URBAN RESILIENCE TRAJECTORIES AFTER AN EXTERNAL SHOCK

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Extended abstract

Cities – and urban agglomerations – are complex and interrelated spatial entities that include a wide variety of dynamic trajectories over time (see e.g. Taylor 2007, Kourtit and Nijkamp 2014, Kourtit 2015). Despite the world-wide urbanisation mega-trend, not all cities have the same growth pace; some may show an unprecedented growth rate, while others may even exhibit a decline (see Haase 2015). Urban growth and urban shrinkage in the world are often taking place at the same time. Urban areas are usually showing a life-cycle pattern with upturns and downturns, sometimes similar to business life-cycles in industry. There is a wealth of studies that document these dynamic urban trajectories (see e.g. an early seminal study on the life course of cities by Van den Berg et al. 1982). In recent years, we have witnessed an avalanche of studies on urban growth and decline under different economic and political regimes (see e.g. Kabisch et al. 2010, 2012, Couch et al. 2005, Haase et al. 2010, Cheshire 2006, Nuissl and Rink 2005). An interesting overview of various trends in urban dynamics can be found in Haase (2015). Clearly, issues related to urban robustness and resilience have attracted much attention.

Interesting contributions to a further understanding of resilience mechanisms and vulnerability analysis can be found inter alia in Alexander (2000), Richardson et al. (2008) and Rose (2007). Urban evolution is the result of a complex internal, external and policy force field. In contrast of a regular life-cycle pattern of urban agglomerations caused by endogenous forces of a city or urban system (as studied in the earlier urban dynamic systems literature; see Forrester 1969), our paper aims to focus the attention on the external shocks that impact the urban economy and that lead to disequilibrating forces, without any prior guarantee of a stable outcome or a return to the original position.

Urban resilience after an external shock is influenced by many factors, including geographic location, the initial and prevailing social and economic situation, level of infrastructure, density of population, social capital, cultural habits, environmental conditions, and many others. Although there may be different levels of suffering from and of impacts by natural disasters or external perturbations in different countries and parts of the world, it is clear that the issue of shock recovery is global.

Resilience refers in general to the ability of actors to develop and implement adaptation mechanisms to external perturbations that mitigate the long-run effects of such shocks and that

might lead to a restoration of the original equilibrium or to the realization of a new equilibrium state. Resilience may thus be considered as "the capacity of a system to absorb disturbance and reorganize while undergoing change so as to still retain essentially the same function, structure, identity and feedbacks" (Walker et al. 2004, p. 8). Vulnerability is related to the robustness of a man-made system to cope with the emergence of external shocks and to combat its negative consequences; it is a shock absorption ability that reflects to some extent a risk-persistence of a system in a timely and effective manner. Reduction of vulnerability through deliberate actions may increase the resilience of the system concerned.

Urban agglomerations have an expensive and vulnerable infrastructure and a massive concentration of humans, business, houses and offices infrastructure. Consequently, any disaster will have a dramatic effect on the socio-economic position of an agglomeration, if affected by an external shock. The long-run consequences are likely also determined by local cultural attitudes and effective policy responses. But it is also important to realize that the contribution of a modern and up-to-date urban infrastructure – in combination with external economies of density, proximity and connectivity – may reinforce the long-range socio-economic progress potential of a city. Efficient recovery and resilience may even improve a city´s position. The paper sets out to trace the determinants of urban recovery patterns after an external shock. We may therefore, hypothesise that the urban resilience trajectory – after an external shock – may have the following shape (Figure 1), which is influenced by various moderator variables, viz.: (i) current level of high welfare and appropriate public facilities;
(ii) inert local cultural attitudes on urban management;
(iii) ineffective or delayed policy response after a shock.

