

The keys to the city of the future

We live in cities to be closer to our work or university, to see our family and friends more often or to have shops, cinemas and theatres conveniently close by. Nevertheless the role of cities goes beyond providing their inhabitants with a good quality of life: cities are a key component in the workings of production that determines its efficiency and therefore a country's growth potential. In this article of the Dossier we analyse the factors that have encouraged growth in cities in the past and especially those that will encourage it in the future.

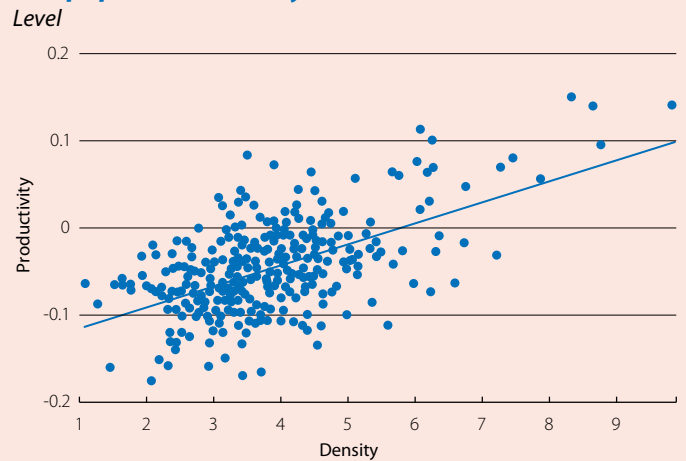
We economists call the economic benefits generated by a larger population density the «agglomeration economies» or «urban-scale economies». The existence of these can be inferred when we see that company productivity is higher in larger cities. But this correlation does not necessarily mean that higher density leads to higher productivity on its own: other factors could also lie behind this relationship, such as when cities are in particularly favourable zones for companies or when they provide better access to certain natural resources. Nevertheless empirical evidence shows that this higher productivity is particularly the result of agglomeration economies. For example, a widely cited study shows that, in the US, doubling the density of the population increases the productivity of work by 6%, all other things being equal.¹ The evidence for the case of French firms is also convincing: those companies in more densely populated areas achieve 9.7% higher productivity than those in less densely populated areas, thanks to agglomeration economies.²

The benefits resulting from bringing workers and companies together in an urban agglomeration are therefore an important reason for cities to exist. The next step consists of understanding the mechanisms behind these advantages. Here we can highlight three major effects: lower transport costs for goods, the creation of a denser labour market and a more favourable environment to generate and spread innovative ideas.³

Lower transport costs was one of the main reasons for companies to cluster together during the period of industrialisation. Manufacturing firms concentrated in cities to be close to their suppliers and clients, cutting their transport costs for both intermediate and final goods.⁴ These agglomeration economies led to the proliferation of industrial districts in many cities in the 19th century, such as the East End of London and Poblenou in Barcelona, a process that intensified during the 20th century and, it is estimated, resulted in a 90% reduction in transport costs in real terms.⁵

The second factor, the concentration of workers in urban areas, increases labour market efficiency. On the one hand, concentrating workers in the same population reduces the cost of losing employment: when workers lose a job it is easier for them to find another if there is a larger number of companies in the city.⁶ The faster they can shift from one job to another decreases the decapitalisation suffered by workers when they are unemployed. Moreover, the fact that a large number of companies and workers are concentrated in cities makes it easier to match people with jobs. One clear example of this is the City in London, where a cluster has been formed of large banks and investment funds as well as the professionals required by such companies, benefitting both. Thanks to this agglomeration, companies can hire the best specialist economists, lawyers or IT experts and these professionals can find the jobs that best suit their interests and skills.

Relationship between total factor productivity and population density in urban areas



Note: Productivity is defined as log total factor productivity and density as log employment density by the area in question.

Source: Combes, Duranton, Gobillon, Puga and Roux (2012).

1. Ciccone, A. and Hall, R. E. (1996), «Productivity and the density of economic activity», *American Economic Review*, Vol. 86, No. 1.

