

## *Inequality and city size: an analysis for OECD functional urban areas*

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### **Abstract:**

As cities grow in size the productivity of their inhabitants is expected change due to agglomeration economies and congestion diseconomies. This change in productivity is usually associated with changes in the composition of skills and industrial structure of cities, the generation and diffusion of knowledge, learning processes, better match in labour markets and therefore, also changes in income of urban dwellers. As a result, the distribution of income is expected to change. On the one hand, agglomeration economies may benefit high-skill workers more than low-skill workers, as companies are able to pay higher returns to abilities and efforts, increasing income inequality. On the other hand, city size also provides more opportunities to any worker, which may more strongly benefit low-income workers, reducing income inequality. Consequently, the effect of changes in city size on income inequality is not clear and requires empirical research. Besides, the relationship between city size and city-level inequality is today of special relevance. Metropolitan areas around the world are reaching a size than in many cases exceeds a population of 10, 20 or even 30 million inhabitants. The increasing expansion of cities, both in physical and functional terms, and their changing spatial organisation pushed an entire research agenda on defining what the actual boundaries of cities are and even what should be considered as 'urban'. At the same time, there is a renovated concern about the soaring inequalities that we see around the world and the fact that in a rapidly urbanising world many of these inequalities are increasingly explained by what happens within cities.

While the empirical literature has widely shown how productivity (and income) changes with city size, the empirical evidence on the effects on income inequality remains very limited. The few papers that study the relationship between city size and city-level inequality focus on a single country and do not provide any comparative evidence. In this paper we study the relationship between city size and income inequality at city level for a sample of more than 200 Functional Urban Areas (FUAs) across 11 OECD countries. We analyse the evolution of the size, average income, and inequality of these FUAs. We control for many city and country characteristics, including demographic, socioeconomic and geographical variables, as well as variables for urban and industrial structure. We also study how different factors influence the relationship between city size and inequality. For instance, FUAs usually face a challenge of fragmented governance (as a result of several municipalities forming the FUA). Also, and partly as a consequence of such governance fragmentation, some FUAs have better urban infrastructure than others. Both, the administrative structure of the FUA and the quality of its urban infrastructure, are expected to have an effect on the city size-inequality relationship. Our data set, which includes historical data on city size, allows us to use different estimation techniques, to use advanced identification strategies, and to implement several robustness checks.

In relation to existing studies, this paper is closely linked to papers in the urban economics literature analysing the relationship between city size and income inequality at the city level (i.e., Duncan and Reiss 1956; Richardson 1973; Haworth et al. 1978; Nord 1980; Long et al. 1977; Alperovich 1995; Baum-Snow and Pavan 2013; Behrens and Robert-Nicoud 2014; Glaeser et al., 2015; Sarkar et al. 2016; Ma and Tang 2016). The evidence in this literature is mixed; with older papers suggesting that inequality goes down with city size and more recent papers suggesting the opposite. Furthermore, all of these studies present evidence for single countries (mainly the US, Australia, and China), with no paper providing evidence for cities across different countries. Our paper aims to fill this gap.

Our results are in line with the idea that inequality tends to increase with city size, and suggest that this result may be especially strong for larger cities (FUAs). Our results also seem to suggest that more integrated governance within FUAs, and better urban infrastructure, is linked with a smaller impact of city size on inequality. These results, together with previous findings in the literature, suggest that while city growth may be desirable when cities are small, as it allows for better economic performance, the increasing growth in size that some FUAs currently experience may be undesirable and call for strengthened policy response. Excessive city size, especially in a context of fragmented governance and low quality of urban infrastructure, not only may

lead to congestion diseconomies, which reduce economic performance, but also to higher inequalities and the risk of less cohesive societies.

***Keywords:***

Functional Urban Areas, OECD, city size, inequality, development

**JEL classification:** O1, O4, R1

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