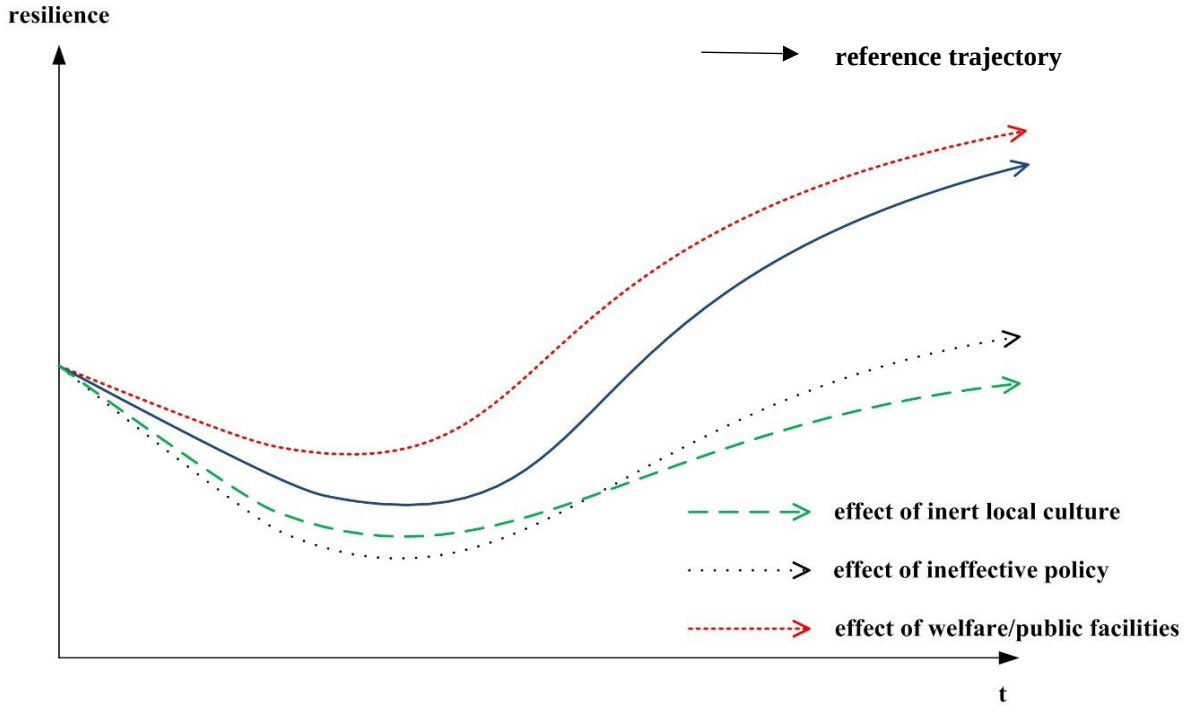

Fig. 1 Urban resilience trajectory after an external shock

Testing the validity of the constituents of the urban resilience curve in the paper is based on extensive panel data mining over a long time period and varied case study research, which may be insightful regarding the drivers and effects of urban catastrophic events. In this context,

institutional support systems and involvement of relevant stakeholders may also play a critical role. Cities can plan and respond better if the location and nature of risk is known and clearly mapped out, and also if risk assessment and management is mainstreamed in urban development and management programs.

Urban risk assessment is mainly based on accessible and operational data. Furthermore, the collection of needed data, their integrity and the capacity of exploitation and interpretation of data in different formats, seems to be problematic in many cities. The World Bank has identified the crucial issues by urban risk assessment as follows:

- Specialized technical skills are a first challenge. Although existing technical capacity can be used for undertaking a primary level of risk urban assessment (with some training), specialized technical skills are required for components of higher-level risk assessments such as flood or seismic risk assessment.
- Financial allocation for risk assessments: While the primary-level of urban risk assessment would require minimal financial resources, the associated costs of the tertiary level can be beyond a city's budget for developing urban-management tools. Specific resources will have to be identified to initiate and sustain efforts toward risk assessment and risk reduction.
- Data collection and interpretation: Collecting reliable, accurate, and timely data remains a daunting task in many cities. Even if the data is available, it may be with different organizations or agencies using different data formats.
- Extent to which assessment methodologies represent the actual situation. Community consultation-based assessment (primary-level risk assessment), while more cost effective, may not be accurate enough to plan for structural reduction of disaster risk. Available risk modelling and climate change projections also have large uncertainties associated with them.
- Gaining and maintaining political support. It may be difficult to gain necessary political support to initiate and mainstream the urban risk assessment. Priorities may change with a change of leadership, leaders may focus more on other pressing issues and there can be vested interests in not disseminating results of a risk assessment to a city's population (Dickinson et al. 2012, p. 34).
- Involvement of communities and relevant stakeholders in urban risk assessment. Involvement of communities and all relevant stakeholders is a crucial issue by urban risk assessment. Communities and relevant stakeholders may fill the gap in data gathering. They should be involved by the preparation of plans for urban risk assessment and reduction as well as scenario building. Communities play a very import role also in term of disaster response.

The paper will present a systematic typology of external urban shocks as well as their determinants (drivers) and their impacts. Through a systematic analysis of possible resilience mechanisms – and their measurement – this study provides new insight into the recovery performance of cities after an external shock.

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