A R T Y K U Ł Y

Studia Regionalne i Lokalne
Nr 2(60)/2015
ISSN 1509-4995
DOI: 10.7366/1509499526001

Les Dolega
University of Liverpool, Department of Geography and Planning, Gordon Stephenson Building, Liverpool L69 7ZT, United Kingdom; L.Dolega@liverpool.ac.uk

Dorota Celińska-Janowicz
University of Warsaw, Centre for European Regional and Local Studies (EUROREG), Krakowskie Przedmieście 30, 00-927 Warsaw, Poland; d.celinska@uw.edu.pl

Retail resilience: A theoretical framework for understanding town centre dynamics

The measure of intelligence is the ability to change.
A. Einstein

Abstract: The concept of resilience has gained much attention in recent academic and political discussion. However, its application to specific sectors, such as retail, is rather scarce. The aim of this paper is to present the concept of resilience and to analyse its applicability to the retail sector within the context of the town centre. The paper proposes a possible analytical framework for adaptively resilient retail centres that links the performance of retail centres to underlying development paths, the pre-shock position in the adaptive cycle, and other factors that drive their evolutionary reorganisation. The proposed framework has a practical application for spatial and urban planning and can be beneficial to various stakeholders and practitioners, including retailers, policy makers, and town centre managers.

Keywords: adaptation, shopping, adaptive cycle, retail centre.

Rezyliencja handlowa: ramy teoretyczne dla zrozumienia przekształceń centrum miasta

Streszczenie: Koncepcja rezyliencji staje się w ostatnich latach przedmiotem rosnącego zainteresowania i dyskusji, zarówno naukowej, jak i politycznej. Wciąż stosunkowo rzadkie są przykłady jej zastosowania w odniesieniu do konkretnego sektora, takiego jak handel detaliczny. Celem artykułu jest przedstawienie koncepcji rezyliencji i analiza możliwości jej zastosowania w odniesieniu do sektora handlowego w kontekście przekształceń centrum miasta. W artykule zaproponowano ramy analityczne rezyliencji adaptacyjnej ośrodków handlowych. Podejście to wiąże kondycję ośrodków handlowych z ich dotychczasowymi ścieżkami rozwojowymi, pozycją, którą dany ośrodek zajmował w cyklu adaptacyjnym przed wystąpieniem szoku oraz innymi czynnikami stymulującymi ewolucyjną reorganizację. Zaproponowane ramy analityczne mają przy tym istotne zastosowanie praktyczne w planowaniu miejskim i przestrzennym. Mogą być zatem przydatne dla władz publicznych oraz przedstawicieli sektora handlowego, a także podmiotów zajmujących się zarządzaniem centrami miast.

Słowa kluczowe: adaptacja, zakupy, cykl adaptacyjny, ośrodek handlowy.

1. Introduction

The concept of resilience, which describes how various systems respond to shocks, has been established in the physical, engineering and ecological sciences for some time.[1] In the context of the social sciences it was the recent recession of 2007–2009 and its aftermath that shifted the focus of economic geographers, regional scientists, and spatial economists from 'a preoccupation with growth to one that captures the notion of resilience' (Dawley et al., 2010, p. 1). As a result, that shift has generated a large number of empirical papers but has also led to fierce debates on the meaning and different types of resilience or its components (Boschma, 2014).

The recent economic crisis, which has enhanced the perceived sense of vulnerability, stimulated the search for new paths to 'resilience,' often reflecting the view that simply bouncing back to the pre-crisis development paths may not only be unlikely but also undesirable. Instead, an alternative and fuller conceptualisation of resilience based on an evolutionary approach was suggested, where the ability of a system to sustain long-term development and withstand various disturbances is linked to a long-term capacity to adapt and reconfigure its structure (Pendall et al., 2010; Christopherson et al., 2001; Hassink, 2010; Simmie and Martin, 2010; Martin, 2012). Adaptive resilience is a dynamic and multidimensional concept and is related to other notions found in economic geography such as path dependence, general Darwinism or panarchy. There seems to be a consensus amongst academics that an economic system's ability to reconfigure is related to its past, in particular to a long-run spatial development path and to the existence and evolution of regional disparities. In addition, the importance of a trade-off between the adaptation (changes within existing development path) and adaptability (developing new grow paths) of an economic system has attracted some attention (Pike et al., 2010; Boschma, 2014). However, there is no agreement on the extent to which these factors define the adaptive capacity of a system, and the supporting empirical evidence is sparse.

The concept of resilience can be useful not only in analysing the whole (national or regional) economy, but also individual economic sectors, such as transportation, banking, or retail. In the case of retail the sectorial approach can be combined with a spatial perspective by analysing the resilience of town centres, defined as the main retail cores within urban areas; also referred to as retail centres. Resilience in the context of retail centres was first empirically considered by Wrigley and Dolega (2011), who investigated the dynamics of the performance of UK town centres and their adjustment to the shock of the global economic crisis and other forces of change. In this work, the notion that retail centres could bounce back to their pre-shock configurations was rejected and the concept of 'adaptive resilience' was developed, whereby resilience was viewed as a dynamic and evolutionary process. The aftermath of the economic crisis,

[1] E.g. Holling, 1973; Schrader-Frechette and McCoy, 1993; Tilman and Downing, 1994; Klein and Nicholls, 1999; Gunderson, 2000; Carpenter et al., 2001; Nyström and Folke, 2001; Bodin and Wiman, 2004; Walker et al., 2004; Hollnagel et al., 2006.

alongside rising internet sales and shifting consumer culture towards convenience and value, are widely considered to be the key disruptions impacting the fragile ecologies of retail centres. Although there is a growing body of research (ATCM 2013; Wrigley and Lambiri, 2014; Hart and Laing, 2014) investigating the nature of these disruptions in a wider context, the mechanisms of building adaptive capacity and the processes governing the reorganisation of retail centres are still poorly understood. Moreover, despite considerable progress in the debates on the resilience of local and regional systems since its embryonic phase during the economic crisis (Christopherson et al., 2010; Dawley et al., 2010), its application to retail is rather rare.[2]

The aim of this paper is to present the concept of resilience and to analyse its applicability to the retail sector and its specificity in the town centre context. The article also proposes a possible analytical framework of retail resilience that is not merely theoretical but can also have a practical application in spatial and urban planning. The paper proceeds in the following way. First, it provides an essential review of various definitions of resilience and related concepts. Although the concept of resilience is still vague, there is broad discussion in the available literature on its applicability as well as on its relationship to and overlaps with other frameworks. The section also traces the evolution of resilience by describing its different types and conceptual frameworks. Secondly, the article outlines the specificity of retail resilience (from sectorial and spatial perspective), in particular its relation with competitiveness, types of shocks, factors driving retail resilience, and ways of measuring it. Thirdly, it suggests an analytical framework for adaptively resilient retail centres that links the performance of retail centres to underlying development paths, the pre-shock position in the adaptive cycle, and other factors that are driving their evolutionary reorganisation. This article broadens our understanding of the mechanisms governing the adaptability of retail centres to both unexpected shocks and more gradual processes of change. The proposed analytical framework is expected to be beneficial to various stakeholders and practitioners, including retailers, policy makers, and town centre managers.

2. Theory: resilience

Review of definitions and types of resilience

Resilience has become an increasingly popular concept; however, as it is defined in different ways (Pendall et al., 2010), it is still vague and often referred to as a 'fuzzy' concept (Markusen, 2003).The numerous definitions of resilience are specified not only by various disciplines, but also vary within the same scientific field (Bhamra, Dani and Burnard, 2011).

