The Changing Economic Geography of Companies and Regions in Times of Risk, Uncertainty, and Crisis

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Chapter 2

Contemporary Perspectives on Uncertainties, Risks, and Crises in Economic Geography

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2.1 Introduction

Economic geography is a dynamic research field that is grappling with the major challenges of our time, such as environmental changes (e.g., Neise, Sambodo, and Revilla Diez 2021), socio-political shifts (e.g., Völlers, Yavan, and Franz 2021), and shocking events (e.g., Brinks and Ibert 2020). In these largely interdisciplinary research areas, uncertainties, risks, and crises have become key terms, reflecting the constantly changing economic systems and their spatial patterns.

The terms uncertainties, risks, and crises are closely related. Uncertainties and risks are inherent features of economic activities and can result from various situations such as technological change, political instability, and natural disasters. These uncertainties and risks may manifest themselves in crises in which economic systems are disrupted, often leading to severe consequences for individuals and communities. The relationship between uncertainties, risks, and crises is thus a sequential one in which uncertainties and risks contribute to generating crises. Managing uncertainties and risks, for instance, through resilience strategies, is thus an essential factor in dealing with crises (Yeung 2023).

This chapter explores these fundamental terms to shed light on their conceptual foundations and examine their significance in the context of economic geography literature. Drawing on interdisciplinary insights from economics, sociology, organizational studies, and political science, the conceptual nuances of these terms and their theoretical foundations are outlined. By means of a review of seminal and contemporary literature, we elucidate how these concepts have been applied in the research fields of economic geography.

It is noticeable that there are clear differences in the scope and conceptual depth of the literature between risks, crises, and uncertainties. While there is extensive empirical work on risks, in particular, the concept of uncertainties has been far less intensively discussed and utilized. Accordingly, the discussion of the three concepts of uncertainties, risk, and crises will also vary in the following.

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2.2 Conceptualizing Uncertainty

Uncertainty is a topic that has been discussed for a long time in a variety of disciplines. However, there is still an ongoing debate on the definition and understanding of uncertainty. One of the most important conceptual contributions to dealing with uncertainty in an economic context has been the distinction between risk and uncertainty by Knight (1921).

Knight (1921) distinguishes between risk and uncertainty by the possibility of assigning probabilities to certain situations in the economy. Risks, in his view, refer to conditions to which probabilities can be assigned. They can be calculated ex ante or based on statistics from the past and can be used as a basis for strategic decisions and managerial actions. Uncertainty, on the other hand, refers to conditions where individuals cannot rely on probability calculations. Situations of uncertainty are often unique and, therefore, associated with unknown outcomes (Beckert 1996), meaning that "we cannot predict or foresee what will happen when acting or not acting" (Aspers 2018, 133).

Even if Knight's distinction between uncertainty and risk is analytically clear-cut, it is difficult for actors to determine whether certain situations are uncertain or risky. It can be assumed that even situations that seem predictable due to probability distributions contain elements of uncertainty. This illustrates the limits of rational calculation of economic situations, and the importance of uncertainty in the modern economy (Beckert 2013; Mousavi and Gigerenzer 2014). Two main types of uncertainties can be recognized from the literature, which have different implications for the economic actions of decision-makers.

First, *informational uncertainty* arises due to a lack of available information or incomplete knowledge about a subject, event, or situation needed for a specific decision. An example of this would be when managers do not have complete information on location factors before deciding to invest in a new subsidiary. This type of uncertainty arises because of incomplete data or information as well as a lack of transparency (Vignoli et al. 2020).

Second, *fundamental uncertainty* is not solely due to a lack of information; it is rooted in the nature of the underlying processes or events with their unknown future outcomes. Fundamental uncertainty is based above all on the unpredictability of human behavior, and the fact that one's own economic actions always depend on third parties (Bathelt and Glückler 2003). It implies that in fundamentally uncertain situations relevant information "does not exist at the decision time because the future is yet to be created" (Dequech 2000, 41). An example of this would be assessing the economic consequences of political events such as geopolitical changes, where the outcome is unknown.

While economic theory traditionally viewed uncertainty as a threat to economic processes, alternative views have become established in organizational theory. In this view, uncertainty does not necessarily have to be reduced but can be used productively, for example, in engaging with creative processes (Ibert et al. 2021).

