

RESILIENCE, SOCIAL CAPITAL AND ACCESSIBILITY IN DYNAMIC SPACES: OPERATIONAL ADVANCES

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ABSTRACT

Resilience is a phenomenon in response to some internal mechanisms of adjustment following an external shock. In this sense, resilience may be defined as the capacity of a system, in the presence of a shock: a) to bounce back to a stable equilibrium point; and b) to absorb the perturbation in order to reach a new equilibrium. Thus, resilience may be seen as a recovery rate which captures the capability of a determined area to be prepared to a potential change in the surrounding environmental conditions in order to respond and consequently to recover (Reggiani et al., 2002).

The notion of social capital has over the past decade prompted an enormous research interest at the interface of economics and social sciences. This concept is defined in numerous ways, each one relating to social capital as a key characteristic of a group, not of a single person. For this reason an appropriate understanding of the term “*social capital*” originates from the creation and improvement of social networks, amongst others with friends, colleagues and neighbours. Indeed social capital, referring to the possibility to realize various contacts and communication patterns (e.g. work, family, colleagues etc), is a feature that allows a group to collaborate in order to reach a common aim.

Social capital appears to be linked to the accessibility concept, since accessibility regards the possibility and benefit to reach some facilities. In particular, the concept of accessibility identifies the opportunities of interaction, by embedding a spatial distance/connectivity weighted by economic variables.

Spatial systems appear to exhibit often a surprising dynamics surrounding regarding their socio-economic development, in terms of (un)employment, income, mobility, ethnic composition, and urbanization rates. Their evolution is co-determined by such factors as market proximity, labour and housing market developments, public amenities, use and access to transport systems, socio-economic composition of population etc. In addition, a *sine qua non* for sustaining regional economic growth is the local or regional presence of individual and collective assets that favour knowledge acquisition and transfer education, innovation and creativity. In this context, social capital and spatial accessibility are critical factors. Indeed a fundamental role in spatial system is played by the quality and the spread of social networks. Social capital is relevant as a binary contact pattern among people, but also because the nature of human interaction and the substance of communication are essential (Putnam, 1995).

Accessibility indeed may propagate external shocks, but may also be instrumental in achieving a faster recovery or return to an original equilibrium (Osth et al, 2015). An improved access to economic hubs impacts the resilience, facilitating the recovery. In this sense rural villages may be more affected by a financial crisis or a natural disaster, such as an earthquake, because of the lack of supporting infrastructures. On the other hand, social capital may act as a stimulus for a solid and trustful economy, and hence create a buffer against external shocks, but it may also create a conservative and inert attitude and hence delay a dynamic response which may be needed to cope with systemic disruptions. After a natural disaster or another event with negative consequences, improved connectivity corresponding to higher levels of social capital may turn out to be more important than other factors (e.g. resources on government assistance). This is due to the solidarity and altruistic sense spread in a community with a high social capital, which facilitates cooperative action and a more effective reconstruction. Moreover, it is worth to highlight the positive effect of bonding social capital, when regarding relationships between very close people such as family or friends.

Against the background of the abovementioned observations on resilience and social capital, the present paper aims to explore the resilience of spatial network systems in relation to their endogenous functioning, their provision with social capital, and their geographical accessibility.

Operational questions to be addressed are:

- i) is accessibility related to social capital?
- ii) if so, is this relationship positive or negative?
- iii) have individual socio-economic features a positive impact on social capital?

In order to answer to the above research questions, a multivariate model is developed and applied to study the different dynamics – including their resilient behaviour – of urban and regional economics in Sweden. The significance of this research framework will be tested by means of detailed spatial data from Sweden. In particular, longitudinal individual data originating from the Uppsala University database, from 1990 to 2014, will be utilized.

The first component of RCI (Resilience Capacity Index; Foster, 2007), i.e. the community connectivity capacity, has been considered here as independent variable. This variable is made-up by civic infrastructure, metropolitan stability, homeownership and voter participation. On the basis of the literature review, the independent variables which have been taken into account in this model are: accessibility (embedding both exponential and power decay function), education, immigration, income, (un)employment and age (as cohorts). In order to highlight potential differences in the impact of the regressors on the dependent variable, a quantile regression is implemented.

The analysis shows the following results:

- a) an increase in accessibility corresponds to a decrease in social capital;
- b) age follows an inverse u-shaped trend with a peak for people aged between 40 and 50 years;
- c) educational level increases social capital following an inverse u-shaped trend;
- d) an unexpected result for the variable regarding immigration, which has a positive sign;
- e) the resilience index, as a proxy for social capital, is higher, the higher the coefficient regarding immigration is and consequently also the impact on the dependent variable.

In more details, the analysis shows that an increase in accessibility corresponds to a decrease, even if not significant, in social capital. Indeed in urban areas, where people can easily reach every facility, such as church, pharmacy or school, social capital is not so important in everyday life. In particular quantile regression shows that the highest coefficients – in terms of absolute value – of accessibility correspond to the highest quantiles, made-up of municipalities described by a high level of social capital. In other words, the impact of accessibility on social capital is even more considerable in absolute value. It means that, although always negatively, accessibility influences much more area with a high social capital than other ones.

Regarding other variables, age confirms what some other previous works have demonstrated: an inverse u-shaped trend with a peak for people aged between 40 and 50 years. The variable regarding this cohort indeed is characterized by a higher positive coefficient over all quantiles. It

means that individuals who are between 40 and 50 years old are described by a higher level of social capital compared to who are in other age cohorts, most likely given the active participation to associations. Similar trend is for the education variables. The model results that educational level increases social capital, but an educational qualification higher than a school high degree has no more a positive effect on resilience; similarly, vocational education appears to reduce social capital. Unexpectedly is the results for the variable regarding immigration, which has a positive sign. Moreover, the resilience index, as a proxy for social capital, is higher, the higher the coefficient regarding immigration is and consequently also the impact on the dependent variable. This means that immigrants are a resource able to increase social capital.

All in all these results call for further research, mainly devoted to test the model in different EU countries/areas, where resilience, social capital and accessibility display different spatial characteristics and dynamics.

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