2. Combes, P. P. et al. (2012), «The productivity advantages of large cities: distinguishing agglomeration economies from firm selection», *Econometrica*, Vol. 80, No. 6.

3. Glaeser, E. (1998), «Are cities dying?», *The Journal of Economic Perspectives*, Vol. 12, No. 2.

4. Krugman, P. (1991), «Increasing returns and economic geography», *Journal of Political Economy*, Vol. 99, No. 3.

5. Glaeser, E. and Kolhase, J. (2004), «Cities, regions and the decline of transport costs», *Papers in Regional Science* 83.

6. Marshall, A. (1890), «Principles of Economics», Macmillan.

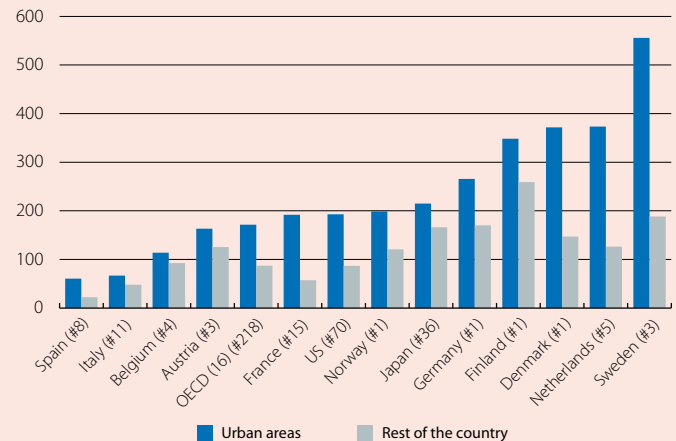
Although the two aforementioned factors are very important, today's rise in agglomeration economies comes particularly from the role played by cities in creating and spreading knowledge. Regarding creation, we only need to note that the main R&D centres for companies and universities are located in large urban areas. Another sign that cities are nurseries for new ideas is that mature industries tend to move outside cities while more innovative up-and-coming industries tend to concentrate in urban areas.⁷

Regarding the role played by cities in spreading knowledge, we should remember that, although we live in an increasingly interconnected world, geographical proximity between individuals living in the same city still makes it easier to propagate ideas. In this respect, an interesting and original study shows that those companies that are geographically closer tend to be cited more often in the details of registered patents.⁸ However, this study was carried out in 1993 and we might therefore conclude that, nowadays, the subsequent development of information and communication technologies (ICTs) has made it easier to exchange ideas, concluding that the advantages of physical closeness provided by cities to pass on information may have dwindled. Nonetheless it appears that the role of cities has become even more important, if possible. The most recent studies show that new technologies are, above all, complementary to geographical proximity: ICTs multiply the benefits produced by new ideas and these, as we have seen, are generated more readily in urban settings.⁹

In summary, the bulk of the evidence available suggests that the role played by cities in a country's production capacity and therefore in the well-being of its citizens will continue to be crucial. However, we need to remember that those features differentiating the best cities of the future are changing, and that certain aspects are gaining ground which determine a city's capacity to generate and spread knowledge. Making sure a country's major cities have an institutional framework that helps to develop such aspects is therefore essential.

Josep Mestres Domènech
Macroeconomics Unit, Strategic Planning and Research Department, CaixaBank

Patents in urban areas and in the rest of the country (Patent demands per one million inhabitants)



Note: Country (# cities).

Source: CaixaBank Research, based on OECD data.

7. Duranton, G. and Puga, D. (2001), «Nursery Cities: Urban diversity, process innovation and the life cycle of products», *American Economic Review*, Vol. 91, No. 5.

8. Jaffe, A., Trajtenberg, M. and Henderson, R. (1993), «Geographic localization of knowledge spillovers as evidenced by patent citations», *Quarterly Journal of Economics*, Vol. 108, No. 3.

9. Glaeser, E. and Ponzetto, G. (2007), «Did the death of distance hurt Detroit and help New York?», NBER WP 13710.