

Economic Resilience

A new concept for policy making?

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Abstract

The idea of “resilience” has in recent years gained a high level of popularity in the formulation of economic-policy objectives. Given the rapid sequence of serious crises, the rise of this concept is hardly surprising. If economic shocks are apparently unavoidable, then an economy’s ability to cope with them should be a subject of interest. However, the virtually inflationary use of the resilience concept has been accompanied by a lack of precision. In particular, there is often no clear understanding that alongside its static interpretation (retention of a system’s existing functions in the case of a crisis), crisis resilience also includes an adaptive dimension (adjustment to new surrounding conditions). Against this background, this article addresses the origin of the resilience concept, illustrates its various usages in different disciplines, and distinguishes it from other key words (“vulnerability,” “sustainability,” “stability”). On this basis, the resilience concept is given additional precision and defined in a manner useful for the economic-policy perspective. A central conclusion is that the concept of resilience can become a normative economic-policy principle if 1) it is not viewed narrowly as only a static concept; 2) it is linked to the societal objectives within the economy being studied; and 3) the interplay of different societal levels is taken into account.

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1 A concept's career

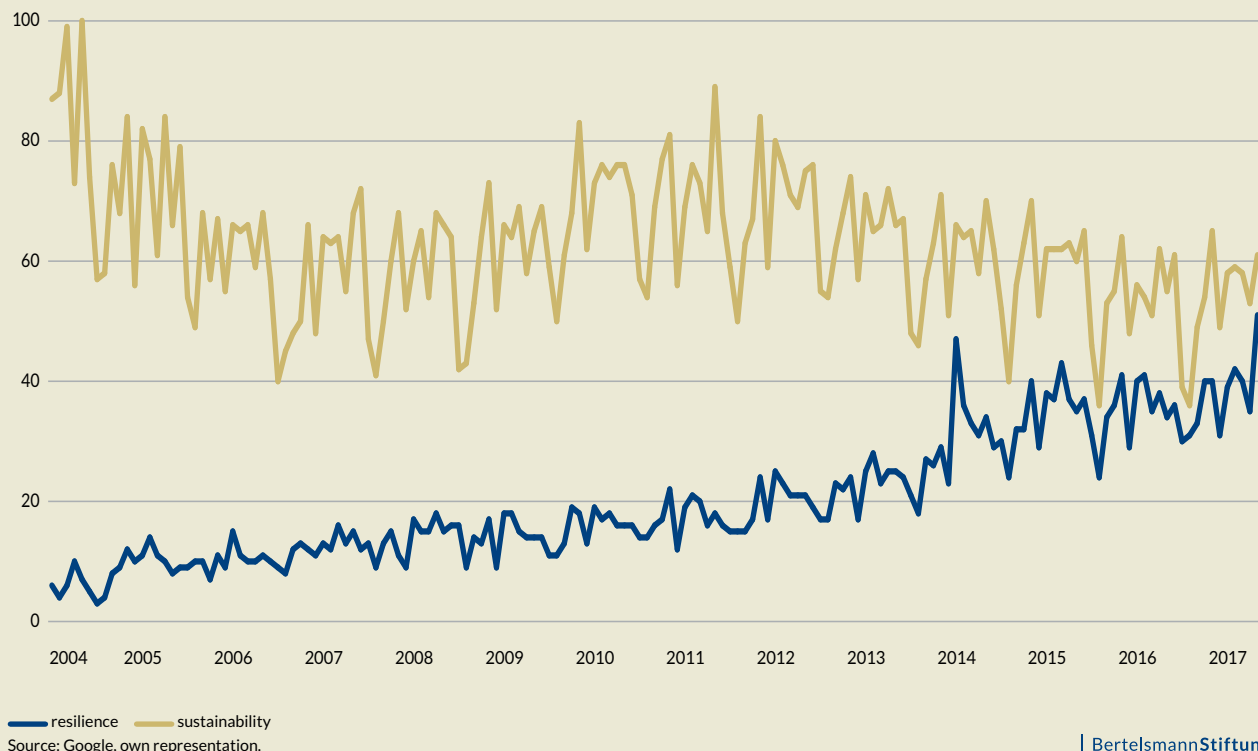
The concept of “resilience” appears poised to supplant “sustainability” in terms of the frequency of its use in the (economic) policy discourse. For the OECD, “economic resilience” has become a guiding principle in the context of economic research.¹ The term has become part of the standard vocabulary in the formulation of EU economic-policy objectives. For example, the Five Presidents’ Report on the future of the euro zone formulated as an objective that member states should converge with regard to “stronger resilient economic structures” (Juncker et al. 2015: 9). Moreover, the German federal government, in its priorities