Although the Latin verb *resilie* can be translated as to 'leap back' or to 'rebound', the actual definitions are more complex. Holling (1973, p. 17) is

[2] E.g. Barata, Salgueiro and Cachinho, 2011; Erkip et al., 2014; Cachinho, 2014; Kärrholm et al., 2014; Ozuduru et al., 2014.

usually quoted as the conceptual founder of resilience defined as 'a measure of the ability of these systems to absorb changes of state variables, driving variables, and parameters, and still persist'. In this definition resilience is a property of the system. A similar approach was taken by Berkes and Folke (1998, p. 12), who define resilience as a 'measure of robustness and buffering capacity of the system to changing conditions'. A more evolutionary approach was used by Carpenter et al. (2001, p. 765), who describe resilience as a 'magnitude of disturbance that can be tolerated before a socio-ecological system moves to a different region of state space controlled by a different set of processes'. Walker et al. (2004, p. 2) also refer to a system's changes, describing resilience as 'the capacity of a system to absorb a disturbance and reorganise while undergoing change so as to still retain essentially the same function, structure, identity, and feedbacks'. A more functional and socio-ecological perspective is evident in the definition of Walker et al. (2002, p. 5), where resilience is understood as 'the potential of a system to remain in a particular configuration and to maintain its feedbacks and functions, and involves the ability of the system to reorganize following disturbance-driven change'.

Initially, the concept of resilience was used within ecological systems, but the adoption of the concept by economics, sociology, or human geography required some kind of socio-economic entities to be considered. In spatial contexts, these entities could be countries, regions or cities. Yet, the mainstream of theoretical considerations investigates resilience in relation to regions. Foster (2007, p. 14) defines regional resilience as 'the ability of a region (…) to anticipate, prepare for, respond to, and recover from a disturbance'. An economic perspective provide Hill et al. (2008, p. 3), who define regional economic resilience as 'the ability of a region (…) to recover successfully from shocks to its economy that either throw it off its growth path or have the potential to throw it off its growth path but do not actually do so'. A more holistic definition related to the concept of sustainable development has been proposed by Ashby et al. (2009, p. 106), who define local economic resilience as 'the extent to which local places and local government are capable of riding the global economic punches, working within environmental limits, dealing with external changes, bouncing back quickly, and having high levels of social inclusion'. Rose (2009, p. 8), on the other hand, distinguishes between static economic resilience (the ability of an entity or system to continue to function when shocked) and dynamic economic resilience (the speed at which an entity or system recovers from a severe shock to achieve a desired state). The dynamic perspective is also present in the definition proposed by Swanstrom (2008, p. 10), who describes a resilient region as one 'in which markets and local political structures continually adapt to changing environmental conditions and only when these processes fail, often due to misguided intervention by higher level authorities which stifle their ability to innovate, is the system forced to alter the big structures'. So from a dynamic perspective, a region can be called resilient 'if, when faced with a challenge, it responds in ways that maintain or even increase good outcomes' (Pendall et al., 2010, p. 82).

This general review of the most popular definitions shows that there is a wide range of approaches to resilience present in the literature; nevertheless, three different interpretations of the concept, adopted in different scientific traditions, have been most recognised (Simmie and Martin 2010; Martin 2012; Boschma, 2014): (i) the engineering (equilibrium) resilience interpretation found in physical science; (ii) the ecological resilience interpretation found in biological science; and (iii) the adaptive resilience interpretation found in complex systems theory.

(i) Engineering resilience focuses on a system's resistance and its ability to bounce back to its pre-shock state or growth path; i.e. on the resistance of a system to economic shock and the speed of its return to a stable configuration (Holling, 1973). Martin (2012) points out that a system is assumed to be in 'equilibrium' before the shock and a disturbance moves the system off its equilibrium growth path; however, self-correcting forces and adjustments eventually bring it back onto that path. Resilience, in this instance, is measured by the differential capacity to be moved off the path and the speed of return to a pre-shock 'equilibrium' state or configuration. The problem with this type of resilience is that socio-economic entities usually can't be described as being in an equilibrium state. Pike et al. (2006) argue that perceived qualities of a successful region, such as dynamism, contrasts with the equilibristic approach, which implies that a resilient economy would not necessarily change over time. On the other hand, Pendall et al. (2010) list a few socio-economic phenomena that can be considered as at least partly in a state of equilibrium, such as population and unemployment rates, poverty, or labour force participation.

(ii) The second definition, the so-called 'ecological resilience', is based on multiple equilibriums, unlike the engineering concept, which assumes that each system has one equilibrium state. Thus, in this context, a resilient region is not necessarily one that returns to a pre-shock state. Instead, the ecological approach focuses on the scale of shock a system can absorb before it is destabilised and moved to a new configuration (equilibrium state). Despite some ambiguities as to what constitutes resilience, it can be measured by the magnitude of the disturbance that is absorbed before the system changes its structure, in other words, the level of 'elasticity threshold' required by the system to be pushed into a new, stable configuration. The key difference offered by 'ecological resilience' is that the new configuration can also be superior or inferior relative to the pre-existing one, which is respectively associated with higher and lower resilience (Martin, 2012; Boschma, 2014). In this context, Simmie and Martin (2010) demonstrated that a resilient regional economy would adapt successfully to the economic crisis and either resume, or even improve its long-run equilibrium growth path. Conversely, they argued that a non-resilient regional economy would presumably fail to transform itself successfully and instead become 'locked' into a long-run out dated trajectory or under-performing equilibrium of decline. Such a response, on the one hand, implies that a resilient system is one that is capable of absorbing and accommodating extreme shocks without any significant change to its form or function, thereby somewhat resembling engineering resilience (Simmie and Martin, 2010). However, on the other hand,

it offers an approach that is more dynamic, linking resilience with the adaptability of a system's structure and function, and according to McGlade et al., (2006) is much richer when the evolutionary aspect is considered. Although some issues, like structural change or institutional support, are not present in this approach, it is much closer to understanding long-term economic evolution than engineering perspective (Boschma, 2014)

(iii) The third interpretation, identified by Martin (2012) as adaptive resilience, focuses on anticipatory or reactive reorganisation of the form and function of a system to minimise the impact of a destabilising shock, and thus offers far greater traction. As Martin observes, complex adaptive systems are distinguished by self-organising behaviour and adaptive capacity, which enable them to reconfigure their internal structures spontaneously. This ability is based on co-evolutionary interactions between actors within the system. As a result, the adaptive resilience interpretation focuses on resilience as a dynamic and evolutionary process of continual adjustment, not as a property or characteristic (Pendall et al., 2010). The system doesn't only cope with a shock, but rather, reconfigures its structure in a way that enables further development. Furthermore, this interpretation, in Martin's view, resonates with Schumpeterian (1942) notions of the 'creatively destructive' potential of macroeconomic shocks in which the sweeping away of outmoded economic structures opens up opportunities to develop new configurations and new trajectories of growth. This approach implies that the system and actors within it (including institutions) demonstrate some level of innovativeness and elasticity, which are usually based on human and social capital.

Based on these three interpretations of resilience, Martin (2012) identified four interrelated dimensions of the concept: resistance, recovery, re-orientation, and renewal, which are shown in Figure 1. Firstly, resistance that is defined as the degree of fragility or vulnerability of a system to shocks such as recession. On the one hand, the resistance of a system will be determined by the nature and strength of the shock itself, but on the other hand, the degree of sensitivity will largely depend on the underlying characteristics and dynamics of systems in which they are embedded, as different configurations create diverse adaptability. A second dimension is the recovery, in particular its speed and extent, but also the way in which it relates to the degree of resistance. The hypothesis here is that systems with strong and sound underlying dynamics exhibit stronger resistance and in turn, are more likely to recover more quickly from the crisis. The third aspect focuses on the extent to which the regional economy undergoes structural re-orientation, and what implications such re-orientation has for its vitality and viability. Finally, renewal is defined as the extent to which economies resume their pre-shock growth path. All four dimensions are interlinked and can interact in different ways to produce different outcomes in terms of the observed resilience.

