilience

The current concentration on economic resilience was preceded by academic elaborations on the general notion of resilience. Over the past decades, many definitions for resilience have been put forward by various academic disciplines. In the following section, we outline three key definitions that inform the current debate on economic resilience. They differ in their general assumptions about how systems function and highlight different aspects of resilience. All too often, the definitions are used interchangeably in the public discourse, which makes the concept of resilience imprecise. Therefore, it is essential to understand the distinctions between these definitions.

2.1 The evolution of diverse meanings

The term “resilience” is derived from the Latin verb “resiliere”, which can be translated into “to leap back”, “to spring back” or “to rebound”. The first scholar to introduce the concept of resilience was Holling (1973) in the field of ecology. He describes resilience as the general stability of a system and

distinguishes two types. **Engineering resilience** refers to the ability of a system that has only one equilibrium to *bounce back* to exactly that state or path after being hit by a shock. Thus, a resilient system is one that can restore its pre-shock equilibrium in a short amount of time. **Ecological resilience** on the other hand refers to the ability of a system with more than one equilibrium to absorb a shock and undergo changes of state to persist. This definition emphasises that a system can change to a different equilibrium after a shock. Following from this, a system is considered resilient if it withstands large shocks before changing its equilibrium. The key distinction between the engineering and the ecological definitions is the latter's assumptions about the existence of multiple stable states (Gunderson, 2000). However, both definitions are rather static and thus not suited to describe socio-economic systems characterised by a dynamic process (Martin & Sunley, 2015).

The concept of resilience also emerged in the social sciences, where a different understanding developed. Psychology defines resilience as the pattern of positive adjustments in the context of past or present adversity (Wright et al., 2013) and therefore, the discipline emphasises the positive element of adaptation when a system faces a crisis. Psychologists moreover integrated these insights into a general and dynamic definition which can be summarised as the “capacity of a dynamic system to withstand or recover from significant challenges that threaten its stability, viability, or development” (Masten, 2011, p. 494). Martin and Sunley (2015) use the term **adaptive resilience** in contrast to engineering or ecological resilience to highlight this aspect of positive adaptability. Adaptive resilience can also be understood as *bouncing forward* because the system can maintain its core functions while changing its structure to learn from past shocks, similar to an evolutionary process.

Resilience has also been used in economics, most notably in the field of regional economics. Here, all three definitions of resilience which have been mapped out apply, with more recent work focussing on the dynamic aspects of adaptive resilience. Initially, economists were intrigued by the fact that some countries have managed to attain high Gross Domestic Product (GDP) per capita even though they are very vulnerable to shocks, for example due to high export concentration or dependence on strategic imports (Briguglio et al., 2006). The solution to this seeming contradiction lies in how fast a country's economy can recover after a shock and *bounce back* to its prior growth trajectory, which is an example for engineering resilience. The magnitude of the shock can also be so strong that an economy is pushed into a different growth path. In economic terms this phenomenon is sometimes called a “Hysteresis effect” (Martin, 2012), indicating that a shock may entail long-lasting effects, which can be positive or negative. The understanding that changing structures can either lead to a more favourable growth model than before or a less favourable growth model with less output and employment reflects the ecological resilience definition. Lastly, the literature around evolutionary regional processes defines resilience as the “capacity of a regional or local economy to withstand, recover from and reorganize in the face of market, competitive and environmental shocks to its developmental growth path” (Webber et al., 2018, p. 358). This definition highlights structural change in order to maintain core functioning, creating the need for a clear definition of core functions of the economy. So far, this part of the definition is underdeveloped, and GDP growth paths are taken as benchmarks. But this viewpoint relies on the misleading understanding that economies with larger GDP automatically have better chances of withstanding periods of crisis. This one-dimensional perspective neglects many aspects which are affected by a crisis or shock (e.g. public healthcare during the COVID-19 crisis). The need to move ‘beyond GDP’ to indicators that are more inclusive of social and environmental aspects has been outlined by many, including the European Commission (SWD/2013/303 final).

We will connect these key definitions to contemporary understandings of economic resilience in EU policymaking and assess how they relate to the Commission's work on economic resilience after highlighting six general dimensions of resilience that emerge from the literature.

2.2 Dimensions of resilience

Alessi et al. (2020, p. 570) assert that “resilience is a multidimensional concept, which cuts across many different aspects of the performance of countries or regions”, necessitating a recognition of these interrelated dimensions. Hence, in the following, we identify the concept’s various attributes that are implicitly or explicitly assumed in its usages and outline how different definitions highlight different aspects of resilience. Enhanced resilience typically pays off in the presence of a crisis and the time period afterwards. Thus, the concept of resilience is distinguished from ‘exposure & sensitivity’, which are relevant before the shock hits the system. Afterwards the dimensions ‘recovery’, ‘flexibility’, ‘capacities’, ‘wellbeing’, and ‘sustainability’ are presented.