1 www.oecd.org/eco/economic-resilience.htm

paper for the G-20 summit in Hamburg, placed the issue “Building Resilience” at the top of its list (Bundesregierung 2017). If one uses the Google search frequency (in the German-speaking world; see Figure 1), then a rising popularity since the years of the financial and euro debt crises is evident, with further gains since 2014.

The appeal of the concept of resilience after years of recurrent economic and political crisis is hardly surprising. European economies were destabilized in quick succession by the global 2008 – 2009 financial crisis and the subsequent euro area sovereign debt crisis. Afterward came the escalating refugee crisis in 2015, the EU integration crisis

FIGURE 1: Google hits for “Nachhaltigkeit” (sustainability) versus “Resilienz” (resilience)



that manifested in the Brexit decision, new threats posed by international terrorism, and increasingly aggressive and/or authoritarian actions by states in the EU's neighborhood. The past years have thus demonstrated that Europe's economic (and political) environment is continually characterized by abrupt change. If such crisis-promoting external influences are to a certain extent unavoidable, then the question logically follows as to whether the capacity to handle and cope with such shocks is in place, and if so, how it is constituted. In this respect, the concept of resilience today represents an "idea whose time has come in policy debates" (Martin and Sunley 2014: 2)

However, the strong increase in the frequency of usage, paired with the simultaneous lack of deeper conceptual work, increasingly arouses the impression that a trendy new concept is being put into circulation without a genuine understanding of what it means. The term thus runs the risk of developing into a trendy empty-vessel concept serving often only as a means of marketing traditional points of view.

Against this background, this paper is intended as a contribution to establishing greater precision for the concept of resilience from the perspective of economic policy. The goal is to show the degree to which the consideration of resilience can in fact produce added conceptual value, and thus can play a normative role in the determination of economic-policy strategies.

It appears in particular that the interplay of a static resilience dimension (a system should retain its ability to function after a shock) and an adaptive dimension (a system should show itself as able to adjust to long-term crisis-driven changes in its environment) is indispensable in giving precision to the concept in an economic context. In addition, the economic consideration of resilience should not be limited exclusively to the macroeconomic perspective. The interplay of the macroeconomic level with the behaviors of businesses and workers at the microeconomic

level, as well as with the work of economic-policy decision makers, plays a decisive role in an economy's ability to cope with crises.

In the following sections, this article first outlines the history and use of the concept of resilience in various disciplines. On this basis, with reference to the context of economic policy, a definition of resilience is proposed, and its overlap with and demarcation from other guiding policy principles is worked out. Subsequently, the analysis indicates which dimensions must be addressed by a consistent and comprehensive strategy for increasing an economy's resilience. The article concludes with some considerations regarding the risks associated with the new term, and identifies research needs.

2 Use of the term, from ecology to psychology

Word origin and meaning in physics

The word “resilience” derives from the Latin verb “*resilire*,” which can be translated as “rebound” or “bounce back.” Thus, in its original meaning, the term refers to the property of an object relative to an active force that has changed its original form. A resilient object in this original word meaning is not permanently changed by the action of the force. The use of the term in physical materials research corresponds closely to this word meaning; here, it refers to the property of a material to return quickly to its original form following a deformation (Martin 2012).