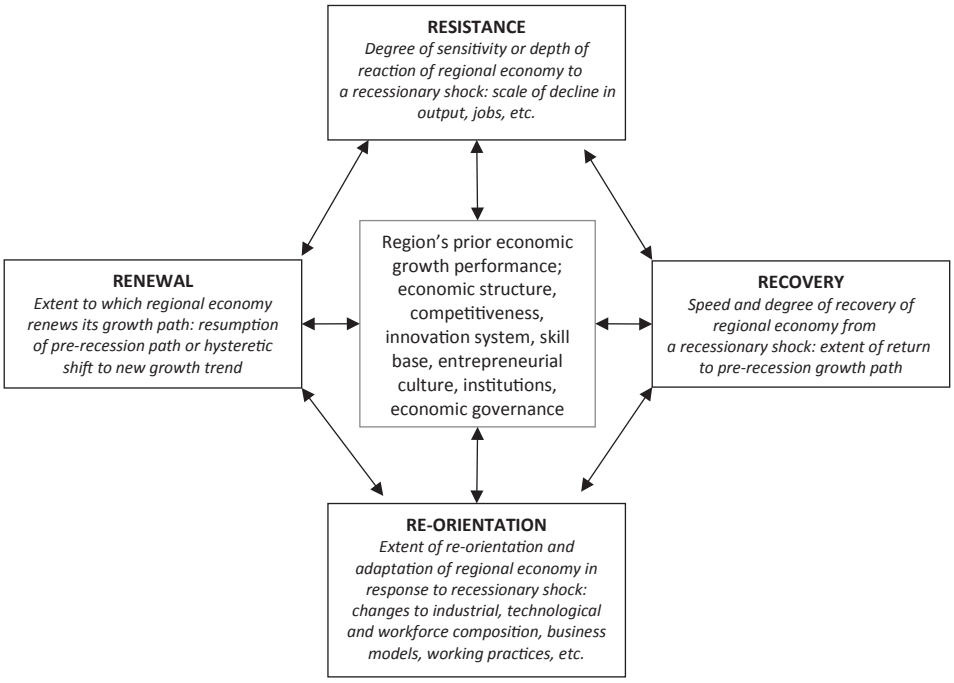

Figure 1. Four dimensions of regional economic resilience to recessionary shock

Source: Martin (2012)

Although they refer to the same concept, each of the abovementioned interpretations define resilience in a different way and are therefore applied in different scientific disciplines. Social sciences, such as economics or human geography, usually use the evolutionary approach (Boschma, 2014). Socio-economic systems, such as regions or cities, are complex and dynamic, thus the application about engineering or ecological approaches is rather limited here. On the other hand, in some political debates (e.g. on the future of UK high streets) the concept of 'bouncing back' has often been implicit and the notion of 'tipping mechanisms' has been present (Wrigley and Dolega, 2011). Yet, despite acknowledging that the concepts of engineering and ecological resilience offer some analytical leverage, neither of these interpretations quite captures the subtle nature of socio-economic systems and their adaptation to an unexpected shock, e.g. the economic crisis.

Resilience conceptual frameworks and related concepts

In the context of resilience and evolutionary adaptation of economic systems to an economic shock, Simmie and Martin (2010) distinguish four conceptual frameworks: 1) Generalised Darwinism, 2) path dependence theory, 3) complexity theory and 4) panarchy. The first, Generalised Darwinism, which emphasises

variety, novelty, and selection, suggests that adaptability is about the potential to adjust to changing circumstances in an appropriate way. Similarly to accounts in the biological sciences, varied or diversified economic structures are perceived as more resilient, being on the one hand less prone to shocks (through unrelated variety) and on the other able to recover faster than the more homogenous systems. The latter is explained, among others, by the higher innovativeness of diversified systems (through related variety as a source of knowledge spillovers), although opinions in this matter are divided (Hassink, 2010). In the so-called Jacobs versus Marshall-Arrow-Romer (MAR) debate (Glaeser et al., 1992), the issue of concentration versus diversification has important implications for the ability of regional economies to cope with changing competitive dynamics flowing from the macroeconomic shocks of the rapid globalisation of industries. With its focus on variety and diversification, this framework refers to adaptability, as defined by Grabher (1993) and discussed below.

The path dependence concept developed within evolutionary economics links the adaptive capabilities of a region's economy to the nature of its pre-existing state, where the system can become 'locked into' a particular trajectory of economic development. Linking path dependency with different interpretations of resilience (described in the previous section), from an engineering perspective a resilient region would be one that is able to maintain its pre-shock development path ('lock-in') despite disturbances. In the evolutionary approach the interpretation of resilience would be quite the opposite: the 'lock-in' can be interpreted as a negative characteristic that holds the system back from adapting to new, post-shock conditions. In this perspective, resilience would be the ability to leave the path from the past in favour of a new alternative trajectory or niche. Furthermore, old development paths often shape the new ones, and are simultaneously the basis for building the system's resilience and adaptive capacity, not only as constraints, but also as opportunities (Boschma, 2014). So, importantly, the effect of path dependence on resilience is open to interpretations, nevertheless, economic shock has the capacity to 'de-lock' the system from one of the multi-equilibrium paths (David, 2005; Martin and Sunley, 2006; Simmie and Martin, 2010).

Further, the complex system theory, which is characterised by non-linear dynamics and self-reinforcing interactions among system components (Martin and Sunley, 2006), highlights self-organisation and adaptive growth as mechanisms responsible for the adaptation of their structures to changes in the external environment, e.g. economic crisis. The system's components have different functions and their mutual relations are the basis of system's degree of connectivity. External shock can influence a system through constant exchange with its environment. For a system's resilience, especially important is its connectedness, related to concepts of adaptation and adaptability. As defined by Grabher (1993), adaptation refers to changes within preconceived paths, while adaptability concerns developing new paths. From this perspective, a trade-off between adaptation and adaptability seems to be inevitable. Adaptation to existing conditions leads to specialisation and innovations that reproduce the current structure, while adaptability requires the ability to engage unspecific and

uncommitted resources for a variety of unforeseeable uses (Boschma, 2014). As described by Pike et al. (2010, p. 67) 'adaptation is a movement towards a pre-conceived path in the short run, characterized by strong and tight couplings between social agents in place (…) adaptability is defined as the dynamic capacity to effect and unfold multiple evolutionary trajectories, through loose and weak couplings between social agents in place, that enhance the overall responsiveness of the system to unforeseen changes'. So in this context, it can be argued that tight relations and the interrelatedness of complex economic systems can decrease their adaptability, and therefore their resilience to external shocks (Simmie and Martin, 2010).

This contradiction overlaps with the framework of 'panarchy,' defined by Simmie and Martin (2010) as a model that adopts a four-phase process of continual system adjustment, explicitly associating resilience with adaptive cycles. Each phase is characterised by three features: the potential of accumulated available resources, internal connectedness, and resilience (as a measure of vulnerability to shocks and stresses). There are two major loops in this model: one related to the emergence and development of a growing path (phases: exploitation and growth, and conservation), and another related to the decline of that structure but simultaneously opening up the potential for its reorganisation (phases: decline and release, and reorganisation and restructuring) (Simmie and Martin, 2010; Pendall et al. 2010). Summarising these adaptive cycles, Dawley et al., (2010, p. 7) have shown that the accumulated resources available to a system lead to increased connectedness and dependency within the system, resulting in lower adaptability and reduced resilience to a shock or long-term structural decline. However, due to that decline, relations once again become looser and more diverse as part of a second release reorganisation loop, which in turn nurtures innovation, technological change and new growth trajectories.

In addition to the four conceptual frameworks described above, there are other concepts that can be found in the literature on resilience. Martin (2012) links the engineering definition of resilience with the so-called 'plucking model' of economic fluctuations (Friedman, 1993). This model is based on the assumption that the business cycle is asymmetrical, and negative shocks dominate. However they are transitory and have no permanent effect on long-term economic trends. So, although the size of the shocks may differ, the system is assumed to rebound to the upward sloping ceiling level every time. When analysing the 'plucking model' in the context of resilience, Martin also points out that the model doesn't refer to a region's economic structure, i.e. structural changes caused by the shock. However, it can be assumed that a region can bounce back to its pre-shock growth path through structural reconfigurations.