2.3 Uncertainty in Economic Geography Literature

Uncertainty has led to considerable debate in many areas of the social sciences. However, this is only partly the case in human geography (Senanayake and King 2021) and is far more evident in economic geography research. The limited studies that deal directly with uncertainty go across the sub-disciplines of economic geography (e.g., Glückler 2005; Ibert et al. 2021; Sohns and Wójcik 2020). They are mainly associated with a focus on situations and processes of major changes, and crises, as well as innovation and creativity, which are primarily characterized by fundamental uncertainty. Selected studies are presented below as illustrative examples.

How firms deal with uncertainty in processes of major changes is investigated by Glückler (2005), using the case of internationalization in the management consulting industry. The internationalization of management consulting firms is characterized by a high degree of uncertainty, fueled by three sources: the liabilities of foreignness, a lack of institutional standards, and the nature of consulting services as experienced goods. To successfully embed themselves in foreign local markets consulting firms must find mechanisms to bridge uncertainty. Two mechanisms were highlighted by Glückler (2005): trust and reputation. Personal, and especially goodwill trust, has been shown to be an important mechanism in building relational embeddedness, and to overcome uncertainty. Reputation, especially networked reputation, "has proved to be a key mechanism of social communication that reduces uncertainty, creates new relations between formerly unrelated actors, and thus facilitates the emergence of structural embeddedness" (Glückler 2005, 1746). Overall, the study shows the importance of social practice institutions in the uncertain internationalization processes of firms.

How firms mediate uncertainty generated by crises has recently drawn attention in economic geography research, especially due to the case of Brexit (e.g., Fuller 2023; Panitz and Glückler 2022; Sohns and Wójcik 2020). Fuller (2023) analyzed this question using the case of foreign subsidiaries in the Southeast of England and Wales. He shows that the resulting responses of foreign subsidiaries caused by Brexit are geographically uneven. The research demonstrates that foreign subsidiaries in Southeast England can cope with the high degree of uncertainty induced by Brexit. Fuller attributes this to the companies' status as high-value creation subsidiaries, which goes hand in hand with autonomy and the ability to take independent measures. In contrast, foreign subsidiaries in Wales have less autonomy and ability to react independently to the crisis, due to their status as low-value creation subsidiaries. The study emphasizes the important role of fictional expectations (Beckert 2013) in mediating uncertainty in crises. It is these cognitive or narrative frames that provide decision-makers guidance for action to navigate the unknown outcomes of the future.

Innovation and creativity, as time-spatial processes with unknown outcomes, are also part of the economic-geographical debate on uncertainty.

Ibert et al. (2021) analyze the role of uncertainty in creative collaborations in the fields of music production and pharmaceutical development. The peculiarity of this study is that the authors do not conceptualize uncertainty as a threat to economic interaction but as a productive asset. Using the example of eight creativity biographies, three central practices in dealing with uncertainty are identified: embracing, fixing, and ignoring.

Embracing uncertainty can be understood as a practice of actors adopting an attitude of open-mindedness as well as receptiveness to surprises and unpredictabilities. Actors deal actively with uncertainty in creative processes by consciously venturing into unexplored areas and value open-ended exploration. Therefore embracing "encompasses awareness and acceptance of possible failure, and a general tendency to observing and reacting, rather than planning" (Ibert et al. 2021, 124).

Fixing uncertainty involves dealing with situations where multiple options of similar value and viability exist, often occurring in ambiguous scenarios. Participants assign a temporary resolution to one uncertain aspect, allowing the focus to shift to another uncertain dimension. These fixes guide decision-making temporarily, but they influence subsequent steps and may halt exploration in certain directions.

By ignoring aspects of uncertainties, participants of creative processes act "rather with a general disposition of confidence toward established or upcoming uncertainty, in the sense of 'pretending' or acting as if an already identified uncertainty does not exist" (Ibert et al. 2021, 128). In other words, actors prefer to be ignorant, especially when no plausible solutions are available.