Reference to ecological and technological systems

Moving on from this initial meaning, the first major development in the concept’s history was to make an analogy between the features of a material on the one hand, and those of a complex system on the other. Holling (1973) pioneered the application of the concept to a system, defining resilience in the field of ecology as follows: “Resilience determines the persistence of relationships within a system and is a measure of the ability of these systems to absorb changes of state variables, driving variables, and parameters, and still persist” (Holling 1973: 17). The persistence of the ecological system thus refers to the original stable equilibrium. The extent of resilience is in this regard measured on the basis of the strength of the shocks absorbed by the system before the original equilibrium is permanently destabilized (“tipping point”), and is alternatively referred to by Holling as “buffer capacity.”

The field of engineering seamlessly follows the use of this term in its ecological sense, except here the focus is on technological rather than natural systems. Complex technological systems are resilient if they can continue to fulfill their functions even when impacted by negative external events. The

resilience of such systems can be strengthened, for example, through the presence of redundancies (capacity reserves) or flexibilities (the assumption of functions by another subsystem when the original subsystem is damaged).

Psychology: reference to the person as an individual

The next step in the development of the concept toward the economic-policy context in which we are here interested is the use of resilience in reference to the person as an individual. In this regard, the field of psychology considers an individual’s resilience in relation to severe traumatic events. “Resilience is the process of effectively negotiating, adapting to, or managing significant sources of stress or trauma. Assets and resources within the individual, their life and environment facilitate this capacity for adaptation and ‘bouncing back’ in the face of adversity. Across the life course, the experience of resilience will vary” (Windle 2011: 12). Here, more clearly than in the previously cited disciplinary contexts, it is not primarily about a return to the status quo in place before the external disturbance, because this – due to a chronic illness, a disability, a drastic social change in living conditions, or the death of a family member – is no longer achievable. The focus is rather on adaptation to the new conditions while preserving a high quality of life. In psychology, a specific performance assessment (quality of life) thus moves into the foreground, on the basis of which the extent of resilience is assessed even in the case of permanent objective changes.

The social-sciences context

The step from the individual dimension to the consideration of human resilience in the context of communal systems takes place in the social sciences, and opens up the relevant context for the economic-policy reflections. For

example, regional-studies approaches examine the resilience of colony systems shaped by people and their interactions. Here, this can be about the consequences of natural disasters for cities, for example (Godschalk 2003). Urban systems are characterized by the interdependence of technological systems (infrastructure) and human communities. Therefore, a purely engineering-focused analysis of the technological systems' performance falls short. The effectiveness of social systems (education institutions, health care sector, public administration, private businesses, neighborhoods, families and so on) is also of significance, as they are no less critical than technological systems to cities' functioning. A typical definition of resilience from this discipline is that of Mileti (1999: 32-33): "Local resiliency with regard to disasters means that a locale is able to withstand an extreme natural event without suffering devastating losses, damage, diminished productivity or quality of life, and without a large amount of assistance from outside the community."

Social-sciences usages emphasize the adaptive dimension

The following fundamental difference between ecological systems on the one hand and systems shaped and influenced by people on the other is of great significance for the economic reference: People can prepare themselves prospectively for uncertainties, and can learn and make systemic changes (Dovers and Handmer 1992). In a natural system, an inherent and unchangeable absorption capacity determines the way that shocks are processed. In a social system – in addition to national restrictions (for example, due to limited resources) – conscious elements of design carried out by people are of critical importance.² Thus, the adaptive dimension of resilience previously emphasized in

2 Ecological systems are also adaptive in an evolutionary sense. In systems controlled by humans, however, adaptation can also take place through conscious decisions.

psychology also appears in the context of social-science analysis. Resilience therefore no longer necessarily refers to the capacity of a system to return to an old and unchanged state after a short aberration. Rather, adaptive resilience takes into account the capacity indicated by whether a transition is successfully made to a potential new state, which however is no less satisfactory than the previous state.