On the other hand, the ecological interpretation of resilience can be linked to the concept of economic hysteresis, defined by Romer (2001, p. 471) as a situation 'where one-time disturbances permanently affect the path of the economy'. This process can be described as a shift from one equilibrium state to another, and almost always assumes structural change of the system (Setterfield, 2010). However, while 'hysteretic' outcomes of a recessionary shock can be both

positive (e.g. faster growth) or negative (e.g. lower growth), only systems that experience positive hysteretic effects might be considered as resilient (Martin, 2012).

3. Retail resilience

As mentioned above, in economic geography resilience is usually linked to a region or a city, less frequently with an economic sector. In this chapter the concept of resilience with regard to retail is analysed. At the theoretical level, the analysis faces a few dilemmas and questions that result from specific characteristics of retail sector and its role in urban space. Some specific characteristics of retail resilience in the context of capital cities are also discussed.

First, when analysing retail resilience one must define the subject of the analysis i.e. an entity or a system whose resilience will be assessed. Retail can be understood as an economic sector (e.g. the retail structure of a region or city) or space (often the central part of a city). In the first case, the resilience of an urban retail system can be defined as 'the ability of different types of retailing to adapt to changes, crises or shocks that challenge the system's equilibrium without failing to perform its functions in a sustainable way' (Replacis, 2011 in Erkip et al., 2014). When analysing the resilience of the retail sector one may focus on all kinds of retail outlets (small and independent, chain stores, large-scale retailing, etc.) or just a few broader types. In each case the definition of resilience would be different. For example, a retail system dominated by large out-of-town units, representing international chains, might be assessed as highly resilient from an economic perspective. Conversely, the same system can be considered as highly vulnerable and not sustainable from a social or environmental point of view. Second, when retail resilience is analysed from a more geographical perspective, it is often linked to the central part of urban areas (town/district centres, shopping streets). In addition to the economic aspect of retail resilience, there are other issues that are also important to the overall town centre performance, e.g. the quality of public spaces, tourist attractiveness, the image of a town or city. The resilience of broader town centres is closely associated with the notion of vitality and viability. The former term describes how busy a town centre is (in different times and locations); the second term refers to the continuing ability to attract investments (Ravenscroft, 2000). Both measures are mutually related, however, the first one refers to the attractiveness of the centre for tourists and residents, while the second one is more economically oriented. Although town centre vitality and viability is a broad concept comprising several components, it is well recognized that retail and other services play a significant role in shaping a town centre's overall economic health (ATCM, 2013; Cachinho, 2014; Fernandes and Chamusca, 2014). Erkip et al. (2014, p. 113) even claim that 'the viability and vitality of an urban core can only be sustained through the resilience of different retailers'.

The resilience of a town centre is also linked to the concept of competitiveness (Bristow, 2010), defined as the capacity of a region (city or town centre) to

compete with other places for globally mobile capital (i.e. investments) or to provide conditions for local companies to win in competition with other (global) actors (Gorzelak and Jałowiecki, 2000). Although there is some evidence that the entry of anchor stores (external investors) may increase the resilience of retail (town) centres (Wrigley and Dolega, 2011), it would be too simplistic to equate resilience with competitiveness, or to treat the two concepts as contradictory. As shown by Bristow (2010), contextualised competitiveness is related to resilience in a complex way. For retail resilience, diversity seems to be especially important, not only in terms of a retail/service mix, but also ownership, size, or prices; although empirical findings are not conclusive when it comes to details (Wrigley and Lambiri, 2014). Conversely, a high share of international retail chains may increase a town centre's vulnerability to external shocks and decrease its uniqueness, which is considered to be an important element of sustainable advantage for town centres (ATCM, 2013).

Another important issue that needs to be considered is the way that retail resilience can be measured. The most obvious indicator, and probably the easiest to apply, is change in vacancy rate (Wrigley and Dolega, 2011; Balsas, 2014). However, as Wrigley and Lambiri (2014) point out, not all vacancy rates are the same. Long-term structural vacancy is probably a much better indicator than the general rate, as a short-term friction or churn-related vacancy is a natural phenomenon and is an important element of a centre dynamic and adjustment. On the other hand, long-term vacancy might be a result of local factors, such as the low quality of physical fabric (not renovated buildings or streets) or poor location in terms of visibility for pedestrians. An additional indicator, however much harder to obtain (due to the confidentiality of financial data), is the dynamic of retail turnover. If retail resilience is considered from a wider perspective (not only as good economic performance) tenant structure might also be used as an indicator of resilience. Especially valuable here would be a share or a number of units such as charity shops or independent retailers, as well as the share of retail units in comparison to services.

Finally, the increased attention that the concept of resilience has gained has been directly linked to the recent economic crisis. However, it is not the only type of disturbance that can occur in retailing systems. The evolutionary trajectories of economic systems are affected by two types of disturbances: a) unexpected shocks and b) more gradual processes of change, often referred to as 'slow burns' (Pendall et al,. 2010). Although both types of disruption have the capacity to alter the configuration of retail centres, their nature and extent may vary. Thus, the interest has essentially focused on the capacity of town centres to recover from external shock – what Hassink (2010, p. 45) describes as 'one of the most intriguing question in economic geography (…) why some regional economies manage to renew themselves, whereas others remain locked in decline'. Examples of such negative events might be: the opening of a new shopping centre or other form of large-scale retailing (not only within or close vicinity to the town centre but also in more distant locations, with overlapping catchment area); significant deterioration of accessibility caused e.g. by construction work on nearby streets;

the entry of a strong competitor, usually an international retail chain (so called 'category killers') (Spector, 2005; Doyle, 2011; Law, 2014).

Long-term processes (slow burns) have been described by Pendall et al. (2010) as 'drivers of change', which in the long term have the capacity to gradually transform economic systems. In the case of urban retailing systems, at least four forces could be associated with such transformation. First, the impact of decade-long progressive increases in online retailing, which have induced the mechanisms of substitution, complementarity, and modification (Weltevreden, 2007). In particular, the former mechanism, directly impacting certain types of traditional retailers, is strongly associated with the irreversible changes to the configuration of town centres. Second, the long-term and cumulative impacts of competition from large-scale retail developments and the discounters, located in both town centres and suburban areas. The impact of this force is directly related to the strictness of spatial planning regulations and public authorities' attitude towards large-scale retailing. Third, the significant shift in consumer culture, driven by changing demographics and the costs associated with travelling to large 'one stop' shops, has led to a progressive rise of a 'convenience culture' (Wrigley, 2010), forming new interdependencies within town centre structures. The fourth factor refers to changes in demography that may increase demand for leisure activities and polarise the spread of disposable income (Wrigley and Lambiri, 2014). All the above-mentioned drivers of change may be interlinked; however, the complex nature of their interaction is still relatively unknown. It is also important to note that although the economic crisis and related austerity might be perceived as a short-term factor, its long-term consequences and changes in consumer behaviours should be seen as a long-term burn. Similarly with changes in planning policy: although all new regulations have a particular date of entry into force, their full consequences are only visible after a few years.

When analysing retail resilience in the capital city, context several specific issues and circumstances have to be considered. Usually, the retail sector in the capital city is better developed than in other urban areas, i.e. there are more shops and other retail establishments, they are more diversified (in terms of formats, size, offer, prices), and the share of international brands (also luxury) is higher. A greater variety of stores favours higher resilience, because diversified economic structures are perceived as more resilient. On the other hand, stronger links with the global retail market make the capital city retail sector more vulnerable to exogenous influences, as during the crisis, major international retail corporations are more likely to introduce austerity measures. In many cases, this means that they tend to be more focused on their home markets and look for savings e.g. by closing down their shops in other countries. This kind of reduction means that international retail companies have to be more selective, and this, in turn, favours capital city markets as the most developed, the wealthiest, and in consequence the safest markets in the country.