2.4 Conceptualizing Risks

The term risk is characterized by its multitude of definitions and numerous changes in meaning. Thus, it is essential to highlight its conceptual particularities. Above all, it is important to emphasize that risks—unlike dangers—are always the result of a decision made beforehand. In the vein of a social constructivist view on risk, it is the decision that leads to the possibility of creating an undesirable state, thus, risks can be understood as the product of human action (Zehetmair 2012). Accordingly, decision-making is of cardinal importance for risk research, as the impression that the world is becoming increasingly risky for the people who live in it (Beck 2008) is primarily due to the increasing complexity of the consequences of decisions. The globalization of supply chains, insecure critical infrastructures, and risks arising from cultural differences, make it difficult to assess the consequences of economic decisions (Kwak, Seo, and Mason 2018; Pachura 2024 in this book). In addition, many risks are highly interdependent. For example, legal frameworks, environmental impact, market, and capital access, reputations, and resistance, influence each other in complex ways (e.g., Franz, Schlitz, and Schumacher 2018; Starr, Newfrock, and Delurey 2003). Risks can also undergo dynamic shifts; depending on environmental changes, previously latent risks can become acute. At the same time, risks that were very prominent over a certain

period can recede into the background and regress to a latent stage (Barnett and Pratt 2000).

At first glance, the concept of risk, in line with Knight (1921), is inherently associated with the desire for objectivity in predicting future events using quantitative methods: "Risk prevails in the 'world of classical statistics,' where there is a known set of possible future events and every event can be attributed a probability (distribution) based on observations about relative frequencies with which these events took place in the past" (Bartkowski and Hansjürgens 2019, 21). On this basis, the so-called risk formula (product of probability and consequence) is used to objectify risks. The formula enables the assessment of a situation at a specific point in time, independent of its context and comparison with other configurations (Renn 1990). Furthermore, it not only allows for quantitative comparisons of different risks, but also the calculation of the effects of protective measures (Zehetmair 2012).

However, there are methodological limitations to quantifying the effects of damages, faults, and impairments which need to be accepted. Not all impacts of harmful events can be described through feature counts, nor can they be expressed in financial terms. Thus, classic variables used in the analysis of environmental disasters (e.g., number of victims, damage in dollars) do not provide a complete understanding of the consequences of events. Effects such as disrupted family relationships, post-traumatic stress disorders, or depression among disaster victims, are hardly able to be grasped through quantitative approaches (Rohrmann 2008). The same applies to the individual perception of risks. As the mere fact that a risk is classified as highly relevant based on statistical indicators, does not mean that it also guides action; it is worthwhile to give increased attention to this aspect (Renn 1990). This is necessary not least because empirical comparisons between quantitative risk assessments and individual risk perceptions often reveal significant discrepancies (Greiving et al. 2021). The basis for differing perceptions lies in various interpretations of the world, which, in turn, are shaped by experiences and strong beliefs that arise within the context of norms, values, and cultural characteristics (Lupton 2013; Slovic 1992). At the same time, social processes in the actors' environment (such as the influence of the mass media) serve to amplify certain risks while seemingly neglecting others (Pidgeon and Beattie 1998).

For a deeper understanding of economic activity in a spatial context, it is important to note that the risk perception of individuals is also relevant at the organizational level. Depending on their position or competencies within the organization, the personal risk perception of managers directly influences the organizational response to risks (Völlers, Yavan, and Franz 2021). This explains why companies can have very different strategies for dealing with comparable risks and in similar situations (Franz, Schlitz, and Schumacher 2018).

2.5 Risk in Economic Geography Literature

Debates on risk are mainly situated in three sub-disciplines of economic geography, within the domain of financial geography (e.g., Ashton 2009; Clark 2010;

Johnson 2013), in research on globalization processes (e.g., Bathelt and Henn 2021; Coe and Yeung 2015; Torrance 2009), and environmental economic geography (e.g., Neise, Revilla Diez, and Garschagen 2018; Pollard et al. 2008; Stanley 2013). Most prominently debated are two types of risk: financial risk (e.g., Bennett 2009; Christophers, Bigger, and Johnson 2020; Clark 2010) and risk related to the global interlinking of economic activities (e.g., Bryson and Vanchan 2020; Coe and Yeung 2015; Völlers et al. 2023).

A number of economic geographers, directly or indirectly, refer to the economic notion of risk defined by Knight (1921), who differentiates between risk (calculable) and uncertainty (non-calculable). Although a critical engagement with the risk concept is becoming increasingly apparent, the objectifying notion of risk is still predominantly applied in subsequent debates—following a risk-and-reward-paradigm, or a trade-off-thinking between risk and opportunities, in favor of opposing terms such as risk and reward (e.g., Blažek 2016), risk and value (e.g., Bryson and Vanchan 2020), as well as risk and trust (e.g., Bathelt and Henn 2014). However, debates in economic geography literature are also influenced by sociological and cultural political economy perspectives on risk, acknowledging the role of microfoundational aspects.