Cross-disciplinary content of the concept

Despite the differences in the various disciplines' usages (see also overview in Table 1, or Norris et al. 2008), there are at least three overarching commonalities in the use of the term. Thus, these should also be observed in the use of the term within the economic-policy context.

Reference to suddenly occurring adverse disruption: First, considerations of resilience appear primarily in the context of a suddenly occurring negative event (disruption, shock, catastrophe, stress), not in relation to a gradual change in the environment. For example, in regional sciences, resilience observations relate to a natural catastrophe such as a flood or earthquake, but not to gradual climate change (Norris et al. 2008). In this regard, resilience is a concept with a specific dynamic understanding: It is about the reaction to a short-term adverse event.

Exogeneity of the disruption: Second, the consideration of resilience focuses on exogenous, not endogenous developments. Negative developments immanent to the system refer to features of the given (ecological, technical or social) system, and thus constitute an element of its equilibrium. By contrast, resilience refers to system characteristics that appear in reaction to a disruption from the outside.³

3 In practice, the borders here are fluid. A major technological accident, for example, is a typical object of a regional-sciences resilience assessment, even if in the broader sense it can be understood as an endogenous (induced by the freely chosen use of a certain technology) event.

TABLE 1: Individual disciplines' use of resilience as a concept

Discipline	Physics	Engineering/ technology	Ecology	Sociology/disaster management/politics	Psychology
Definition(s)/ particularities	Capacity of a material to absorb energy Property of returning to original form after an elastic deformation	Stability near a point of equilibrium Resilience as a generally static concept Resistance of systems to shocks (resistance capacity) Capacity of technical systems, in the case of partial failure, to avoid complete failure	Capacity to absorb shocks and retain relationships within the system Buffer capacity to absorb (external) disruptions (similar to the resistance concept) Probability of persistence Degree of self-organizational capacity within a system Reorganization with retention of original structures/identity (retention of qualitatively similar status)	Maintenance of essential functions in case of catastrophe (without external aid) Capacity to adapt existing resources / capabilities to new conditions Degree to which a system is capable of expanding learning and adaptation abilities Goal: acceptable level of (institutional) functionality	Positive adaptation/ development despite "high-risk-patient status," trauma or chronic stress Constant development despite adverse factors of influence Behavior conforming to laws despite adverse socioeconomic factors (forensics)
Resilience measurement & dimensions	Amount of absorbable energy Duration before recovering original form	Duration before reaching original equilibrium Low extent of effect	Magnitude of shock before a tipping point is reached Time before recovery of previous state	Relative: avoidance of potential catastrophic consequences Retention of social order/ quality; social networks	Resilience as ex ante non-observable characteristic Retention of mental health
Literature examples	Bodin and Wiman 2004, Martin 2012	Thalmayr 2015, Martin 2012, Rose 2007	Holling 1973, CARRI 2013, Klein et al. 2003	Godschalk 2003, Klein et al. 2003, Perrings 2006, UNISDR 2005	Windle 2011, CARRI 2013, Deutsches Resilienz Zentrum o.D.
Relevance/ relationship to economics	Equilibrium perspective for dynamic economic systems makes little sense			Positive: social dimension (adaptation, learning capacity, social capacity) Political, economic and cross-regional factors are poorly differentiated	Positive: strong focus on adaptation to crises in the field of psychology In economics, more ex ante clarity with regard to resilience-promoting factors

Distinction between resilience and prevention: Third, as far back as the word's origin, the consideration of resilience does not take into account statements regarding the probability of sudden adverse events, but rather addresses the effects and processing of such events. This understanding permeates applications in all disciplines. Consequently, analyses of resilience should be conceptually distinguished from issues of crisis origin or prevention. At the core of a resilience strategy is not the prevention of crises, but rather the attempt to cope with a crisis – one which is unavoidable, or one whose probability can be influenced only to a limited degree – as well as possible. This includes also proactive measures in the run-up to a possible crisis. However, these are not oriented toward averting the crisis, but rather toward coping with it more effectively through preparatory measures.