4. Suggested analytical framework

Complex systems are often characterised by self-organising behaviour (Levin, 1998) and an adaptive capacity (Martin, 2012) that enables them to reconfigure their internal structures in response to unexpected shocks and more gradual processes of change. Retail centres can be viewed as dynamic and complex economic systems that constantly evolve. At large, the resilience of retail centres to major shocks is closely linked to a long-term and cumulative process of adaptive capacity building. It is a multidimensional process, encompassing the mechanisms through which retail centres develop a 'coping strategy', and is dependent on both their long-term strategy and previous experiences such as underlying development paths or entry of a major competitor.

Adaptive cycle

The analytical framework suggested by this paper implements the panarchy model described above, and links town centres' resilience to their position within the adaptive cycle (Holling et al., 2002; Pendall et al., 2010). It also associates the adaptive capacity with various dimensions of town centre performance and the scales in which they are nested. Moreover it examines the extent to which the reorganisation of a town centre's structure can be spontaneous as opposed to controlled, including targeted interventions and the role of various actors. The panarchy model normally consists of various adaptive cycles depicting the scales a system is nested in. Authors suggest such an adaptive cycle in a retail context, shown Figure 2 below, and outline the individual development phases that a retail centre might be positioned in.

1) *Growth*: This phase normally happens rapidly and is characterised by a high rate of new stores opening up, which may lead to duplication of businesses, and generates increased competition. Retail centres, during this stage are likely to attract new investments and increase available floorspace to meet increasing demand. The newly completed retail space, coupled with high retail churn, facilitate the changing demand of both existing retailers and new entrants in a particular centre. Resilience in that phase, fostered by innovation and creativity, is typically high, but as the phase matures, it slowly decreases.

2) *Consolidation*: Over time, as the development path becomes more fixed and the connectedness amongst various agents is high, the system's rigidity increases. During this phase, retail supply in terms of demand for physical outlets becomes more predictable and established. Most commonly, it is a period when town centres reach their highest capacity and experience a period of relative stability. As retail churn decreases and efficiency increases, retail centres may become 'locked-in' in a particular trajectory of development. Town centres, however, constantly evolve due to changing consumer culture and arising competition, thus, failing to take appropriate actions or adapt to those changes may result in an increased vulnerability and low resilience, especially at the mature stage of this phase.

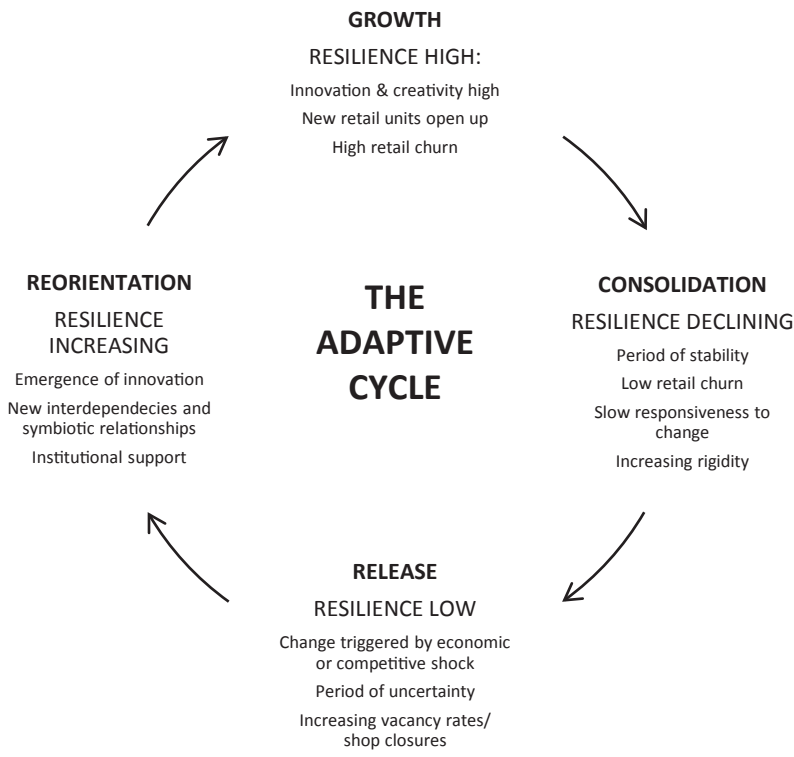

Figure 2. Suggested adaptive cycle of retail centres

3) *Release*: This stage is usually triggered by some sort of unexpected shock. It is quite rapid and may feel like an emergency, which is often marked by collapse and uncertainty. In terms of a town centre, the need for change may be driven by internal factors such as new corporate superstore entry or by external factors, for instance, the shock of economic crisis. One of the examples of such a shock might be also the opening up of a new shopping centre, which could trigger a downtown spiral, as described by Guy (1999, p. 457) (Figure 3). Competition of the new large retail development, such as a shopping centre, results not only in sales decline in town centre shops, but also in the movement of downtown retailers to the new centre. As a result, the rate of shop closures goes up and shop openings goes down, leading to a dramatic rise in the number of vacant units. The whole economic and social environment in the downtown area worsens. Such shock however, has the capacity to open up new possibilities and de-lock previously rigid and often declining configurations in the manner referred to by Schumpeter (1942) as 'creative destruction'.

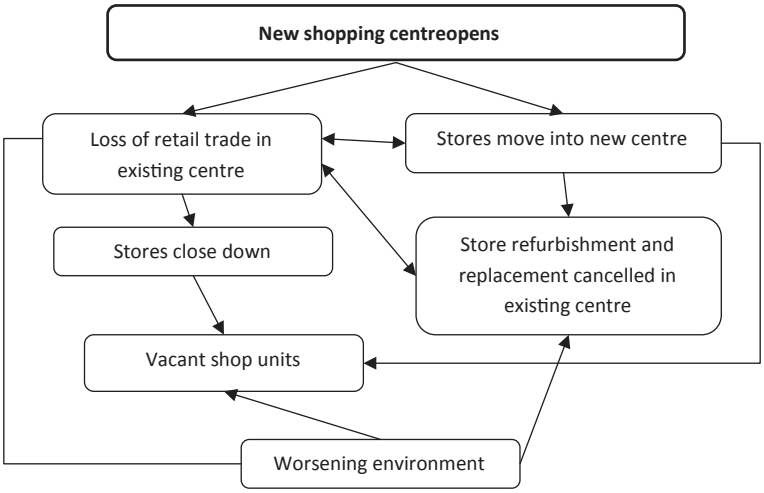

Figure 3. Downtown spiral model of environmental impact

Source: Guy, 1999, p. 457.

4) *Reorientation*: During this stage innovation kicks in, creating new potential for growth, and new configurations are likely to emerge through some internal mechanisms, which create new interdependencies. Although the mechanisms explaining the emergence of new configurations are little understood, the reconfigured town centres are likely to increase their attractiveness and accessibility in order to increase footfall, which is the lifeblood of every retail centre. Moreover, some research (e.g. Wrigley and Dolega, 2011) has suggested that developing symbiotic relationships between corporate and independent retailers or increasing the presence of various services is equally important for adaptively resilient town centres.

Domains of town centre performance

Importantly, a town centre is 'nested in' a hierarchy of different scales, e.g. local or regional ones, which interact with each other in a rather complex way. Walker and Salt (2012) suggest that these interactions happen through two principal mechanisms where larger scales affect smaller ones and, in turn, local systems act back on regional and national ones. Typically, three different scales in which a retail centre is nested are distinguished: local, regional, and national. The overall resilience of a retail centre is affected by a combination of both the position of a centre within an adaptive cycle and the characteristics of the three major domains of performance: social, economic, and physical.

The social domain typically includes various demographic indicators driving the demand side of retail (e.g. the affluence of catchment areas, population increase, level of unemployment etc.). They have the ability to depict changes in consumer culture and fluctuating levels of market demand at different scales.