Some authors start emphasizing an actor-centered stance with socio-spatial emphasis. In so doing, these economic-geographical scholars stress variables such as spatial-relation context (e.g., Ekinsmyth 2002; November 2008; Rodrigue, Notteboom, and Pallis 2011) and more specifically embeddedness, and the role of risk perception (e.g., Gagliardi and Iammarino 2018; Kleibert 2015; Völlers 2023), in addition to connecting the conceptualization of risk to the idea of future-oriented expectations (e.g., Baldwin and Stanley 2013; Christiansen 2021; Green 2000). These debates build alternative conceptual arguments regarding the nature of risk, which is seen as resulting from social practices rather than as an objective entity (e.g., Brill and Robin 2020; Schwabe 2020; Völlers et al. 2023). Especially studies emphasizing the fictional aspect (see Beckert 2013) of humans fabricating *the* future, recognizing facets of risk production such as power relations, legitimacy, governmentality, and the discursive or narrative (e.g., Emel and Huber 2008; Green 2000; Lanari et al. 2021), and social-cultural aspects of reputation-related risks (e.g., Clark and Hebb 2005; Ibert et al. 2019; Kleibert 2021). Additionally, some authors engage in debates on risk while drawing attention to the mediating role of formal (regulations) and informal (interpersonal networks) institutions (Bathelt and Henn 2014; Bennett 2000; Rafiqui 2009).

Economic-geographical literature focusing on individual human behavior and decision-making, specifically highlights the role of context and cognition (e.g., Clark 2022; Strauss 2008, 2009). One of the early accounts adopting a constructivist perspective on risk in economic-geographical literature represents the case study of the environmental understanding and knowledge of local (lay) people regarding industrial hazards in England by Irwin, Simmons, and Walker (1999). The authors advocate for acknowledging the context-specific sense-making processes of how individuals interpret their immediate

surroundings in everyday life. "[…] [R]isk does not stand apart from the range of social relationships, worldviews, everyday practices, and shared understandings which constitute local culture" (Irwin, Simmons, and Walker 1999, 1325). In the same vein, November (2008, 1526) argues for a spatial aspect in the analysis of risk perception and assessments as "space influences the implications of risk just as risks affect and alter spaces themselves" (see also Stanley 2013).

An increasing number of economic geographers are analyzing risk-related globalization processes through the lens of the so-called Global Production Networks approach 2.0 (GPN 2.0), with an underlying network perspective on cross-border economic activities. This GPN 2.0 discussion started to gain momentum when Coe and Yeung (2015), introduced the concept of GPN risk. In this way, Coe and Yeung (2015, 110) argue that "global production networks are fundamentally an organizational platform for economic actors to mitigate the different forms of *risk* inherent in the competitive dynamics of cost reduction, capability building, market growth, and financial discipline." The authors differentiate between five types of risk: economic, product, regulatory, labor, and environmental. Thereby, four characteristics were identified by Coe and Yeung (2015) describing GPN risk: First, risk has the potential to be transmissive and amplifiable through coupled locations and interlinked GPN actors. Second, the nature of coordinative management approaches is determined by the fundamental nature of risk. Third, applied risk management grids allow deductions to be made about the power relations within a network. Fourth, certain risks are specific to particular industry sectors (e.g., Coe 2021; Yeung 2022). In principle, GPN risk is conceptualized as being produced externally by GPN actors. However, other authors argue for including different scales to consider where risk is produced (e.g., Bryson and Vanchan 2020; Völlers et al. 2023; Völlers 2023). Geenen (2018) and Völlers et al. (2023) highlight the socially constructive nature of risk and its effects on network dynamics and organizational structures—"risk as being politically produced" (Geenen 2018, 32). Barratt and Ellem (2019) stress the spatio-temporal component of assessing and managing network-related risk dynamics; additionally, the authors draw attention to the fact that a chosen risk management strategy may itself become a risk at a later point in time.

2.6 Conceptualizing Crisis

For a long time, crises were seen as an external element beyond the control of people, organizations, and states. A crisis was seen as an "act of God that is unwanted, unexpected, unprecedented, and almost unmanageable, causing widespread unbelief and uncertainty" (Rosenthal, Boin, and Comfort 2001, 5). Since the beginning of the 21st century, scholars have been increasingly concerned with the emergence, prevention, and management of crises. The understanding of crisis in today's literature is that it is not an external feature, but

has been internalized in individual life and economic, social, and ecological systems (Rosenthal et al. 2001).

