

Does urban scaling apply to Europe's oldest cities, too?

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Europe's cities, most of which were established centuries ago, have seen periods of boom and bust and developed under unique geographic constraints and economic pressures. Do these unique pressures result in unique growth and development patterns? Or do the general relations of urban scaling apply to ancient European cities just as they do to younger urban areas in other parts of the world.

A new study co-authored by SFI Professor Luís Bettencourt and Jose Lobo of Arizona State University analyzes [urban areas](#) in 28 European countries with populations of more than 500,000 people. The study considers economy size, employment, extent of urbanized areas, rhythms of innovation, and carbon emissions, among other urban characteristics.

Urban scaling theory predicts that land densities, socioeconomic productivity, and innovation per capita increase predictably with city size. Cities in Europe's largest nations already manifest this pattern, but scaling relations become especially clear at the pan-European level, say the study's authors.

These patterns shed interesting new light on a number of curious puzzles about European cities: Are London and Paris too big and too expensive for their own countries, or are they just right? What's the link between prosperity and development and the properties of European cities in different nations?

"The path to a richer nation overall depends on two important but uncorrelated dynamics: baseline productivity per person in cities and city sizes," write the authors. "Nations with lower productivity can nevertheless become wealthy as a whole by growing their cities larger...whereas nations with high productivity can be rich even while having relatively small cities." That's a difference seen in the Netherlands and Spain, for example.

As the European Union continues to meld the economic and political futures of its nation members, understanding the unique flavors of those economies and how they might change in coming years will be important. The authors predict that a truly integrated pan-European system could produce urban centers much larger than its biggest cities—London or Paris—are today. This would magnify Europe's wealth and innovation rates, but also exacerbate present regional inequalities.

More information: Luís M. A. Bettencourt et al. Urban scaling in Europe, *Journal of The Royal Society Interface* (2016). [DOI: 10.1098/rsif.2016.0005](#)

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