Knowledge-based spatial differences in economic activity, job related migration and housing related migration

Gilad David Aharonovitz

Abstract This paper analyzes the mutual effects of growth of cities and migration between cities. A model in which cities manufacture goods in a traditional sector and in a technological sector, and each city exhibits independently learning-by-doing in the latter sector is presented. The possibility that the development of one city prevents the development of the other is demonstrated. The higher wage in the developed city attracts the talented residents of the less developed city, to which less talented residents migrate in search of lower housing prices, thus creating bi-directional migration that reinforces the above result. An empirical analysis of the differences between job-related migration and housing-related migration in the U.S. is conducted, finding that these two streams are indeed in-line with the model’s prediction. Implications for regional development policies are discussed.

JEL Classification J6 · O1 · R1 · R5

1 Introduction

In almost every developed country one finds relatively poor cities, which generally lack technologically advanced industry and are characterized by lower-priced local goods (such as real estate), alongside rich cities which are characterized by technologically advanced industry, higher-priced local goods and a higher average wage. Residents of

This paper is based on two unpublished chapters of my dissertation, “Inequality Within Cities, Inequality Between Cities and Patterns of Urbanization” (also called in another version “Knowledge Based Spatial Differences in Economic Activity and Bidirectional Migration”), and “Internal Migration in the United States”.

G. D. Aharonovitz (✉)
School of Economic Sciences, Washington State University, Pullman, WA 99164, USA
e-mail: aharonovitz@wsu.edu

© Springer
the poor cities can migrate to the rich cities in search of higher wages, while residents of the rich cities may migrate to the poor cities in search of lower prices. Governments are sensitive to the aforementioned spatial inequality and one can often find massive transfers of resources (relative to total GDP) from rich to poor areas and to rural and agricultural areas. However, in many cases this has no lasting effect on economic conditions in the poor areas.

Although a great deal of research has been done on the development of cities, only a little of it has focused on the link between local knowledge, migration between cities and the differences in the development among cities, and differences between various types of migration are widely ignored. Thus, this study will attempt to achieve two goals: (1) to analyze the theoretical connection between the distribution of the population (which is heterogeneous with respect to ability) among cities, movements of the population, and the differences created in the technological levels and development of cities; and (2) to empirically validate the characteristics of the bi-directional migration predicted by the model.

This paper presents a theoretical model of multiple cities, each of which can produce a good in a traditional method and a technological (or industrial) method. The traditional production is a function of the number of workers employed in that sector, while the technological production is a function of the number of workers, the ability of the workers, which is uniformly distributed, and the technological level of the city. This technological level involves a learning by doing (LBD) process which is specific to each city, i.e., differential accumulation of knowledge between cities. Thus, there can be a different steady state in each city (based on the initial conditions), so one city undergoes the LBD process and primarily produces the technological good, while another produces the simple good. At a later stage I add real estate to the model and show the possibility of a steady state with one developed city and one less developed city (with lower real estate prices), and population movements of equal magnitude between the two. The result of the model is that the highly able (skilled) move from the less developed city to the more developed city to enjoy higher skill premium, while the lower skilled are leaving the developed city to the less-developed city, thus enforcing the technological gap between the two places. This conclusion is robust to two alternative assumptions regarding migration costs and characteristics of the products, which are analyzed as well. The latter variation leads to a higher wage to the less talented in the developed city, which, under some conditions, may even empty out the less developed city. Therefore, the developed city prevents the other city from developing.

Empirical analysis of job-related migration and housing-related migration is provided, using multi-year data on each migrant, combined with education-specific data regarding wages, unemployment and other variables in origin and destination states. I use the PSID dataset, which includes a question on the reason for moving, thus allowing for splitting migrants into two different streams, following the model.\(^1\) Although

\(^1\) The field is defined: Why did you (HEAD) move? (1) Purposive productive reasons: to take another job; transfer; stopped going to school (2) To get nearer to work (3) Purposive consumptive reasons—expansion of housing: more space; better place (4) Purposive consumptive reasons—contraction of housing: less space; less rent (5) Purposive consumptive—other house-related: want to own home; got married (6) Purposive...