For instance, the regional variations in affluence, employment etc. have the capacity to create different levels of consumer confidence and demand, e.g. the North-South divide in England and Italy or the East-West divide in Germany and Poland. The economic dimension at the local level includes various elements impacting the 'economic health' of retail centres such as rents, business rates, and other lease terms, especially the length or presence of various institutional support structures. At the regional and national scale it incorporates underlying dynamics of growth, cyclical economic downturns, competition from large international retail chains, or technological advances such as online retailing. The physical domain comprises the condition of the retail fabric or streetscape and other physical factors impacting foot levels, such as adequate and reasonably priced parking or the presence of the most attractive 'magnet' stores. Additionally, other factors, such as the adequate size of a centre, presence of services such as banks, post offices, health & beauty shops, or perceived safety and cleanliness, are crucial here. At the regional or national levels various accessibility factors, such as the rurality of an area, may also be important.

Table 1. Domains of town centre performance and scales they are nested in

Domain	Scale		
	Local	Regional	National
Social	Catchment area demographics (e.g. affluence, population increase, unemployment levels)	Regional variation in levels of consumer confidence and demand	Changing consumer culture
Economic	Business rates, institutional support, diversity	Underlying dynamics of growth, economic strength, regional employment base	Economic downturns, increase in online sales, change in planning policy
Physical	Retail fabric, streetscape, ease of parking, presence of anchor stores	Accessibility factors, physical geography, rural-urban living	

The scales in which town centres are nested are of central importance to building resilience and adaptive capacity. More specifically, the 'institutional co-ordination of multiple actors vertically and horizontally across multiple spatial levels, from the supra-national to the local', (Dawley et al., 2010, p. 8) is vital to the successful adaptation of town centres to the forces of change. Some commentators argue that reorganisation at a large scale is risky and potentially expensive, and therefore support for experimentation at a finer scale is needed, and that it should be undertaken in a bottom-up manner. Taking into consideration town centres, it is important to understand the causes of poorly performing centres in relation to wider economic trends and consumer behaviour changes, but also to draw a local action plan based on a comprehensive 'town centre health check'. This may indicate that a spontaneous reorganisation, which is an inherent element

of complex systems, may not always be appropriate, and other more controlled forms of reorganisation may need to be considered, such as institutional support during the economic crisis.

Spontaneous vs. controlled reorganisation – the role of actors and institutional support

Spontaneous reorganisation may be a well-known phenomenon in ecological systems; however, the extent to which self-organising behaviour can induce anticipatory and/or reactive reorganisation in social or economic systems has been questioned (Martin, 2012; Walker and Salt, 2012; Boschma, 2014). Two evidence-based arguments seem to support that concern. First, it has been long argued that building adaptive capacity is a long process that requires multi-scale coordination. Second, due to the specific dynamics of an economic system, such as a constant power and conflict struggle, spontaneous reorganisation may have an undesirable outcome, and could be chaotic and expensive. There is a growing body of evidence that targeted interventions might be important for the enhancement of a system's resilience and adaptive capacity (Simmie and Martin, 2010, Dawley et al., 2010). There are two key dimensions to these targeted interventions: (i) timing; and (ii) the role of the actors involved.

(i) Both timing and the sequencing of interventions are important because they can have negative impact on a system if implemented before agreeing on safety measures or a regulatory framework (Walker and Salt, 2012). In the context of an *adaptive cycle* there is a consensus view that a key time for developing action plans aiming at increasing the adaptive capacity of a system, is the *conservation phase.* Otherwise, the increasing connectedness of elements in a very efficient system may break apart in an uncontrolled manner during an unexpected shock or disturbance. Also, the spatial scale may be critical when deciding on the duration and intervals of targeted interventions (Pike et al., 2010) because the timing required for an intervention may vary at each scale.

(ii) The role of various actors whose good knowledge is helpful in identifying the structural problems of a system is equally important. It is clear that initiating a successful intervention requires a good understanding of the way a system works, what change is required, and what is the role of particular actors in that system. There is some empirical evidence that institutions that learn from previous challenges can adapt their behaviour more easily, even in the absence of major shocks or disturbances. For instance, it has been found that town centres that experienced the entry of a large food retailer in the prosperity period were more resistant to the impacts of the economic crisis (Wrigley and Dolega, 2011). Some of the most challenging interventions may involve the transformation of a system, introduction of new components, or downsizing. In the case of retail centres, the presence of a town centre manager and participation in BID's[3] or other

[3] The Business Improvement District is business-led partnership created through a ballot process to deliver additional services to local businesses. It is a defined area in which a levy

revitalisation schemes maybe beneficial. Additionally, it is crucial to recognize and act upon the challenges arising from the current trends in retailing that are likely to impact the vitality of town centres. For instance, as the major retailers increasingly focus on larger markets and online retailing, there might be a need to downsize the physical retail space in many medium/smaller town centres.

An example of a targeted intervention across different scales could be the UK initiative led by Mary Portas, launched by the Department for Business, Innovation and Skills in 2011. The Review, which made 28 recommendations, has identified key tasks for policy makers, local authorities, and local communities that have to be implemented in order to create prosperous and diverse town centres. The Government has accepted the recommendations and as a response has decided to 'run a number of "Portas Pilots" to test proof of concept' (Department for Communities and Local Governments, 2012) by providing advisory and financial support. This initiative has generated much interest amongst many struggling town centres in the UK and as a result, more than 400 towns have applied to be 'Portas Pilots'.

Assessing the adaptive cycle framework

The adaptive cycle framework has several advantages when considering town centres and other retail centres: a) it depicts the dynamic and evolving nature of retail centres, b) links their potential resilience to the pre-shock position in the cycle, and c) offers some explanation of the mechanisms responsible for creating the adaptive capacity. It can be argued that the framework depicts the dynamics of evolutionary change in town centres relatively well, and implies that it is intertwined with the regional dynamics of growth and national retail planning policies. What is even clearer from the *adaptive cycle* framework is the fact that the resilience of retail centres is linked to the nature of their pre-shock state; in other words, the adaptive cycle phase in which a retail centre was in the pre-crisis period can determine its resilience. As Figure 2 shows, the response of town centres that are at consolidation and release phases is characterised by weaker resilience than those which are at either growth or reorientation stages. The adaptive cycle also suggests that building adaptive capacity is a process that on the one hand, draws from previous knowledge and experiences, but on the other hand, is fostered by novelty and innovation, which underpin the emergence of new growth trajectories.

Despite considerable analytical leverage in explaining the *adaptive resilience* of retail centres, the 'adaptive cycle' framework has some limitations (see Table 2).

---

is charged on all business rate payers in addition to the business rates bill. This levy is used to develop projects that will benefit businesses in the local area [https://www.gov.uk/business-improvement-districts accessed: 01.02.2015].

Table 2. Strengths and weaknesses of an adaptive cycle framework

Strengths	Weaknesses
Depicts the dynamic nature of retail centres and considers the evolutionary aspect	Decline loop (release and reorientation phases) little understood and developed
Links the potential resilience of a retail centre to its pre-shock position in the cycle	Becomes very complex when multiple scales are accounted for
Explains mechanisms responsible for creating adaptive capacity to some degree	Does not account for the power and conflict present in (national?), regional, and local governance
Shows that the emergence of a successful path is linked to the accumulated knowledge and innovation	The extent of regional evolution and national retail planning policy following adaptive cycle is unclear

First, the 'decline loop' of an adaptive cycle – the release and reorientation phases – is undeveloped and little understood. Unlike the 'development loop', which comprises growth and consolidation, the release and reorientation phases often happen very rapidly and erratically (Walker and Salt, 2012). The mechanisms responsible for reorganisations of town centres require further consideration. Secondly, the phases of the adaptive cycle might not always be easily distinguishable and the movement between phases is normally not as linear as Figure 2 suggests (Robinson, 2010). In the context of town centres, this may not only question our ability to specify the position of a centre within the adaptive cycle, but may also query the extent to which adaptive cycles represent the evolution of regional dynamics or national retail planning policy. Furthermore, the adaptive resilience of town centres needs to take into account the multiple scales a centre is nested in, e.g. failure of regional or national retail chain affects the local centre; and the power and conflict 'present in regional governance in ways they are not present in ecosystems' (Swanstrom, 2008, p. 3), e.g. a constant struggle between policy makers and developers. Finally, the extent to which regional evolution and national retail planning policy follow the adaptive cycle is unclear and needs further consideration.