Exposure & sensitivity:

Presently, it seems that the occurrence of crises poses an inevitable part of society. Disastrous events constitute a seemingly inherent part of news reporting. Nevertheless, there remain differences in how these shocks affect livelihoods and structures determined by individuals’, communities’ or economies’ relative exposure and sensitivity. **Exposure** is the degree to which a system is subjected to a crisis or shock (Mumby et al., 2014). It does not yet address the actual experienced effects of such an occurrence, but rather adheres to the possibility to be affected. For example, communities living close to the meeting point of tectonic plates are subject to higher levels of exposure for earthquakes. Similarly, communities in close proximity of volcanos are exposed to the consequences of their eruption, just as people living close to coasts and rivers bear greater exposure to flood risks. In these examples, the exposure to the risk is rather straightforward, and often known. For this purpose, warning systems in high-risk areas are put in place, alarming inhabitants in times of earthquakes, eruptions, or floods. However, the likelihood of a crisis is not always well-known and it may occur in areas not identified as high-risk. Naturally, the aspect of exposure also applies to more abstract groups with a common characteristic different from their geographic location that puts them at risk of shocks other than natural disasters. Individuals and groups within an exposure area also have different capacities to cope with shocks. Therefore, exposure must be linked to sensitivity to offer a meaningful insight into the potential impact of a shock. **Sensitivity** is the degree to which a crisis or a shock actually impacts the system and its functions (Mumby et al., 2014). It is an inherent property of a system and must be distinguished from its exposure, which links the inherent property of a system to respond to a shock with its environment. Low sensitivity to a shock can be achieved by building redundancies into a system which buffer the effect of the shock such that core functions are not affected. For example, electric circuits often have inbuilt redundancies in the form of alternative parallel circuits. This way the whole system still operates even if there is a malfunction in one of the units. Christmas lights often do not have these parallel circuits, therefore all lights will turn dark if one fails.

A system that has low sensitivity is also described as being robust. **Robustness** refers to the ability of a system to stay in a desired state, despite fluctuations in its environment (Anderies et al., 2013). In general, robustness focuses on designing fail-safe systems within a defined range of uncertainty, similar to engineering resilience. Resilience in the sense of adaptive resilience on the other hand emphasises safe-fail systems capable of learning, self-organising, and adapting to change (ibid.). However, there is considerable disagreement about the extent to which robustness should be part of resilience since it neglects the transformative elements of adaption if the core functions of a system are affected. Brunnermeier (2021) identifies a trade-off between the two: A system with lots of redundancies can become hard to change and thus forfeits the capability to change its structure. At the same time, he argues that it could be efficient to combine robustness and resilience when designing systems. This debate highlights the need for further conceptualisation of resilience.

Recovery:

During and immediately after a shock or crisis, a seemingly natural reaction is the urge to return to a past state, to quickly repair damages and to move along in the same manner as before the event. In resilience literature, this is called *bouncing back* (Alessi et al., 2020; Manca et al., 2017; Stanley, 2020). In the engineering definition of the concept, recovery in the form of return is the guiding signal for resilience. In other words, the quicker and swifter the recovery process, the more resilient the system. While stabilisation to a past (and known) equilibrium seems desirable during the experience of a crisis, resilience is not just about return. Therefore, a growing strand of literature focuses on recovering core functions and system attributes rather than bouncing back to a previous design (Hudson, 2010; Simmie & Martin, 2010; Stanley, 2020). Understanding recovery as a dimension of resilience encompasses an adaptive character as the concept does not necessarily assume a pre-existing stable and desirable state which pre-defines the direction of the recovery. Recovery is rather related to the extent to which a system can re-organise itself not only to stay on the path of its previous development but also to transition to a new trajectory that allows for system's functionality. Resilience thus enables changes in the structure, while maintaining and safeguarding high levels of wellbeing (Stanley, 2020). This leads us to the following point of flexibility in responding to a crisis.

Flexibility:

In building resilience, some degree of systemic flexibility is necessary to be able to respond according to the needs of the new situation caused by a disruptive event (Manca et al., 2017). As the needs immediately after a shock tend to differ from those before, there must be flexibility on various levels. For example, on the societal level, provided that certain structures or infrastructures are rendered unusable during and after the crisis, the necessary flexibility allows adaptation to the new circumstances. In severely disruptive events, returning to a past state (*bouncing back*) is simply not possible, requiring flexibility for adaptation. For example, the atomic explosion in Chernobyl rendered the soil and air unsafe for living or cultivating. Therefore, flexibility on part of the local community was necessary to settle elsewhere. Flexibility further opens space for creative solutions that aim not only to maintain the pre-crisis *status quo* but to shift structures towards more resilient and just ones. This dimension is therefore a necessary precondition for the following one as well. Put differently, if systems were rigid, adaptation and transformation needed for capacity building would not be possible.