Additional terminological distinctions

The contents of the concept of resilience, as given greater precision above, lead to further distinctions between important terms that are significant for the formulation of economic-policy strategies.

Resilience versus stability: The resilience of a system is not to be equated with its stability (in the sense of a low degree of volatility) (Rose 2009). Even a system that undergoes considerable short-term fluctuation as the result of a shock can prove to be resilient if, following a phase of instability, it reaches a new equilibrium with performance comparable to that displayed before the shock

Resilience versus vulnerability: These two terms too should not be equated. Vulnerability is the broader term, encompassing the extent to which a system is exposed to crisis (Rose 2009), and is thus minimized through successful crisis-prevention measures. By contrast, the degree to which resilience has been achieved can be assessed only with respect to a crisis. A system in which crisis-pre-

vention measures have been successfully carried out reduces its vulnerability. However, it does not necessarily thereby improve its resilience (for the case in which the now-less-probable crisis event nevertheless takes place).

Resilience versus sustainability: These two concepts differ with respect to their temporal dimension. Sustainability considerations from ecology to economics are defined on the basis of very long time horizons, typically encompassing several generations. Sustainable systems have the prospect of fulfilling their functions even after the passage of decades (or centuries). Sustainability is also often a reaction to gradual changes. Observations of resilience are undertaken over a shorter period of time. The systemic disruption under consideration is of a shorter-term and more abrupt nature, and the question of processing the shock, if necessary, refers at most to the medium term. As compared to resilience, sustainability is the more comprehensive concept; resilience represents a necessary but not sufficient condition for sustainability.

3 A definition of the term for the economic-policy context

Measured against the foregoing conceptual clarifications, current definitions of resilience within the economic-policy context (to the extent use of the term is even accompanied by such definitions) are far from satisfying.

A one-dimensional macroeconomic conception of resilience is dominant among international institutions. A Bank for International Settlements paper (BIS 2016: 1) released for the autumn 2016 G-20 meeting says: for example “A resilient economy is a natural policy aspiration. One aspect of resilience is an economy’s capacity to absorb and quickly recover from adverse shocks, containing their impact on output and employment.” The formulation in a current working paper from the European Central Bank is similar: “Resilience is understood here as the capacity to minimize output losses once an adverse shock hits the economy” (Sondermann 2016: 2). This equation of resilience with the neutralization of growth and employment consequences, while broadly ignoring the dynamic, adaptive dimension, is not atypical of the term’s use at the level of the international economic-policy coordinating bodies. There is also a lack of any reflection as to how performance after a crisis can be assessed. To be sure, a simple growth criteria is operationally useful, but today fails to resonate with comprehensive societal objective functions.

In addition, terminological confusion is evident between resilience in the above-developed interdisciplinary understanding and the reflections on crisis prevention such as that contained in the following definition from an OECD working paper: “Economic resilience can be defined as the capacity of an economy to reduce vulnerabilities, to resist to shocks and to recover quickly. It can be strengthened by exploring the role of policies that mitigate both the risks and consequences of severe crises” (Caldera Sánchez et al. 2016: 6). Under this understanding, the avoidance of crises is a part of a resilience strategy, in contrast to the interdisciplinary use of the term. This macroeconomic literature considers the use of certain indicators as an early-warning system for impending crises (Hermansen and Röhn 2015),

for example, or examines preventative approaches that offer promise with regard to avoiding banking, real-estate, balance-of-trade or economic crises (see overview in Caldera Sánchez et al. 2015).

In a certain sense, such well-established resilience definitions are at the same time too broad (because they combine resilience and crisis exposure) and too narrow (because they suppress the dynamic, adaptive dimensions of the concept, and assess the performance of the economic system too one-dimensionally).

Requirements for an definition for the economic-policy context

In accordance with the social-science understanding of the resilience concept, a definition in the economic-policy context necessarily must include the adaptive dimension, and must not limit itself to a static understanding in the sense of a return to the pre-disruption state. Humans and the systems shaped by them are characterized by the capability to adapt, learn and deal with crises creatively (Dovers and Handmer 1992).