Nevertheless, the term crisis remains a multifaceted concept. However, a common understanding is that crises are "a serious threat to the basic structures or the fundamental values and norms of a system, which under time pressure and highly uncertain circumstances necessitates making critical decisions" (Rosenthal, Charles, and 't Hart 1989, 10). Roitman (2021, n. p.) stresses that crises "create narrative structure: it is a means to define an event and to delineate a beginning and an end." Calling crises a normative concept, she emphasizes that scholars should focus on the complexity of crisis discourses and understand how crisis debates are socially constructed and by whom (Roitman 2014).

Furthermore, there is a general consensus that crises are not purely discrete events, but rather unfolding as a process with certain stages (Rosenthal et al. 2001). Several scholars and organizations (e.g., Boin et al. 2005; Kruke 2012, UNISDR 2009) categorize crises into different phases, including mitigation, preparedness, prevention, response, and recovery. These "phase" models have been questioned, as they tend to oversimplify the complexity of crisis (Coetzee and van Niekerk 2012), thus leading to the conceptual development of circular models. Kruke (2012), for instance, suggests that a new normal emerges during a pre-crisis (including preparedness and prevention), and undergoes an acute (including response) and a post-crisis phase (including recovery and learning) (Morsut et al. 2021).

Next to stressing the stages covering a moment of crisis, research has engaged in classifying various types of crises (Drennan et al. 2015; McConnell 2003; t'Hart and Boin 2001). McConnell (2003) describes three different forms: sudden, chronic, and creeping crises. Sudden crises are characterized by their unexpected and rapidly evolving nature. In contrast, chronic crises are persistent and often enduring, lacking clear-cut solutions. Creeping crises gradually escalate over an extended period, spanning years or even decades. t'Hart and Boin (2001) offer a comparable categorization, which, however, focuses primarily on the speed of onset and completion. The authors distinguish between fast-burning, cathartic, slow-burning, or long-shadow crises. Like the term sudden crisis, fast-burning ones entail swift and conclusive beginnings and endings, sometimes with tragic outcomes. The cathartic crisis, resembling McConnell's "creeping crisis," evolves gradually, but concludes abruptly. A slow-burning crisis, corresponding to McConnell's chronic crisis, unfolds gradually in both onset and progression, often dissipating rather than ending definitively. A long-shadow crisis implies that the effects and repercussions of this crisis linger over an extended period, casting a figurative shadow that persists over time. These crises may unfold gradually, often building up over time before reaching a critical point, and their impacts can be enduring.

Although crises result in harmful consequences, there is also the understanding that "crises are about change […] crises are opportunities to impose new ideas and practices" (French and Leyshon 2010, 2549). Particularly, in economic-orientated science, crises are seen—next to their negative effects—as

a critical component for renewal and innovation. In line with Schumpeter's idea of "creative destruction," a crisis can be a critical juncture to rethink or break inefficient development paths (McCraw 2009).

As crises are increasingly spreading geographically, or several harmful events take place simultaneously or interact with each other in the era of globalization, several new conceptualizations have been developed. Boin (2009), for instance, emphasizes the term transboundary crisis, which transcends conventional time and geographical boundaries. Moreover, their origins can be profound, and their effects may only become apparent years later (Boin 2009). More recently, literature has moved its focus to the term poly-crises. Lawrence, Janzwood, and Homer-Dixon (2022), for instance, call the occurrence of crises in multiple global systems that are causally linked, a poly-crisis. Due to their interconnectedness, crises have a synergistic effect that causes greater damage than the sum of the individual crises on their own (see also Henig and Knight 2023; Tooze 2022).

2.7 Crises in Economic Geography Literature

The term crisis has been approached from different angles in economic geography, highlighting various key events (e.g., global financial crisis in 2007/08, European austerity policies, Brexit, and the COVID-19 pandemic) with profound effects on spatial relations and uneven development.

Related to structural and economic crises, the term resilience has received increasing attention from economic geography scholars. In particular, the global financial crisis of 2007/08 and its aftermath, have led to the concept of resilience being incorporated into debates in economic geography. Resilience, defined as the ability of a system to recover from shocks, has been widely adopted in understanding how regions, sectors, or economic systems resist and recover from various crises (Gong et al. 2020; Hassink 2010; Martin 2018; Simmie and Martin 2010). Many studies have taken a quantitative approach to analyze how crises lead to different regional growth paths. This approach relates to an understanding of resilience as a bouncing back effect, in other words returning to pre-shock conditions (e.g., Christopherson, Michie, and Tyler 2010; Dijkstra, Garcilazo, and McCann 2015), or a bounce-forward approach that focuses on reorientation or developing new growth paths (e.g., Boschma 2015; Martin et al. 2016).