Capacities:

Most conceptual literature considers a variety of capacities necessary to prove resilient. Capacities can refer to different actors such as individuals, communities, society, and the economy. In an attempt to create a conceptual framework of resilience for the Joint Research Centre (JRC), Manca et al. (2017) differentiate between three main capacities, namely **absorption**, **adaptation**, and **transformation**. According to the authors, the appropriate capacity depends on the length of the shock and intensity of disturbance. The absorptive capacity is largely in line with the engineering definition of resilience and connotes *bouncing back* to a past equilibrium or state of being. It therefore embodies a sense of stability in dealing with a crisis. By creating buffers in the current system, shocks can be absorbed more easily. For example, storing a base level of materials for local production or use reduces the disturbance of a possible delivery disruption, as has recently been the case when a cargo ship blocked the Suez Canal, a central waterway transport path between Asia and Europe. Thus, the absorptive capacity connotes the ability to quickly recover from and minimise the immediate effects of a shock. This is intrinsically linked with the aspects of exposure and sensitivity as discussed above.

Adaptation refers to a degree of flexibility, making incremental changes in the system to maintain core functions and structures. Although the disturbance is considered rather high and the length of exposure rather long, there remains rigidity in the system which persists throughout. In light of the current crisis sparked by the COVID-19 pandemic, governance responses in relation to paid work largely focused on smaller changes based on concepts involving remote work, alternating schedules, or increased hygiene measures. Thus, measures have been put in place to allow adaptation of the system to the current circumstances. Nevertheless, the fundamental structures of paid labour have remained the same throughout the pandemic. The adaptation process is characterised by an evolutionary dynamic, and therefore altered throughout the crisis response (Simmie & Martin, 2010). Because the core structures of workplaces continued throughout the pandemic response, this can be considered an example of adaptation. The adaptive capacity is closely linked to the ecological definition, which denotes system maintenance (ibid.).

Lastly, the transformative capacity comes into play when the degree of disturbance becomes unbearably high and the length of exposure is considered very long (Manca et al., 2017). A transformation denotes a fundamental change of structure, which essentially breaks with the *status quo*. Resilient subjects have a transformative capacity when they succeed to turn crises into opportunities. This is sometimes called the ability to *bounce forward*, as opposed to *bouncing back* in the engineering definition. A transformation takes place when core structures and even functions of subsystem are untenable following the disruptive event. This distinction between the three capacities elucidates the resistance to undergo transformative change unless absolutely necessary by exogenous contribution. Due to the seeming stability and well-known structures of a past state, transformation is considered a last resort only. However, it should be highlighted that transformative capacity is linked to the concept of adaptive resilience and implies the ability to turn crises into opportunities, thereby reversing the shock into a positive change.

Wellbeing:

In translating resilience to the policy context, one must ask to what goal corresponding policies should contribute; defining the goal is the first step to then conceptualise the core functions that need to be maintained. The EU's JRC defined societal and individual wellbeing to be the final goal of resilience (Manca et al., 2017). Resilient systems, by way of absorption, adaptation, or transformation, can cope with the adverse circumstances of a crisis by minimising the negative effects, while non-resilient societies suffer greater damages and losses. While it is beyond the scope of this paper to go into great detail, it is important to highlight a few central arguments regarding wellbeing and prosperity.

Wellbeing itself is a multidimensional concept which involves inter alia material living standards, health, education, personal activities, political voice, social connections, and security (Stiglitz et al., 2009). Although wellbeing is rather subjective and context-dependent in time and space, these are generally acknowledged dimensions of wellbeing. They form the basis of discussion of proponents of a wellbeing economy, where economic actions and transactions are considered in relation to their effects on wellbeing (cf. Coscieme et al., 2019; Costanza et al., 2018; Fioramonti, 2021; Mguni et al., 2011). This marks a shift away from GDP growth-centred economic systems. Instead, this holistic approach situates the economy as a part of society which in turn is part of the natural world. Thus, “a wellbeing economy recognizes that the economy is embedded in society and nature. It must be understood and managed as an integrated, interdependent system” (Costanza et al., 2018, p. 1).

By extension, mainstreaming economic resilience in policy interventions and governance measures contributes to move beyond GDP growth as an indicator for development, prosperity, and wellbeing. The great importance of wellbeing can be captured during economic depression as well as boom

periods, as wellbeing's many dimensions not only promote recovery but also prevent damages and losses, provide relief from deprivations, and enhance people's capabilities overall (Mguni et al., 2011). With an understanding of economic resilience guided by such terms, a different kind of system centred in the pursuit of wellbeing emerges as a new pathway to policymaking. However, "as change is about fostering the new, it is about letting go of the old [...] towards a better emerging future with disruptions that can be harnessed along the way" (Dirth et al., 2021, p. 5) and prosperity should be pursued in a process that makes harmful practices more difficult and thus contributes to their elimination.

