Bálint, Lajos – Daróczi, Gergely: The relationship between spatial focusing and migration intensity – Hungarian county level evidences

Objective

Migration is the change of usual residency by an individual or group of individuals over a defined time interval. No limit is put on the distance, over which the change can take place or on time interval (Rees et al. 2000). Thus internal migration is *sui generis* a spatial social phenomenon, it's a temporal change and its characteristics have many times been examined by several demographic studies (Baccaïni, 2007, Bonifazi and Heins, 2000, Zelinsky 1971). In our presentation we will analyze the relationship between different dimensions of movements, namely the intensity of the flows and the concentration of these flows (spatial focusing) with the help of an advanced time-series method (VAR model).

Spatial focusing

There are several possible aspects of the characterization of internal migration, and all dimensions have appropriate measurement methods. If we examine the temporal evolution of internal migration, it is more important to apply measures that describe more dimensions of this interconnected system. According to Bell et al. (2002) there are four broad groups of measures, each of which provides a different insight into the migration process. These are (1) measures of the intensity of migration, (2) measures of the distance of migration, (3) measures of migration connectivity, (4) and measures of the effect of migration. One of the listed domain is migration connectivity, which reflects the strength of the functional linkages between spatial units. It could help to reveal the changes in settlement structure, and have potential application to population projections (Rogers and Raymer, 1998). One possible solution to describe the connection between places is the quantification of the concentration of flows, in other words the determination of spatial focusing. According to Plane and Mulligan (1996) the aim of spatial focus is: „… to mean the inequality that exists in the relative volumes of a set of origin-destination-specific migration flows. A high degree of a spatial focusing means that most migrants are moving selectively to only a few destinations and that most out-migrants are leaving only a few origins. A low degree of spatial focusing means that migrants are moving among all possible origins and destinations in relatively equal numbers." (Plane – Mulligan 1996, pp. 1-2.).

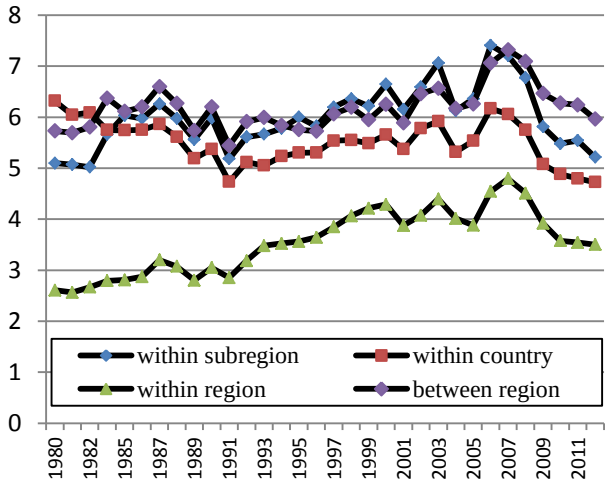
Several studies also dealt with the concentration of spatial flows in the 1980s (Long 1988, Watkins 1986). At the end of the 1990s, some studies dealt with spatial focusing as a methodological challenge. Plane and Mulligan (1996, 1997) employed Gini indices to describe the inequities in the interaction (migration) matrix. Rogers and Sweeney (1998) aimed to create less complicated and less computational intensive measurement. They suggested to use coefficient of variation type indices applying only for the rows and columns of the matrix, which is directly and conveniently interpretable. According to our experiences the Gini and the ACV indices for rows and columns consider the system-wide differences similarly (see the plots at the end of abstracts). In order to calculate different spatial focusing measurements we developed a package in R (Daróczi and Bálint, 2013).

Data and Spatial Scale

The source of data is the vital register (DEMO) of Hungarian Central Statistical Office. The data are available on an annual basis from 1980 to 2012. Because of the nature of the data we analyze the events (movement concept) and not the migrant (transition concept) itself (Rees et al., 2000). As with all spatial analysis, we need to be aware of the modifiable areal unit problem (MAUP), which means that the choice of spatial scale can radically affect the results (Openshaw, 1984, Fotheringham – Wong, 1991). However the intensity of internal migration measured on different spatial scale followed a very similar dynamics, especially after 1990.

