Urban exodus: housing market structure and interregional migration revisited

Thomas de Graaff[1]*

Abstract
This paper addresses the impact of home-ownership and social renting rates on intercity residential migration in the Netherlands. It especially focuses on their role on the migration of natives out of the larger and popular Dutch cities. By applying a Bayesian multilevel gravity model I control simultanously for (*i*) both city-specific effects of origin and destination, (*ii*) dyad-pair specific effects, and (*iii*) the impact of the housing market structure in both the city of origin and the city of destination. I find positive and high elasticities of social renting (0.8) and homeownership (1.8) rates on out-migration, while homeownership rates have a smaller and negative impact (-0.5) on in-migration. Moreover, city specific in- and out-migration flows are highly correlated (0.88) just as dyad-specific flows (0.8). Finally, I show that my probabilistic model is able to accurately predict migration flows both within and out-of-sample.

Keywords
Gravity model — housing market — interregional migration — multilevel model — cities

[1] *Department of Spatial Economics, Vrije Universiteit Amsterdam, Amsterdam, The Netherlands*
***Corresponding author**: ✉ t.de.graaff@vu.n; thomasdegraaff.nl

1. Introduction

In the recent decade cities have been proclaimed to be the overall "winners" within the regional economic landscape (Glaeser, 2012). Indeed, there is a large empirical literature that finds that especially large cities exhibit relatively more employment, more innovation and produce overall more added value (see, e.g., Balland et al., 2020). Most of this success of (large) cities can be attributed to positive regional and urban agglomeration economies (see for a recent overview of the size, scope and nature of these urban economies Duranton and Puga, 2020; Rosenthal and Strange, 2020)

Arguably, however, urban succes does not accrue to everyone and recent research has shown as well the negative aspects of this success.

To anticipate the results of this paper, I find strong negative effects of home-ownership rates on on both in- and out-migration flows. Further, social renting rates also affect regional migration flows negatively, but only for out-migration.

This paper reads as follows. The next section describes the data and focuses especially on the distribution of regional migration flows and housing market structure. Section 3 describes the modelling approach, where starting from traditional gravity model and using the descriptives of the migration flows, a Bayesian multilevel gravity model is constructed. Section 4 gives both the model results and interprets them by providing as well predictions within and out-of-sample. The last section concludes.

2. Data

I use inter-regional migration flows measured in individuals between all of the 40 Dutch COROP regions between 2012 and 2018. I use no information on within regional migration. So, I have 320 regional characteristics (or doubled when accounting for both origin and destination municipalities) and 10,902 aggregate migration flows ($7 \times (40 \times 40 - 40)$).

The histograms in Figure 2 show the distribution of migrant flows within my sample. The left panel deals with migrant flows below 100, the right panel with migrant flows of 100 and larger. Two main observations can be made.

Acknowledgments

I would like to thank Wim Bernasco, Thor Husby, Viktor Venhorst, Maureen Lanhuizen, participants at the 15th biennial NECTAR conference in Helsinki, participants at the 59th ERSA conference in Lyon and seminar participants at the VU University Amsterdam for valuable comments on a first draft of this paper. Paper, data and code can be retrieved from the following project's GitHub page:
https://github.com/Thdegraaff/migration_gravity.

References

Balland, P.-A., C. Jara-Figueroa, S. G. Petralia, M. P. Steijn, D. L. Rigby, and C. A. Hidalgo (2020). "Complex economic activities concentrate in large cities". In: *Nature Human Behaviour* 4.3, pp. 248–254.