Due to contemporary instances of crisis, such as the COVID-19 pandemic, the resilience concept has been included more deeply in economic geography, resulting in a larger diversity of conceptual approaches. For instance, scholars have recently developed the concept of *transformative resilience* that concentrates on a region's capacities to transform their paths toward sustainability (Martin and Sunley 2020; Trippl, Fastenrath, and Isaksen 2023). In addition, several scholars have explored the resilience of regions and sectors during crises through concepts such as *regional resilience* (e.g., Gong et al. 2020; Lüder and Kalvelage 2023), *business resilience* (e.g., Soroka et al. 2020) or *organizational*

resilience (e.g., Verfürth et al. 2022). The importance of local characteristics in building resilience during or after crises has been highlighted, indicating that resilience is not a one-size-fits-all concept, and is influenced by specific contextual factors and actors' agency (Bristow and Healy 2014; David 2018; Kitsos and Bishop 2018).

The critical events in the 21st century also influenced financial geography, a subdiscipline of economic geography (e.g., Engelen and Faulconbridge 2009; Klagge 2009; Lee et al. 2009). Research has drawn attention to the spatial architecture and power relations of the global finance industry to understand the origins, unfolding, and aftermath of crises, as well as their impact on spatial inequalities (e.g., Christophers 2015; Martin 2011; Muellerleile et al., 2014; Omstedt 2016; Wójcik 2013). Furthermore, a large body of research has focused on the varying impacts of financial crises on regions, the spatial dynamics of financial centers, and the role of financialization and mortgage crisis in exacerbating urban struggles (Dymski 2018; French, Leyshon, and Thrift 2009; Hall 2011; Martin 2011; Pažitka and Wójcik 2018).

With a specific focus on financial crises and the COVID-19 pandemic in particular, economic geography scholars have engaged in questioning the capitalist architecture of the global economy and labeled, for instance, the world financial crisis as a crisis of neoliberalism (e.g., Aalbers 2013; French, Leyshon, and Thrift 2009). In this context, the work of David Harvey (1985) on spatial fix, emphasizing the spatial dimensions of capitalism and crisis, is influential. His work highlights how spatial inequalities (e.g., resources, infrastructure) and uneven regional growth patterns can create vulnerabilities that amplify the impact of economic crises (Jones and Ward 2004; Oßenbrügge 2011). Harvey (1985, 11) sees crises as "the real manifestation of the underlying contradictions within the capitalist process of accumulation." Furthermore, Harvey (2003) distinguishes between partial, switching, and global crises. Partial crises only affect single sectors or geographical regions and may be solved within this sector or region. Global crises affect all sectors and regions of the capitalist world. More intriguing is the idea of geographical switching crises that occur as a result of the geographical reorganization of capitalism. According to Harvey, these crises are not caused by overaccumulation, as is traditionally understood, but rather are the effect of the spatial reconfiguration of capital within the capitalist system (Franz 2021; Harvey 2003).

As a result of the COVID-19 pandemic, the term crisis was associated with the dark side of economic geography. Scholars are looking at the unequal and exclusionary development outcomes of global production, exacerbated by crises such as the COVID-19 pandemic (Lawreniuk 2020; Neise, López, and Angga Reksa 2023; Sokol and Pataccini 2020). Likewise, the concept of polycrisis has started to be included in research concerning the fragility of global value chains or GPN (e.g., Gong et al. 2022).

Although moments of crisis have resulted in a large body of case studies in economic geography, there is less work on how the term crisis challenges economic geography concepts. An exception is the work by Hadjimichalis and

Hudson (2014, 210), who argue that the impact of the 2007/08 world financial crisis "pushed dominant regional development theories to an [sic] homologous deep theoretical crisis." The authors suggest a paradigm shift in regional development theories that moves away from a too narrow emphasis on markets, entrepreneurship, and competitiveness. They advocate for a more holistic view of how markets are politically constructed and socially regulated that includes socio-spatial justice, interventionist regional policies, as well as social and spatial redistribution. Hadjimichalis and Hudson (2014) argue that crisis is inherent to capitalism, and it is necessary to develop a systemic view of capitalism that acknowledges periodic crises as a necessary and recurrent feature of capitalist development. They also suggest understanding the spatial basis of crises and their impact on different regions, to better address the uneven development and spatial inequalities that crises exacerbate.