This requirement applies particularly with regard to economic systems, as these are subjected by innovation and growth processes to continuous changes, which can and must be shaped by people. While in the case of an ecological or technical system it might still be reasonable to speak primarily about a possible return to an old “normal state,” this is not true of an economic system; at best, the return to a pre-crisis development and growth path can be considered as a point of reference.

A definition for the economic context must also take into account that a national economy represents a system determined by a multiplicity of actors at various levels, along with their interactions. In this regard, social interdepend-

encies and the decision processes within the political system play a role, as do the decision-making behaviors of individuals as voters, consumers or entrepreneurs. A comprehensive definition must include these different levels.

and European economic policy, the objective function could be described using the concepts of inclusive and sustainable growth, and operationalized accordingly.

A definition

Against this background, the following definition appears suitable as a starting point for a comprehensive economic-policy resilience strategy:

Definition of economic resilience

Economic resilience is the capability of an national economy to take preparatory crisis-management measures, mitigate the direct consequences of crises, and adapt to changing circumstances. In this regard, the degree of resilience will be determined by how well the actions and interplay of the political, economic and societal spheres can safeguard the performance of the economy – as measured against the societal objective function – also after a crisis.

This definition captures the contents of the resilience concept that are essential in the economic context, including the proactive and adaptive dimension. In addition, the formulation makes it clear that the resilience of an economic system is determined through the interplay of different levels. The societal objective function referred to in the definition is a placeholder that must be filled on the basis of the relevant regional and historical context, and which is to be determined through a democratic decision-making process. In this regard, it may be that adjustments in the objective function itself may figure into the crisis-driven adaptations. In the context of today's German

4 Dimensions of a comprehensive resilience strategy

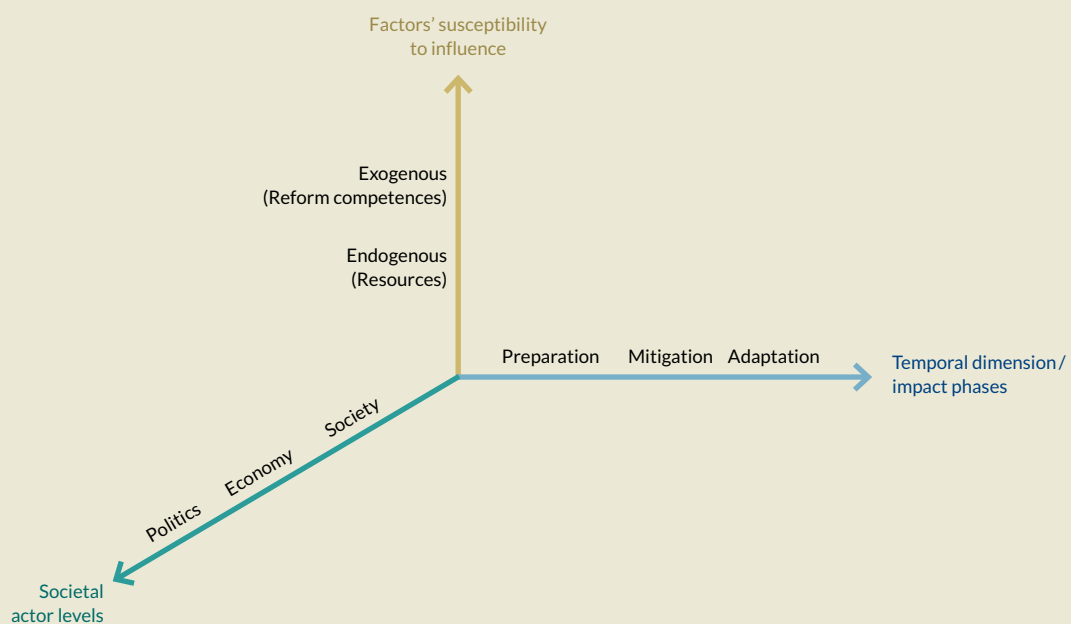
Writing on the concept of resilience, Swanstrom renders the following judgement: “[R]esilience is more than a metaphor but less than a theory. At best it is a conceptual framework [...]” (Swanstrom 2008: 2). This may be a realistic appraisal of the added value possible for this concept of comparatively recent vintage within the field of economic policy. A precise and fully fleshed-out idea of resilience offers a conception that can take on a directive function if societies want to prepare themselves for unavoidable crises.