Sustainability:

Lastly, a reoccurring theme within resilience discussions surrounds sustainability, in terms of future-orientation, lasting impacts, and intergenerational as well as social justice. It has been noted that "resilience adds an element of future proofing to a wellbeing analysis" (Mguni et al., 2011, p. 1). Sustainability therefore entails long-term thinking to resilience. This dimension is herewith central both for a societal and environmental perspective, hence, living well within planetary boundaries. A resilient society in these terms accentuates a fair distribution across generations and interrogates whether the current level of wellbeing and production can last (Alessi et al., 2020). Given the dimensions explored above, the question can be rephrased as whether the system can currently provide wellbeing in a way that can be maintained over time, i.e., whether it is sustainable for people and nature now and in the future. Assessing sustainability needs to follow the developments and changes of the different factors that matter for future wellbeing. In particular, it demands the preservation of elements that guarantee respecting both the social floor and the ecological ceiling. To sum up, "resilience does not replace sustainability as an overarching concept, but in the long run sustainability of a system depends crucially on the resilience of that system" (Stanley, 2020, p. 4).

3. Building resilient systems

At present, there is limited literature on how to build economic resilience. Therefore, we focus on translating general resilience building into economic policymaking. In order to enhance general resilience, there needs to be a clear conceptual framework for policy thinking. Resilience is a multidimensional construct by nature, which includes *bouncing back* in the form of absorption, recovery, and *bouncing forward* in the form of transformation. So far, there exists no framework which includes the dimensions mapped out in section 2 in a comprehensive manner. Furthermore, a resilience framework needs a defined end goal to facilitate the measurement of the success of a resilient system. Only by specifying a system's overall purpose can one identify the functions that enable a system to reach that goal and increase the resilience of these functions.

A useful starting point is the JRC's report on the concept of resilience (Manca et al., 2017). The report clearly demonstrates that resilience is a means to achieve individual and societal wellbeing. The merit of their conceptual framework is that it identifies actors in the system, their role in the system, and the interactions among them. To build resilience they underline **preparation, prevention, protection, promotion, and transformation policies**. The first four are measures to take before a crisis or shock impacts a society. Applied successfully, they mitigate the exposure and sensitivity of a system towards a shock. Paton & Johnston (2001) for instance emphasise the role of disaster preparedness and warning mechanisms to build resilience. Knowing the dangers and likelihoods of a crisis allows for better preparation, which could for instance have mitigated the shock caused by the COVID-19 crisis. However, only transformation policies entail a future orientation post-crisis by addressing the consequences of a crisis. These scholars' suggestions neglect this fifth pillar of resilience building, hence not exploiting all opportunities policymaking offers in terms of strengthening and future-proofing communities and societies.

Building on the JRC's report, the European Commission intends to streamline resilience into policy thinking to help make strategic choices about future challenges and mega trends, for example climate change, security challenges, or rising inequalities (European Commission, 2020). Therein, the concept considers the social and economic, the geopolitical, the green, and the digital dimension. While this multifaceted approach is a valuable starting point for the discussion, new insights have emerged since the publication of the JRC's report and the Commission's strategy, e.g., resulting from the maturity of the COVID-19 pandemic or the energy crisis aggravated by the war in Ukraine. Building on these insights, the Commission's resilience framework could be further enhanced by implementing the issues we pointed out in the beginning of this section. Firstly, to translate resilience into the economic policymaking context, a corresponding framework needs a clear end goal. The Commission's proposal however decreased the importance of individual and societal wellbeing, the previous end goal. Secondly, the functions of core elements in their framework require further elaboration. For example, the social and economic dimension includes the unique social market economy and the single market of the EU as a capacity to build resilience. However, the framework does not define critical functions of these systems or their *role* in the system, which need to be maintained in face of a crisis. Thus, the framework cannot tackle the question of how to increase the resilience of the single market or the social market economy to increase the overall resilience of the social and economic dimension.

Resilience building is made difficult by the inherent complexity and uncertainty of our societies. This challenge can be addressed by creating capacities to prepare for unexpected crises. There are numerous ways to create economic capacities that are sufficiently large and comprehensive to help maintain societal functions in light of unforeseen circumstances. According to Dirth et al. (2021), examples for such measures include tax reforms that allow for fiscal revenues that increase resilience without hampering economic activity, and reducing inequalities while benefitting the environment. Another example is subsidy reforms that reduce harmful subsidies and enable subsidies to promote positive changes through innovation, technology, and supporting sectors that foster a sustainable future.