Another analytical focus on the term crisis within economic geography has been developed by Brinks and Ibert (2020). They emphasize the importance of understanding crisis as more than just a temporal event, and the characteristic elements of crises: uncertainty, urgency, and threat. Brinks and Ibert (2020) argue for geographic thinking in crisis studies by taking an actor-centric approach. Through the TPSN framework (territory, place, space, and network) developed by Jessop, Brenner, and Jones (2008), Brinks and Ibert (2020) provide a better understanding of how crises unfold in time and space, that helps to build effective crisis management and response measures with consideration of regional characteristics.

2.8 Conclusion

In this chapter, we have outlined contemporary perspectives of uncertainties, risks, and crises within the realm of economic geography (see Table 2.1). Through a conceptual lens, we explored the theoretical foundations and nuanced meanings of these fundamental terms. In addition, we elucidate how these concepts have been applied in empirical research within economic geography through a literature review.

Uncertainty is rooted in the nature of economic processes or events, with their unknown future outcomes. It can also stem from a lack of available information or incomplete knowledge about a subject, event, or situation needed for a specific decision. Uncertainty is conceptualized primarily from an objective perspective, as conditions for which no probabilities can be assigned (Knight 1921). Within economic geography, uncertainty has been examined across the sub-disciplines, but compared to risks and crises only to a limited extent. The studies dealing directly with uncertainty mainly focus on situations and processes of major changes, crises, innovation, and creativity.

The term risk is conceptualized either from an objective perspective, as conditions for which probabilities can be assigned, or from a social constructivist perspective (Völlers et al. 2023). The economic geography debate dealing with risk is largely taking place in the sub-disciplines of financial geography,

Table 2.1 Uncertainties, risks, and crises in Economic Geography.

Terms	*Conceptualization*	*Appearance in literature*
Uncertainties	Objective perspective on uncertainty: conditions for which no probabilities can be assigned.	A limited number of studies deal directly with uncertainty.
	Types of uncertainty: e.g., informational and fundamental uncertainty.	Studies across the sub-disciplines of economic geography.
		Mainly associated with a focus on situations and processes of major changes, crises, innovation, and creativity.
Risks	Objective vs. social constructivist perspective on risk.	A large variety of studies deal directly with risk.
	Types of risk: e.g., financial, economic, product, regulatory, labor, and environmental risk.	Studies mainly in three sub-disciplines: financial geography, geographies of globalization, and environment-oriented economic geography.
		Mainly associated with a focus on individual and organizational decision-making processes as well as on risk perception.
Crises	Objective vs. social constructivist perspective on crisis.	A large variety of studies deal directly with crises.
	Types of crises: e.g., fast-burning, cathartic, slow-burning, or long-shadow crises, and poly-crises.	Studies across the sub-disciplines of economic geography, especially in the domain of financial geography.
		Mainly associated with a broad empirical interest, such as the origin of a crisis, resilience within a crisis, and impacts of a crisis.

Source: own elaborations.

geographies of globalization, and environmental economic geography. The main focus of these studies is on individual and organizational decision-making processes as well as on risk perception.

Crises are also conceptualized from an objective perspective, as a serious threat that requires critical decision-making (Rosenthal et al. 1989) and from a social constructivist perspective (Roitman 2021). Across the sub-disciplines of economic geography, there are scholars with a broad interest in studying crisis, focusing on the origin of crisis, resilience within crisis, as well as on the impacts of crisis.

Uncertainties, risks, and crises are, and will remain, important concepts in economic geography, linking diverse thematic issues such as processes of globalization, environmental changes, socio-political shifts, and technological advancements. We see a need for further research in two areas. First, while there is already an intensive theoretical and empirical debate on the concepts

of risk and crises in economic geography, we encourage economic geographers to become more involved in conceptual debates about uncertainty and to conduct more empirical studies dealing directly with uncertainty from a spatial perspective. Second, future research could contribute to bridging the conceptual boundaries of uncertainties, risks, and crises, by focusing on the close connections and interrelationships of these terms and gaining new insights beyond the limitations of the singularly focused perspectives.

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