The dimensions that such a resilience strategy must cover are set out in the above definition. In this respect, a strong resilience strategy must aim to:

- Strengthen existing crisis-management capabilities,
- Take the various crisis phases (preparation, mitigation and adaptation) into account, and
- Address the various levels (politics, economy, society), including their interplay.

In the literature, a distinction is made between “exogenous” and “endogenous” types of crisis-management capabilities (Rose 2016). The former describe existing resources available in the short term (such as natural resources, human capital, infrastructure or financial reserves). The latter, closely related to the adaptive dimension of resilience, take into account an economy’s reform competences, which are furthered through flexible insti-

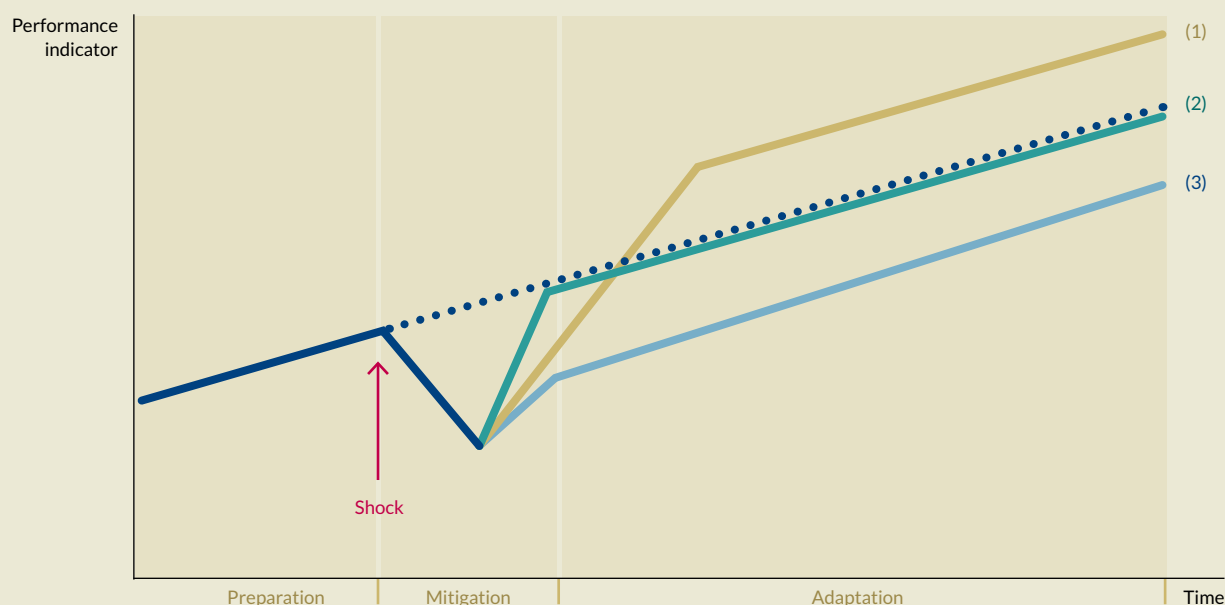
FIGURE 2: Dimensions of a resilience strategy



Source: Own representation.

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FIGURE 3: Performance under conditions of a crisis



Source: Own representation.

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tutions, workers and businesses, as well as by a high level of social capital (mutual trust, networking). However, the “exogenous” resources in a proactive resilience strategy are not truly exogenous; they can be consciously augmented in order to be available in times of shortages caused by crises.