5. Conclusions

In this paper, the broader concept of resilience and its application to economic systems, in particular to the retail sector, are reviewed. The concept has been in use in engineering and ecological science for some time, but its application to economic geography or regional sciences has been significantly enhanced by the recent economic crisis. The examination of various definitions of resilience reveals that there is no uniform approach and the notion is still considered to be vague and open to different interpretations. Some commentators have criticized the idea of bringing the concept of resilience into economic geography in order to explain differences in regional performance. In particular, Hassink (2010) and Pike et al. (2010) were concerned with by the focus on equilibrium or multi equilibrium states and the neglect of states and policies at various spatial levels.

They claimed that the notion of equilibrium appears to contradict the constantly changing form observed in economic systems such as regions or town centres. Thus, in the social sciences it is the evolutionary approach that has gained much attention, in particular the concept of adaptive resilience, where an economic system's response to a shock is linked to structural change and long-term economic renewal (Boschma, 2014). Such a resilience framework strengthens some basic arguments derived from evolutionary economics, such as the advantages of diversity, seeing regional economies as path-dependent systems (Hassink, 2010), or the potential for novelty and selection in an economic system's adjustment to evolving circumstances (Simmie and Martin, 2010). Moreover, Martin (2012) claims that recessionary shocks can cause sudden and intense structural change and the re-orientation of a system, resulting in hysteretic change to a system's growth path, and for that reason, resilience should be central to any conceptual framework explaining the evolution of the economic landscape.

In terms of sectorial resilience, the authors focused on retailing; in particular they considered the evolutionary nature of retail cores, which are integral components of the vibrant town/city centres, and their differential performance. Indeed, the authors have identified a need to develop a conceptual framework that could explain their adaptive resilience to both unexpected shocks and more gradual processes of change; one against which future studies could be positioned and interpreted. In this paper, retail centres are viewed as complex and dynamic economic systems undergoing constant evolutionary change and the authors propose a *conceptual framework* of adaptively resilient retail centre. In a nutshell, the conceptual framework links the resilience of retail centres to their position in the *adaptive cycle* and the *role of various actors* across different scales. There are two explicit loops in that model; one related to the emergence and development of a growing path, and another related to the decline of that structure, but simultaneously opening up the potential for its reorganisation.

In agreement with other studies (e.g. Dawley et al., 2010; Salt and Walker, 2012) this paper questions the ability of retail centres to adapt to economic and competitive shocks solely by a mechanism of spontaneous reconfiguration. Rather, it suggests that the ability of retail centres to survive unexpected disturbances and 'slow burns' in a relatively good condition can also be related to the previous knowledge and experience of various actors who can anticipate the changes driving the evolution of town centres, such as competition from internet sales and large retail developments or shift in consumer culture towards convenience and value. This, in turn, facilitates a multi-scale intervention, one that can transform the configuration of a town centre, and which is typically fostered by novelty, creativity, and innovation. The *conservation phase* was identified as the key time in which such intervention should be developed, as otherwise the system may break apart in an uncontrolled manner during an unexpected shock or disturbance. Moreover, the authors would like to highlight the importance of the 'back loop' – release and reorientation stages – to an understanding of the emergence of new trajectories of growth, in particular by utilising the process of *adaptability*.

The *adaptive cycle framework* has some limitations, such as its complexity, or not accounting for the power and conflict 'present in regional governance in ways they are not present in ecosystems' (Swanstrom, 2008, p. 3), or some aspects of the *adaptive cycle* concept overlapping with other notions found in economic geography such as system *lock-in*. However, this approach provides some significant implications for the design of policy proposals and instruments aimed at revitalising retail core areas of the city/town centres. This in particular should address the increasing empirical evidence on the impact of Information and Communication Technologies and the beneficial role of leisure and services or the complex relationship between large corporate and independent retailers. The new evolutionary trajectory of reconfigured town centres is likely to be associated with a substantial number of leisure amenities offering experience-based activities, e.g. cafés, restaurants, or health and beauty shops. The presence of entertainment and leisure facilities is very important to a successful retail centre, as consumers can enjoy the 'shopping experience', and in addition they provide sensory stimulation and hands-on experience that cannot be fully substituted by the Internet (BCSC, 2010).

In the evolutionary context, the adaptability of reconfigured town centres is also centred on new mixes and offers that will be able to cater for changing consumer behaviours towards value and convenience. Nevertheless, it is essential to highlight that the concept of adaptively resilient retail centres is still in the embryonic stage, therefore further research testing the above assumptions is essential, particularly studies investigating aspects of the relationship between the pre-shock development stage of a retail centre and its response to a shock, and the role of institutional support in building the adaptive capacity of retail centres. Certainly, creating sufficiently adaptable retail spaces that are able to withstand future shocks in better shape is reliant on the above-mentioned tasks.

Bibliography

Ashby, J., Cox, D., McInroy, N. (2009). *An International Perspective of Local Government as Steward of Local Economic Resilience*. Manchester: Centre for Local Economic Strategies.

Association of Town & City Management (ATCM). (2013). *Successful town centres – developing effective strategies*. GFIRST, ATCM, Department for Business Innovation & Skills, Gloucestershire Local Enterprise Partnership.

Balsas, C. (2014). Downtown resilience: A review of recent (re)developments in Tempe, Arizona, *Cities*, 36, 158–169.

Barata Salgueiro, T., Cachinho, H. (eds.) (2011). *Retail Planning for the Resilient City: Consumption and Urban Regeneration*. Lisbon: Centro de Estudos Geográficos.

Berkes, F., Folke, C. (1998). Linking sociological and ecological systems for resilience and sustainability, in: F. Berkes, C. Folke (ed.), *Linking Sociological and Ecological Systems: Management Practices and Social Mechanisms for Building Resilience*. New York: Cambridge University Press, pp. 1–25.

Bhamra, R., Dani, S., Burnard, K. (2011). Resilience: the concept, a literature review and future directions, *International Journal of Production Research*, 49(18), 5375–5393.

Bodin, P., Wiman, B. (2004). Resilience and other stability concepts in ecology: notes on their origin, validity, and usefulness, *ESS Bulletin*, 2(2), 33–43.

Boschma, R. (2014). Towards an evolutionary perspective on regional resilience. Papers in Innovation Studies, #14.09, Utrecht University.

Bristow, G. (2010). Resilient regions: re-'place'ing regional competitiveness, *Cambridge Journal of Regions, Economy and Society*, 3(1), 153–167.

British Council of Shopping Centre (BCSC) (2010). *Future of Retail Property Shopping Places for People*. London: BCSC.

Cachinho, H. (2014). Consumerscapes and the resilience assessment of urban retail systems. *Cities*, 36, 131–144.

Carpenter, S., Walker, B., Anderies, J. M., Abel, N. (2001). From metaphor to measurement: resilience of what to what?, *Ecosystems*, 4(8), 765–781

Christopherson, S., Michie, J., Tyler, P. (2010). Regional resilience: theoretical and empirical perspectives, *Cambridge Journal of Regions, Economy and Society*, 3(1), 3–10.

David, P. A. (2005). Path dependence in economic processes: implications for policy analysis in dynamical systems contexts, in: K. Dopfer (ed.), *The Evolutionary Foundations of Economics* Cambridge, UK: Cambridge University Press, pp. 151–194.

Dawley, S., Pike, A., Tomaney, J. (2010). Towards the resilient region?, *Local Economy*, 25(8), 650–667.

Department for Communities and Local Government (2012). Portas Pilots. Prospectus: an invitation to become a Town Team. London.

Doyle, C. (2011). *A Dictionary of Marketing*. Oxford: Oxford University Press.

Erkip, F., Kızılgün, Ö., Akinci, G. M. (2014). Retailers' resilience strategies and their impacts on urban spaces in Turkey, *Cities*, 36, 112–120.