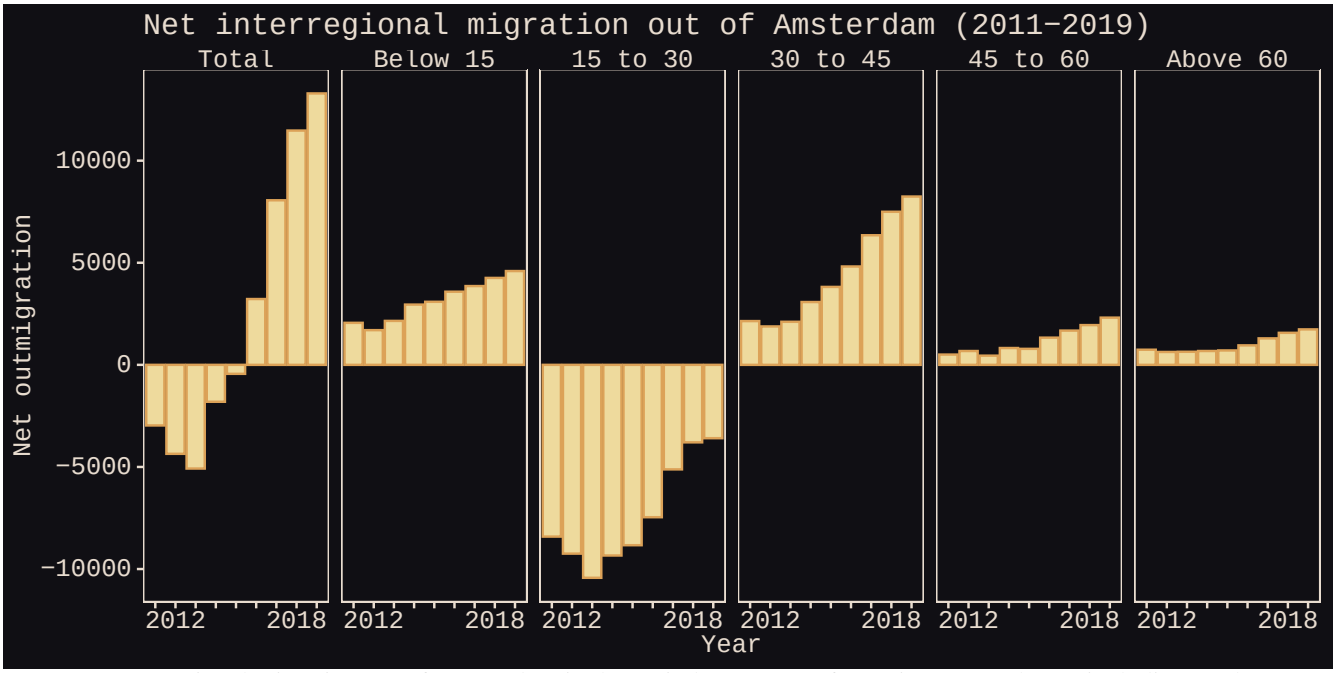

Figure 1. Interregional migration out of Amsterdam in the period 2011-2019 for various age cohorts (including total out-migration in the most left-panel)

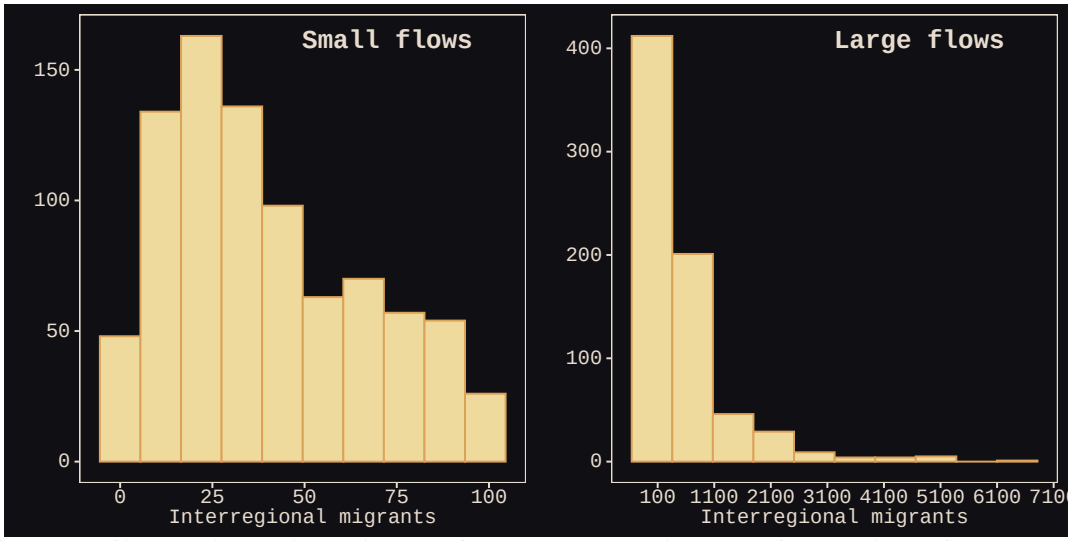

Figure 2. Histogram of inter-regional migrant flows. Left panel shows the histogram of small migrant flows ($0 \leq N < 100$) and the right panel shows the histogram of large migrant flows ($N \geq 100$). Note the different scale of the y-axes.

Boyle, P (1998). "Migration and housing tenure in South East England". In: *Environment and Planning A* 30.5, pp. 855–866.

Duranton, G. and D. Puga (2020). "The economics of Urban Density". In: *Journal of Economics Perspectives* 34.3, pp. 3–26.

Glaeser, E. L. (2012). *Triumph of the City: How Our Greatest Invention Makes Us Richer, Smarter, Greener, Healthier, and Happier*. Penguin.

Rosenthal, S. C. and W. C. Strange (2020). "How Close Is Close? The Spatial Reach of Agglomeration Economies". In: *Journal of Economics Perspectives* 34.3, pp. 27–49.