The three temporal phases encompass the time before (preparation), during (mitigation) and after the crisis (adaptation). During the crisis, the focus is on maintaining the greatest degree of functionality possible, as well as on avoiding dramatic declines in employment, growth or development; some adjustments are also already conceivable at this point.

No matter how the various levels are ultimately specified, every comprehensive strategy must include both the micro level (for example, workers’ readiness and capability to adapt) and the macro level (such as the state’s fiscal maneuvering room).

The aim of such a comprehensive resilience strategy is to positively influence performance (with reference to the social definition of objectives) both during and after a crisis. A permanently poorer performance (trend line (3) in Figure 3) will be avoided to the greatest extent possible, the consequences of the shock will be permanently neutral-

ized (trend line (2)), or – in the ideal case – the crisis will even be used to transition to a higher path (trend line (1)).

Type of crisis

If a resilience strategy is specified, then ultimately the type of shock the strategy is meant to address must also be identified. With a view to the crisis years of the recent past, this could include banking, financial, real-estate, debt and currency crises with their various cross-border effects, or a global growth decline triggered by any other cause which is associated with a slump in national export performance. With regard to all crisis-specific aspects, there should ultimately be a large field of resilience-promoting factors that collectively increase resilience for many different types of crisis. Examples include (with regard to resources) the state of public finances, and with regard to reform competences, the degree of flexibility and openness to change among workers and voters.

5 Conclusions and possible applications

If the concept of resilience is developed comprehensively, and is not simply forced into service as no more than a new label on well-worn messages, then it holds economic-policy potential as a kind of new compass. This is because the question of how national economies can increase their crisis-handling capabilities across their various levels is of great importance in our era of multiple crises.

However, the limitations of the new conceptualization must be observed. The considerable enthusiasm for resilience as a concept should not lead to misconceiving this term as a replacement for the formulation of societal objectives. As stated, the extent of a country's economic resilience can only be assessed in the light of a previously determined societal objective function; without identifying goals, for instance with regard to growth and distribution, the term remains only an empty husk.

Against this background, it is no accident that the vogue for the concept of resilience has coincided with the demand for inclusive growth – that is, a growth that links economic dynamism with participation opportunities for all population groups. If a crisis does occur, the associated consequences are potentially serious for the socially weaker groups within a society. On the one hand, these groups have few opportunities to absorb income fluctuations; on the other, an economic crisis is often accompanied by decreases in the government's capability to engage in social redistribution. One of the goals of an economic policy obligated to pursue inclusive growth must thus be to seek means of managing crises that ensure that the objectives of inclusive growth are compromised as little as possible.

The gaps in knowledge today remain as large as resilience's entry into the lexicon of economics is recent. How does resilience differ within various European countries with respect to various types of shocks? What types of resilience can be distinguished on the basis of different societal objectives? What factors promoting resilience are of empirically large significance? Where do Germany and the EU show

specific shortcomings with regard to coping with crises? What strategies for improving resilience can be implemented here, and which are most promising? Questions such as these remain largely unanswered today, and point the way to an extensive need for future research.

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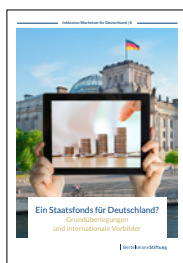
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“Inclusive Growth for Germany” is a publication series from the Bertelsmann Stiftung’s Shaping Sustainable Economies program. The German economy is as strong as ever. But growth in recent years has not been inclusive. Inequalities between groups of people, generations and regions have increased. In order to ensure the continuing success of the social-market-economy model, we must we must rethink the relationship between growth and a socially inclusive society. The series contributes to this important debate by analyzing current developments and offering feasible recommendations for action.

Following the tradition of its founder, Reinhard Mohn, the Bertelsmann Stiftung is committed to the common welfare. It sees itself as an agent of social change, and supports the goal of a sustainable society. The Stiftung is independent and non-partisan.

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