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Metropolitanisation and medium-sized cities in the Munich Metropolitan Region. On location competition, structural change towards the knowledge economy, and accessibility

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Theoretical background

Knowledge and innovation are important factors for economic development. The structural change towards knowledge intensive activities is strongly linked with the revival of cities and agglomerations. They play an important role for the production of knowledge and innovations, since knowledge contains a tacit component that is not easily transferable and sticks to geographical proximity (Polanyi, 1966). A multitude of theoretical approaches aims to understand relations between the localisation of economic activities and the output of these activities.

The theoretical framework of agglomeration economies acknowledges that accessibility, size, density, specialisation and diversification are factors that foster economic performance and development. Agglomeration advantages provide externalities with different outreach. The basis of agglomeration economies are knowledge spillovers which occur more likely in close geographical proximity where face-to-face contacts are possible (Gronberg and Goldstein, 1984, Duranton and Puga, 2004). Agglomeration advantages also work on the level of labour market regions (Rosenthal and Strange, 2003, Rosenthal and Strange, 2001). Employees benefit from a high concentration of economic activities because of a higher variety of jobs and better paid positions (Parr, 2014). Network economies suggest that external linkages to remote knowledge resources have the potential to complement these agglomeration externalities with external inputs (Bathelt et al., 2004, Storper and Venables, 2004). The emergence of metropolitan areas adds another issue of scalarity to this complex interplay. The term metropolitanisation entails an upscaling process of economic relations on a level of city regions that are physically separated but functionally interlinked (Hall and Pain, 2006, Krätke, 2007). The spatial division of labour drives the interplay between locations and calls for approaches that reflect on the issue of spatial scales in order to understand the development of cities. All in all, we have to assume that knowledge intensive activities tend to concentrate in

metropolitan regions with sufficient size and connectivity, which has major implications for small and medium-sized cities both in- and outside of them.

Accessibility, in particular in public transport, is an important strategic factor for this spatial development and the structural change towards the knowledge economy (Bentlage et al., 2013). As time, both for work and leisure, is becoming more valuable to knowledge workers, they rely more often on public transport modes to be able to use commutes or other journeys productively. Good transport links have been a key driver of urban development. Transport oriented development in a metropolitan environment may be a tool to facilitate functional mixture, high density and hence potentials for interaction and at the same time allowing short distances, as it can drive polycentric development.

The Munich Metropolitan region (MMR)

In Germany a few metropolitan regions appear to combine these advantages of agglomeration, network and metropolitanisation. Regions such as Munich, Frankfurt, Stuttgart, or Hamburg are the economic engines of the country. The Munich Metropolitan Region (MMR), in particular, faces strong growth and a concentration process in larger urban centres (Thierstein et al., 2017). The region attracts young and highly educated workers that search for lively urban districts. The monocentric transport structure of the MMR fosters this development, since urban amenities with high public transport accessibility are rather concentrated in the city of Munich. At the same time the MMR hosts a number of medium-sized cities such as Augsburg, Ingolstadt, Landshut or Rosenheim that could benefit more from the overall development if they are able to use growth of population for entire urban development and the improvement of location factors. Thus, this high demand for central locations represents an opportunity for other municipalities to further develop the quality of business locations including this into a strategy of urban planning.

Method and data

We assess the interplay of accessibility, development in the knowledge economy and metropolitanisation for the Metropolitan Region of Munich. Therefore, we use an accessibility model that includes high speed trains, regional trains, suburban railways as well as light rail and important bus lines for the MMR. This data is combined with population and employment figures for each location in order to calculate gravity based accessibility, inversely weighted by distance. We further differentiate between closeness centrality and betweenness centrality (Freeman, 1979). Closeness centrality indicates the totalized distance to access population and employment from each node in the network and thus represents a measurement for potential interaction – a basic condition for knowledge production. Betweenness centrality is given by a node's location on the shortest paths between two other nodes. This indicator shows the frequency of passengers that could be clients or customers. In a second step we disaggregate knowledge intensive employment from labour market regions to finer grained locations below the municipality level using a data set with georeferenced firm locations from Dun & Bradstreet. This enables us to detect clusters of knowledge intensive employment. Thirdly, we use these data for two different time points in order to evaluate changes within the MMR. Therewith, we include a multilevel analysis ranging from the local level up to municipalities, labour market regions and the entire metropolitan region of Munich. Our contribution aims to discuss the potential of small and medium-sized cities with good accessibility that can be used to develop future-oriented locations.

Preliminary results

Preliminary results show that although the MMR performs very well, certain municipalities are not able to keep up with the overall structural change towards the knowledge economy. This results in huge distances between residential areas and economic centres which increases commuting distances. Municipalities that are not able to combine spatial accessibility by public transport, density and the mixture of different functions such as work, residence and supply to promote urban qualities fall behind. A polycentric orientation in the MMR helps to valorise spatial qualities. This requires a focus on public transport and its spatial-structural element, in which functions are centralized. We conclude with the finding that in some parts of the MMR, policies should be more thoroughly directed at encouraging the development of locations with high accessibility. This also means that qualities such as broadband connection have to be bundled and centralised in accessible locations instead of distributing it evenly across the area. Otherwise, other locations will arise which are faster on the market and, thus, might be more competitive in attracting companies as well as qualified personnel.

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