4. Measuring economic resilience

Being able to measure economic resilience offers practical tools for policymaking across sectors. When effectively embedded into the policymaking process, indicators can work as a communication mechanism to connect (and transform) research, policy, and reality. However, there is no universal methodology or framework to measure economic resilience in a tangible way. Constructing a bridge between the concept and an operational form is not a straightforward task – as explored above, resilience generally has various dimensions that interplay with one another. Thus, the sub-category of economic resilience is a **highly complex concept**. Still, a growing number of empirical experiments and indicators have been proposed in different fields by both academia and policymakers.

While actual resilience can only be measured in the face of a shock or crisis, i.e., through retrospective analysis, there are possibilities to evaluate the general resilience of a system. In the field of physics, technology, and engineering, in which the understanding of resilience relates to that of engineering resilience, measurement tends to account for physical variables such as amount of energy absorbable and duration before the system (or material) recovers its original form. In the field of ecological resilience, the speed of recovery from a shock or natural disaster has been greatly emphasised as an essential variable. However, critics have pointed out that the discussion still mostly relates to the challenge of managing resources efficiently and lacks the acknowledgement of the interaction between the natural environment and socio-economic systems (Stanley, 2020).

4.1 Beyond GDP indicators

As pointed out above, GDP growth has been considered synonymous of persistence and progress for a long time. Conceptionally, however, GDP leaves a gap in understanding processes in the economy that lead to stability and wellbeing in times of multiple crises. First and foremost, GDP growth alone does not enhance an economy's shock-absorption capacities. Rather, stable institutions and economic structures are required to prepare for a crisis. As a response, several indicators have been proposed to capture the multidimensionality of progress in socio-economic and ecological systems by substituting or enriching the aspect of GDP growth with further variables that constitute wellbeing. In the following, we provide a brief overview of main beyond GDP indicators and highlight two important debates when creating an indicator, namely the **challenge of aggregation** and the **question of monetisation** (Walker & Jackson, 2019). Reviewing the selection of alternative indicators demonstrates that while they do capture prosperity more adequately than economic growth alone, they do not address the future proof dimension that is absent in the concept of GDP in the first place. This **missing dimension is best described as economic resilience** and offers a unique opportunity to create an indicator which can replace policymakers' dependence on GDP with a compass to prepare for and subsequently navigate crises.

One of the pioneer indexes to start the debate on the multidimensionality of socio-economic systems is the Human Development Index (HDI), established in 1990. The HDI captures the dimensions of health (life expectancy), education (years of schooling), and economy (Gross National Product, GNP). Its methodology uses the geometric mean of these three dimensions to ensure that by aggregating one dimension with another their respective performances are not affected by each other; e.g., in theory a poor performance in education cannot be compensated by a better performance in the economic dimension. While the HDI has since been widely used in many regions and countries across the world, its components are selected arbitrarily and important dimensions such as the political and environmental ones are left out (Van den Bergh, 2007).

Following the window of opportunity for alternative economic indicators, other high-profile initiatives have appeared. This includes the OECD's Better Life Index (BLI), a dashboard that visualises how countries perform on selected key factors of wellbeing. The tool has an interactive option where people can rate each of the factors of wellbeing according to their perception, thereby involving citizens in the debate about what really matters in the economy. However, the BLI currently does not allow for comparisons over time and is restricted to OECD countries. Another beyond GDP indicator is the Happy Planet Index (HPI) developed by the New Economics Foundation. It aims to measure the ecological efficiency of delivering wellbeing by incorporating three measurements: self-reported life satisfaction, life expectancy, and ecological footprint (Marks et al., 2006). Given that the HPI uses factors other than GNP to measure progress, unlike the HDI, it is considered a more extensive measure of wellbeing and sustainability. However, the HPI suffers from subjectivity in the self-reported life satisfaction factor. Even though wellbeing depends on individuals' subjective state, asking people their happiness or satisfaction levels does not reveal underlying causes of *why* life is good or bad. Life satisfaction does not provide policy indications on what issues must be addressed to increase welfare. Additionally, subjective measures on human wellbeing do not reflect environmental wellbeing priorities (Walker & Jackson, 2019).

Monetary indexes are another group of indicators that emerged with the aim of "improving" or "greening" GDP (Costanza et al., 2009). The Genuine Progress Indicator (GPI) not only incorporates monetarised welfare-relevant non-market activities like unpaid domestic work but also subtracts environmental externalities and other activities which do not increase wellbeing. Moreover, the GPI measures categories like voluntary work, criminality, divorce, loss of leisure time, unemployment, and

damages to the ozone layer (Van den Bergh & Antal, 2014). As such, it pays close attention to the sustainability of economic welfare (Talberth et al., 2007). Along this line, the Genuine Savings (GS) indicator was also introduced. Also known as Adjusted Net Savings (ANS), this indicator is used by the World Bank as a measure of sustainability (Hamilton, 2000). The GS indicator adjusts savings instead of GDP, but otherwise follows a similar methodology. In short, the indicator corrects the gross national saving to account for net investment in natural and human capital. For this it deducts the cost of environmental pollution, the rent from the depletion of natural resources, and capital depreciation, while adding the expenditures on education.