Fernandes, J., Chamusca, P., (2014). Urban policies, planning and retail resilience, *Cities*, 36, 170–177.

Foster, K. A. (2006). *A Case Study Approach to Understanding Regional Resilience*. Berkeley: Institute of Urban and Regional Development.

Foster, K. A. (2007). Snapping back: What makes regions resilient?, *National Civic Review*, 96(3), 27–29.

Friedman, M. (1993). The plucking model of business fluctuations revisited, *Economic Enquiry*, 31(2), 171–177.

Glaeser, E. L., Kallal, H. D., Scheinkamn, J. A., Shleifer, A. (1992). Growth in cities, *Journal of Political Economy*, 100(6), 1126–1152.

Gorzelak, G., Jałowiecki, B., (2000). Konkurencyjność regionów, *Studia Regionalne i Lokalne*, 1, 7–24.

Grabher, G. (1993). The weakness of strong ties: The lock-in of regional development in the Ruhr area, in: G. Grabher (ed.), *The Embedded Firm*. London: Routledge, 255–277.

Gunderson, L.H. (2000). Ecological resilience-in theory and application, *Annual Review of Ecology and Systematics*, 31(1), 425–439.

Guy, C. M. (1999). Retail location analysis, in: M. Pacione (ed.), *Applied Geography: Principles and Practise*. London: Routledge, 450–462.

Hart, C., Laing, A. (2014). The consumer journey through the high street in the digital era, in: N. Wrigley, E. Brookes (ed.), *Evolving High Streets: Resilience and Reinvention. Perspectives from Social Science*. Southampton: ESRC, University of Southampton (download from http://www.riben.org.uk/Cluster_publications_&_media/)

Hassink, R. (2010). Regional resilience: A promising concept to explain differences in regional economic adaptability?, *Cambridge Journal of Regions, Economy and Society*, 3(1), 45–58.

Hill, E. W., Wial, H., Wolman, H. (2008). Exploring Regional Economic Resilience. Working Paper 2008-04. Berkeley: Institute of Urban and Regional Development.

Holling, C. (1973). Resilience and stability of ecological systems, *Annual Review of Ecology and Systematics*, 4, 1–23.

Holling, C. S., Gunderson, L. H., Peterson, G. D. (2002). Sustainability and panarchies, in: L. H. Gunderson, C. S. Holling (ed.), *Panarchy: Understanding Transformations in Human and Natural Systems*. Washington, DC: Island Press, 63–102.

Hollnagel, E., Woods, D. D., Leveson, N. (2006). *Resilience Engineering: Concepts and Precepts*. Aldershot: Ashgate.

Kärrholm, M., Nylund, K., de la Fuente P. P. (2014). Spatial resilience and urban planning: Addressing the interdependence of urban retail areas, *Cities*, 36, 121–130.

Klein, R. J. T., Nicholls, R. J. (1999). Assessment of coastal vulnerability to climate change, *Ambio*, 28(2), 182–187.

Law, J. (2014). *A Dictionary of Business and Management*. Oxford: Oxford University Press.

Levin, S. A. (1998). Ecosystems and the biosphere as complex adaptive systems, *Ecosystems*, 1(5), 431–436.

Markusen, A., (2003). Fuzzy concepts, scanty evidence, policy distance: The case for rigour and policy relevance in critical regional studies, *Regional Studies*, 37(6–7), 701–717.

McGlade, J., Murray, R., Baldwin, J., Winder, B. (2006). Industrial resilience and decline: a co-evolutionary approach, in: E. Garnsey, J. McGlade (ed.), *Complexity and Co-Evolution: Continuity and Change in Socio-Economic Systems*. Cheltenham: Edward Elgar, 147–176.

Martin, R. (2012). Regional economic resilience, hysteresis and recessionary shocks, *Journal of Economic Geography*, 12(1), 1–32.

Martin, R., Sunley, P. (2006). Path dependence and regional economic evolution, *Journal of Economic Geography*, 6(4), 395–437.

Nyström, M., Folke, C. (2001). Spatial resilience of coral reefs, *Ecosystems*, 4, 406–417.

Ozuduru, B. H., Varol, C., Ercoskun, O. Y. (2014). Do shopping centers abate the resilience of shopping streets? The co-existence of both shopping venues in Ankara, Turkey, *Cities*, 36, 145–157.

Pendall, R., Foster, K. a., Cowell, M. (2010). Resilience and regions: building understanding of the metaphor, *Cambridge Journal of Regions, Economy and Society*, 3(1), 71–84.

Pike, A., Dawley, S., Tomaney, J. (2010). Resilience, adaptation and adaptability, *Cambridge Journal of Regions, Economy and Society*, 3, 59–70.

Pike, A., Rodríguez-Pose, A., Tomaney, J. (2006). *Local and Regional Development*. Oxon, New York: Routledge.

Ravenscroft, N. (2000). The vitality and viability of town centres, Urban Studies, 37(13), 2533–2549.

Replacis (2011). Retail planning for cities sustainability, final report, in: F. Erkip, Ö. Kızılgün, G. M. Akinci (2014). Retailers' resilience strategies and their impacts on urban spaces in Turkey, *Cities*, 36, 112–120.

Robinson, M. (2010). *Making Adaptive Resilience Real*. London: Arts Council England.

Robinson, R. C. (2012). *An introduction to Dynamical Systems: Continuous and Discrete*. American Mathematical Society.

Romer, R. (2001). *Advanced Macroeconomics*. New York: McGraw Hill.

Rose, A. Z. (2009). *Economic Resilience to Disasters*. CREATE Research Archive.

Salgueiro, T. B., Cachinho, H. (ed.) (2011). *Retail Planning for the Resilient City*. Lisboa: CEG Universidade de Lisboa.

Schumpeter, J. A. (1942). Creative destruction, in: *Capitalism, Socialism and Democracy*. New York: Harper, 82–85.

Schrader-Frechette, K. S., McCoy E. D. (1993). *Method in Ecology*. London: Cambridge University Press.

Setterfield, M. (2010). Hysteresis. Working Paper 10-04, Department of Economics, Trinity College, Hartford, Connecticut.

Simmie, J., Martin, R. (2010). The economic resilience of regions: towards an evolutionary approach, *Cambridge Journal of Regions, Economy and Society*, 3(1), 27–43.

Spector, R. (2005). *Category Killers: The Retail Revolution and Its Impact on Consumer Culture*. Harvard Business Review Press.

Swanstrom, T. (2008). Regional Rresilience: A critical examination of the ecological framework. University of California, Berkeley, Institute of Urban and Regional Development (IURD) Working Paper 2008–07.

Tilman, D., Downing, J. A. (1994). Biodiversity and stability in grasslands, *Nature*, 367, 363–365.

Walker, B., Carpenter, S., Anderies, J., Abel, N., Cumming, G. S., Janssen, M., Lebel, L., Norberg, J., Peterson, G. D., Pritchard, R. (2002). Resilience management in social-ecological systems: A working hypothesis for a participatory approach, Conservation Ecology, 6(1), 14.

Walker, B., Holling, C. S., Carpenter, S. R., Kinzig, A. (2004). Resilience, adaptability and transformability in social-ecological systems, *Ecology and Society*, 9(2), 5.

Walker, B., Salt, D. (2012). *Resilience Practice. Engaging the Sources of Our Sustainability.* Island Press, USA.

Weltevrenden, J. W. J. (2007). Substitution or complementarity? How the Internet changes city centre shopping, *Journal of Retailing & Consumer Services*, 14(3), 197–207.

Wrigley, N. (2010). The shifting geographies of UK retailing, in: N. Coe, A. Jones (eds.), *The Economic Geography of the UK*. London: Sage Publications, 181–195.

Wrigley, N., Dolega, L. (2011). Resilience, fragility, and adaptation: New evidence on the performance of UK high streets during global economic crisis and its policy implications, *Environment and Planning*, 43(10), 2337–2363.

Wrigley, N., Lambiri, D. (2014). *High Street Performance and Evolution*. Southampton: University of Southampton.