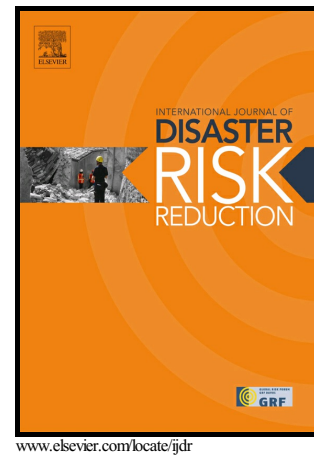


Author's Accepted Manuscript

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An Exploratory study

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PII: S2212-4209(18)30118-3
DOI: <https://doi.org/10.1016/j.ijdr.2018.05.012>
Reference: IJDRR899

To appear in: *International Journal of Disaster Risk Reduction*

Received date: 29 January 2018
Revised date: 19 May 2018
Accepted date: 23 May 2018

Cite this article as: Kamila Borsekova, Peter Nijkamp and Porfirio Guevara, Urban resilience Patterns after an external shock: An Exploratory study, *International Journal of Disaster Risk Reduction*, <https://doi.org/10.1016/j.ijdr.2018.05.012>

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URBAN RESILIENCE PATTERNS AFTER AN EXTERNAL SHOCK: AN
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Abstract

Resilience has in recent years become an established concept in dynamic systems analysis. It is also increasingly employed in dynamic spatial systems, such as cities. The present paper offers an evidence of resilience of urban systems after an external shock. It pays particular attention to natural disasters affecting a city's system. A typology of different types of disasters and of related damage is presented, from a global perspective on the regional occurrence of such calamities. The cost and recovery potential after an external shock are statistically explored. We find that population size and density are critical parameters for the order of magnitude of disaster damage. The comprehensive approach to urban resilience based on risk assessment, identification and management proposed in this paper helps to depict a feasible urban resilience pattern after an external shock.

Keywords: resilience, vulnerability, external shock, urbanization, urban resilience pattern

1. Introduction

Several years back, Brakman et al. [8] published a study on the long-term consequences of strategic bombing of German cities by the Allied Forces during WWII for the post-war city growth in (East and West) Germany. Such a shock in the growth trajectory of cities may have short-term negative effects, long-term negative effects or long-term positive effects. Their analysis is an example of the rising volume of empirical studies on urban resilience trajectories, which aim to analyse the dynamic recovery potential of cities after an external shock.

Cities – urban agglomerations and metropolitan regions – are complex and interrelated geographic entities that exhibit a wide variety of dynamic behaviours over time (see e.g. [57,

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