Most significantly, the advantage of these monetary indexes is that they produce a simple single number analogous to GDP which is easy to understand and interpret. Yet, they have fundamental limitations. Inherent to monetary indicators is the concept of weak sustainability. For instance, the GS indicator, by simultaneously measuring economic, human, and natural capital, allows to offset the loss in one of these dimensions by a gain in another (Van den Bergh, 2007). In addition, a monetary index provides only a partial solution to the aggregation problem as it assigns a market value for all its components. Yet, non-monetary factors such as social cohesion or environmental preservation do not intuitively yield a monetary value and there is no methodological consensus on an estimation procedure. It may be further questioned to which extent it is even desirable to associate a monetary value with social and ecological aspects. Moreover, indicators aimed at improving GDP do not break the chain of regular crises inherent in the economic system because they do not address the lack of a missing economic resilience dimension.

Among other developments within the beyond GDP discourse, we highlight the creation of different frameworks to inspect economic, social, and environmental concerns in a more interconnected way. Prominent examples are the OECD's Measuring the Progress of Societies project and the publication of recommendations on the Measurement of Economic Performance and Social Progress by a special commission led by the economists Stiglitz, Sen, and Fitoussi. The OECD's framework acknowledges that the definition of progress is a political issue (Hall et al., 2010). Therefore, their work aims to find a legitimate definition of progress that reflects the shared values of a society. The Stiglitz-Sen-Fitoussi-Commission was created by the French Government and released its final report in 2009, placing the concepts of wellbeing and sustainability at centre of assessing progress (Stiglitz et al., 2009). The project enjoyed strong political support and wide media coverage, which further drove beyond GDP indicators to gain space in political agendas, especially across EU and OECD countries (Whitby et al., 2014). On top of that, one commonality of both frameworks is the underlying need to further develop the understanding of progress. One can observe an analogy to the need to conceptualise resilience in order to address inherent contradictions and realise the full potential of transformation policies while keeping in mind balanced interests, i.e. power concentration when building resilience after a crisis (Barth & Hafele, 2021).

In the EU, one of the first advances in this sense was the setup of the EU's Beyond GDP initiative, which emerged from the Beyond GDP conference in 2007. The initiative's main objective is to develop alternative indicators to measure progress from a multi-perspective angle: "We need adequate indicators to address global challenges of the 21st century such as climate change, poverty, resource depletion, health and quality of life" (European Commission, 2022a). A series of policy documents and indicators have been published since then, amongst them the recently created Transitions Performance Index (TPI). The TPI holds as core principle that a transition in several areas – namely economic, social, environmental, and governance – is indispensable for progress. The index is structured around a scoreboard of multiple indicators and a ranking among the countries assessed, therefore presenting both absolute and relative performance. Indeed, the focus of the TPI is on

outcome indicators. This way, even though its results indicate unbalanced profiles, the framework is not prescriptive in terms of policymaking (European Commission, 2022b).

Aiming to mainstream and integrate the multitude of indicators that have appeared in the beyond GDP agenda, Barth et al. (2021) introduced the Compass towards 2030. The Compass is inspired by the Doughnut Economics framework and proposes an overarching dashboard with targets to be reached by 2030. Therefore, it encompasses the indicators, targets and priorities from across different EU policy processes. One of its main features is that it offers a way to track the EU's progress towards key aspects of environmental sustainability and wellbeing. The Compass further provides a more accessible way to interpret existing cross-departmental indicators and thus supports initiatives such as the resilience dashboards, the 8th EAP monitoring framework, the Social Scoreboard, the SDGs, and the upcoming European Green Deal dashboard. Overall, the Compass towards 2030 works towards making policy makers more accountable to meet mid- and long-term objectives beyond economic growth.

We motivated this section by pointing out that growing **GDP does not grant stability and wellbeing** anymore. It is hence critical to adopt new metrics of progress beyond GDP and apply these to economic policymaking. This understanding aligns with the Commission's perspective that the recovery from the pandemic must account for the various vulnerabilities exposed by the COVID-19 crisis beyond the sole focus on economic growth. The Commission aims to strengthen the EU's ability to deal with future shocks and intensify the agenda on the green and digital transformation. Their goal is to **bounce forward by adopting resilience as a new compass for EU policy**, which includes a Recovery and Resilience Dashboard. In the next chapter we explore recent developments regarding the topic of resilience in European economic policymaking and show how the conceptualisation of resilience on the EU level does not align with the Commission's objective to *bounce forward*.