Internal migration on different spatial scale,

per 1000



Administrative units in Hungary

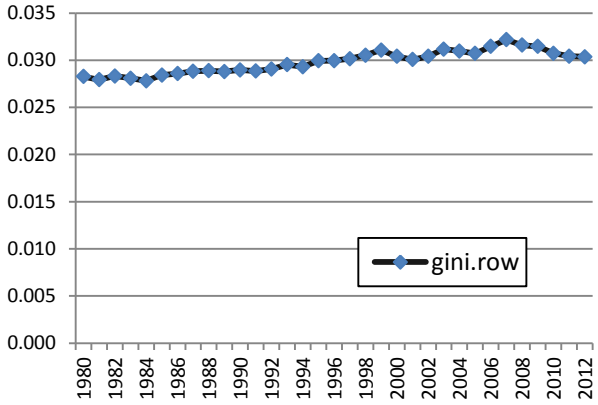
Preliminary results

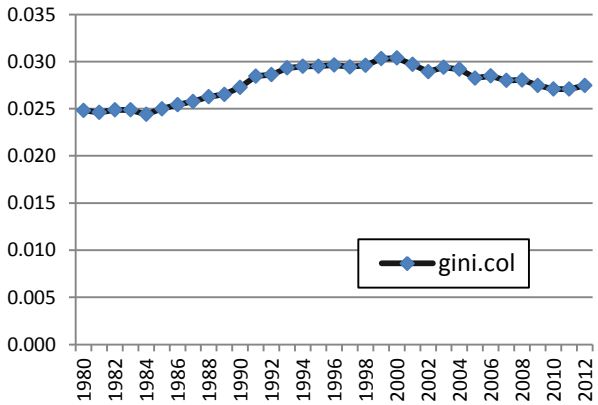
In our analysis we were dealing with inter-county (long distance) migratory flows (within + between region flows). During these three decades the migration rate increased at a moderate pace starting from State socialism to 2007. Nothwithstanding in the early 90s the impact of the political and economical transition on crude migration rate was relatively moderate. The Hungarian migration system exhibits considerable inertia and stability despite of eruptive societal changes. From the year of the financial crisis in 2008, migration intensity reduced significantly. The decline is promisingly lasting. Similar dynamics were observed in the spatial focusing by out-migration (concentration of rows), while the focusing of in-migration (concentration of column) were slightly different. In sum, using annual data we did not discover significant signs of volatility, which indicates the stability of migration system.

As Plane and Rogerson (1991), we also found that the increase in the intensity of migration is associated with more focused spatial streams. One possible explanation would be that the financial crisis everywhere reduced the opportunities. As a result migration intensity decreased, and in parallel with it the concentration of movement also declined.

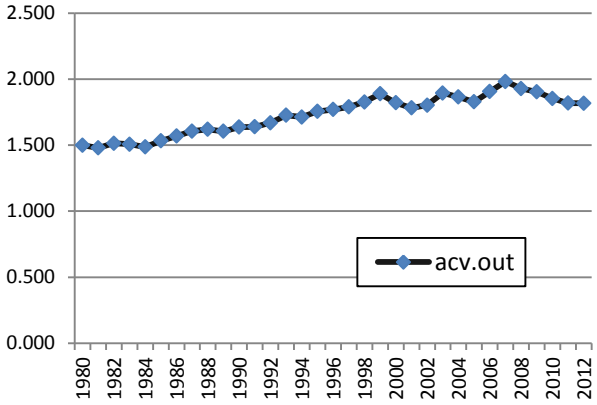
Different system-wide spatial focusing indices between 1980 and 2012

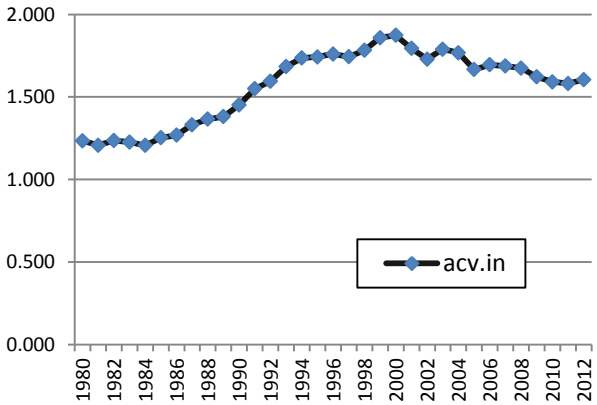
Gini





ACV





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