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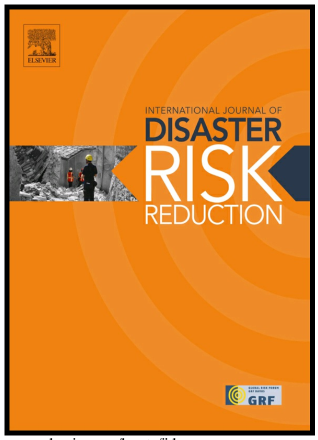

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Modeling the Labor Market in the Aftermath of a Disaster: Two Perspectives

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Abstract:
This paper presents two opposite perspectives on the labor market in the aftermath of a disaster. The first posits a production sector that is non-tradeable and a labor market with total mobility. This is modeled using agent based simulation. The second presents a production sector that is fully tradeable and a labor market that is perfectly immobile. This is modeled using traditional micro-economic modeling and numerical simulation. Outcomes from the two approaches are compared. In the no-disaster case, participation rates and wages under both approaches settle down to a low-level equilibrium albeit at different rates. In the case of a disaster, outcomes are very different. Under the agent based model labor market mobility results in solutions being found outside the area. In the micro-economic approach workers absorb the recovery process within the area readjusting their demand for labor. When population movement is introduced the system reorganizes at a new equilibrium. The results highlight first, the importance of labor mobility and flexibility and second, the divergent absorption costs in determining the long-term outcomes of a disaster.

Keywords: labor markets, agent based simulation, numerical simulation, equilibrium, adjustment

1. Introduction

Cities are often spatially organized around the concept of work and commuting. As such, the labor market forms one of the central features of the urban environment and wages comprise a key element in local income. Spatial rigidities in the location of firms and employees allow for idiosyncratic regional labor markets which affect population levels, incomes, firm competitiveness, and commuting. By altering these core characteristics of the city, the labor market spatially and functionally organizes urban space [1,2]. A significant shock to local capital via a large-scale disaster will catalyse a decline in worker productivity assuming capital and labor are non-rival goods [3]. While the result of this decline is subject to debate [4] there is little doubt that the subsequent recovery of productivity is inherently linked to reconstruction and thus