4.2 Economic resilience in EU policymaking

Based on the conceptual framework by Manca et al. (2017), the EU's 2020 Strategic Foresight Report defines resilience as "the ability not only to withstand and cope with challenges but also to undergo transitions in a sustainable, fair and democratic manner" (European Commission, 2020, p. 2). This definition is closely linked to adaptive resilience as it underlines a transitional process in which economies *bounce forward*. The report further outlines four dimensions of resilience streamlined in EU policy, corresponding to anticipated future challenges: social and economic, geopolitical, green, and digital resilience. As a follow-up to the report, the European Commission created its own resilience dashboards encompassing indicators to assess the EU's and its Member States' resilience and its development in the four pivotal dimensions.

In addition, the concept of resilience has gained much traction over the course of the COVID-19 pandemic. For instance, the dashboards are closely related to the RRF outlined in the introduction. This program is a meaningful step towards mainstreaming resilience in EU politics because it prioritises a future-looking recovery strategy after the pandemic, strengthening the European economy and society in preparation for future shocks. To be precise, the regulation establishing the RRF defines resilience as "the ability to face economic, social and environmental shocks or persistent structural changes in a fair, sustainable and inclusive way" (Regulation (EU) 2021/241, Art.2(5)). Thus, the facility includes foresight activities to build stability and adaptability when facing shocks like a pandemic. Moreover, the RRF definition highlights the need for socially just policies both within and among generations. Here again, the conceptualisation of resilience links to that of adaptability. In addition, the discussion on the recovery in the EU seems to approach aspects of ecological resilience as the pandemic disrupted growth paths and will have long-lasting impacts.

On a positive note, the four resilience dashboards could potentially support the monitoring under the framework of the RRF. These recovery and resilience scoreboards could furthermore provide a critical tool to monitor the progress of the National Recovery and Resilience Plans towards the twin green and digital transitions as well as collective efforts on the six pillars of the RRF, and to ensure that the recovery process from the pandemic builds economic resilience.

Unfortunately, the draft delegated regulation resulting from the RRF and its monitoring and evaluation frameworks do not define and measure resilience in a concrete way. The indicator set to monitor the RRF outlined by the Commission does not align with the Commission's own Resilience Dashboard or its definitions of resilience. As a result, ZOE Institute's public consultation response summarises persisting weaknesses of the recovery and resilience scoreboard (ZOE, 2021). This instrument, although a crucial step to include foresight about resilience into policymaking on the EU-level, does not foster resilience beyond the recovery from the pandemic. By describing it as merely the ability to face a shock, the scoreboard falls short of recognising the transformative potential of resilience. The Commission should consider a more future-oriented understanding of the concept with a defined end goal and by doing so support the effective implementation of a recovery and resilience scoreboard. In short, our recommendations underline the need for better indicators, especially ones that successfully measure social and environmental aspects and in which dimensions are evenly balanced in order to fill the gaps in economic policy regarding resilience.

This way, the draft delegated regulation is insufficient firstly in **defining core functions of the economy** in order to strengthen them, and secondly in highlighting the **great need for structural changes**. As indicated in section 2, overall, this part of the conceptualisation of resilience remains underdeveloped. Beyond that, although dashboards are a valuable step to consider resilience in policymaking, we argue that resilience should receive a more central role in policies to mainstream wellbeing. Moreover, the literature has shown that there is not much evidence of policy impact associated with dashboards (Barrington-Leich & Escande, 2018). In other words, this form of indicator set might have good longevity "but limited practical use in policy making thanks to their somewhat unwieldy nature and subsequent lack of resonance with policy-makers" (Walker & Jackson, 2019, p. 6). On top of that, the different aspects in the dashboard do not necessarily connect to each other in an intuitive and straightforward manner, leaving policymakers with little guidance on how interpret and evaluate trade-offs and synergies (Jackson, 2020). Separating the resilience dashboard according to its various dimensions makes it more difficult to grasp the **interconnectedness of the aspects related to the economy, society, and nature**.

Most recently, the Russian aggression towards Ukraine has considerably shaped the European discourse around economic resilience. Policymakers recognised the risks associated with economic dependencies on other nations, as they not only restrict their options in terms of geopolitical strategies but also implicate severe vulnerabilities in the face of crises. The EU's main concern in this context is its Member States' dependence on Russian energy supplies, which has been a critical point of discussion regarding the feasibility and impact of potential actions to weaken the Russian Federation, most notably a ban of Russian energy imports. Aiming to forestall similar conflicts in the future, the European Commission published a strategy titled REPowerEU which envisions measures to accelerate the clean energy transition and make the EU independent of Russian fossil fuels until 2030 (European Commission, 2022c). In its communication, the Commission explicitly states that the plan "will increase the resilience of the EU-wide energy system" (ibid., p. 5), bringing the notion of resilience to the forefront of the crisis response. The most significant strength of this program is its acknowledgement of the need to identify one elementary function of the economy – in this case energy supply – and building the policy strategy on this definition. Nevertheless, this was merely a hasty

reaction to an immediate crisis and may not be mistaken for a comprehensive resilience-enhancing program, as the latter must account for further basic functions of the economic system and hence for more diverse aspects of economic resilience. Despite its shortfalls, this plan, if successfully implemented, illustrates the transformative potential provided by exogenous shocks.

In fact, in order to **mainstream economic resilience**, the concept needs to be operationalised in a way that resilience is not restricted to returning to normality but allows policymakers to consider the whole picture – in other words, towards a systemic view that allows to capture the entire production process of resilience. The work towards a “Resilience Doughnut” put forth by Barth and Hafele (2021) is a step forward in this pursuit. The Doughnut framework is a useful tool to clearly indicate areas in which progress can be reported and where it is still lacking. By doing so, it promotes a systemic view as it develops a holistic picture of resilience in interconnected aspects of the economy. Furthermore, it maintains the essential idea of a safe and just space by recognising biophysical boundaries while meeting social needs. However, the Doughnut framework was designed with a rather wellbeing-oriented approach instead of resilience as a concept of its own.

In summary, the decision for a specific focus and methodology greatly impacts the final outcome of any indicator. There needs to be **robust theoretical foundation** to support the choice of dimensions and especially their respective weighting process. Otherwise, indicators might be perceived as biased and hinder acceptance in the political sphere and among citizens. On top of that, when it comes to thinking of alternative indicators, we acknowledge that technical obstacles exist that limit their feasibility, especially related to data availability. Moreover, the **political circumstances** in which indicators are embedded also play a role in their practicability, and “can either serve to enable their use and influence, or to hinder it” (Walker & Jackson, 2019, p. 40). Still, alternative indicators for measuring resilience could play a crucial role to build resilience across different areas. As Hudson (2010, p. 17) puts it, “greater priority would need to be given to issues such as the creation of socially useful (as opposed to simply profitable) work and socio-spatial equity, justice, and wellbeing rather than economic growth per se, and, as an important component of this, to seeking to optimize regional self-reliance and the degree of regional economic closure.” First and foremost, policymaking needs **clear and systemic definition of the term resilience in the context of economic policymaking**. Hence an essential missing step to building a benchmark for measuring economic resilience is to provide a coherent yet practical conceptualisation of the term.

5. Conclusion

Russia’s invasion of Ukraine and the COVID-19 pandemic are recent reminders that societies and economies remain vulnerable to deeply disruptive exogenous shocks. Compounding crises have forced policy strategies to target the complexity and unpredictability characterising today’s economies. As it became evident that economic growth is neither a guarantee of macroeconomic stability nor socio-ecological wellbeing, **the search for a new overarching economic policy objective has brought forth the concept of economic resilience**.

However, this policy brief revealed that while the notion of resilience has spread from ecological sciences over physics to various social sciences and political institutions, its usage has been altered and its definition blurred. **Economic resilience building has been enthusiastically embraced by several EU institutions and remains at the centre of the discourse** because its vagueness leads to an excessively large scope for interpretation, such that it can be bent towards almost any political objective. Yet, a precise and comprehensive definition is an essential prerequisite to reinforce the implementation of economic resilience. As a starting point for the development of such a definition, this brief defined six generalised dimensions of resilience: ‘exposure & sensitivity’, ‘recovery’,

'flexibility', 'capacities', 'wellbeing', and 'sustainability'. We encourage policymakers to adopt an understanding of economic resilience that accounts for all of these aspects. For economic policy to be able to facilitate the deep structural changes required for the socio-ecological transition, it must in particular harness the transformative potential that crises offer for *bouncing forward* – utilising the momentum of the shock to initiate transformative change.

Moreover, as the concept transitions from diverse fields into economic policy, it is important to consider its measurement, which must be based on a clear and at the same time holistic definition. While there are several alternative indicators to measure wellbeing beyond GDP, we demonstrated that none of them is especially effective at addressing economic resilience. **Measuring economic resilience requires identifying an economy's elementary functions which ought to be upheld during times of crisis** because they are essential to people's quality of life. Only based on such an agreement can we specifically target these functions' resilience. Since policymaking is driven by quantitative assessments of policy goals, the lack of concordance regarding the economy's primary functions constitutes a significant gap in the economic policy landscape. If the target is to increase economic resilience, giving policymakers the tools to fill this gap is the crucial bridge between the *status quo* and building more resilient communities, economies, and, eventually, societies. In other words, we urgently require a holistic conceptualisation of economic resilience that 1) is based on a common understanding of the key functions of our economy which must be upheld in times of crisis, 2) is sufficiently precise to allow a successful translation into policies, and at the same time 3) does justice to its multidimensional character.

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