



The impact of the European Union integration on the city size distribution of the Member States



Marco Modica^{a,b,*}

^a CNR – IRGrES, Research Institute on Sustainable Economic Growth, via Corti, 12, 20133 Milano, Italy

^b SEEDS, Via Voltapalette, 11, 44121 Ferrara, Italy

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ABSTRACT

This paper analyses the relation between socio-economic and institutional factors and the dynamics of city populations, the hierarchy of city systems and the urbanization. Particular attention is devoted on the integration process that several European Countries, often structurally so different, have experimented from the beginning of '90s. Results show that the hierarchical structures of Member States is more even than expected. Moreover, the analysis have provided evidence that the integration process of the European Union had a mixed impact on the way in which people gathered across the territory of the EU. In details, the entry into force of the Schengen treaty has promoted a process of agglomeration of the population in the larger cities. On the contrary, the introduction of euro has led people to spread over the territory.

1. Introduction

The Member States of the EU have a long history of conflict. Only in the last century, Europe has been the main theater of the two World Wars. However, after WWII, European Countries started an integration project leading to the creation of European Union that, in some way, covered up old tensions (Nahoi, 2011). The first attempt to build an integrated Europe started in 1951, with the creation of the European Coal and Steel Community (ECSC) thanks to the agreement of 5 countries (Belgium, France, Italy, Luxembourg, the Netherlands and West Germany) that have signed the so-called Treaty of Paris and which came into force on 23 July 1952. This Community was aimed at reinforcing the capacity of reconstruction of those 5 countries after WWII because coal and steel was two essential goods needed for the reconstruction process after the devastation of the war. Subsequently, the same five countries have continued their integration process by a further transfer of national power on 25 March 1957, by signing the so-called Treaty of Rome (officially the Treaty establishing the European Economic Community, TEEC). This treaty is one of the milestones of the European integration process, that brought about the creation of the European Economic Community (EEC) and the European Atomic Energy Community (Euratom). The main aim of the treaty was to develop a single market for people, goods, services, and capital across the EEC's member states by reducing the customs duties and the policy coordination on agricultural, transport and social fund policies. The Community have grown in size during the time by the accession of new

member states (Denmark, Ireland and the UK in 1973, Greece in 1981, Spain and Portugal in 1986).

The second fundamental pillar for the European integration is the so-called Maastricht Treaty formally, (the Treaty on European Union or TEU). It was signed on 7 February 1992 by the Members States of EEC and established the European Union (upon the foundations and in continuation of the European Economic Community), that among other consequences, led to the creation of Euro for the States that fulfill the so-called Euro convergence criteria (currently they are 19). Today, the EU is a union of 28 member States, which come together in common institutions in order to legislate in a number of areas.

However, it should be taken in to account that, despite the long process of integration occurred in Europe since 1951, only after the entry into force of the Maastricht treaty, it is possible to recognize a stronger attempt of a real political integration because improved dramatically the free movement of goods, services people and capital. This fact, jointly with the constitution of the so-called Schengen area that is *de facto* the elimination of the internal borders within the European Union might be source of changes in the population distribution across geographic areas (e.g. fostering urbanization) for several factors that can be found in the literature.

For instance, Mera (1975) affirms that the degree of urbanization is strictly related to differences in regional per capita income (Mera, 1975). Armington and Acs (2002) focus on the fact that odds in the population density can lead to different conditions in the labor market and/or investments in infrastructure (see also Fay & Yepes, 2003;

* CNR – IRGrES, Research Institute on Sustainable Economic Growth, via Corti, 12, 20133 Milano, Italy
E-mail address: marco.modica@ircres.cnr.it.

Randolph, Bogetic, & Hefley, 1999). Finally, even the institutional factor may affect the degree of concentration/dispersion in a country, for instance (Henderson & Wang, 2007) provide evidence that less democratic societies tend to be more concentrated in the capital city. All together, however, the process of urbanization that benefit of the recent increases in trade, investment, infrastructure, and telecommunications, offers without any doubt a choice for better opportunities (Glaeser, 2011).

Then, the literature seems to point out that the impact of a given policy, the role of institutions, the integration process and the improved capacity to move for capital, goods, services and labor (e.g. higher trade openness) can lead to a change in the urban structure. For instance, Yang (1999) shows that, among the others, urban policies, investments in the urban sector, institutions and financial policies are responsible for the long-term income differential between urban and rural areas. Moreover, urban places expand their influence on a much larger hinterland than rural areas and the difference between urban and rural places goes behind the simple difference in population size, but also in a different concentration of economic activities, people and cultures. (Pacione, 2001). On these regards, that is another piece of the story, is that the European Union has put a considerable effort in (sustainably) developing urban areas at least by the late 1980s and early 1990s,¹ by means of a range of policies over many areas of activity (Baker, 1997). Currently, indeed, the EU aims to reduce regional disparities through the so called Regional Policy. In particular, the EU has two funds for this purpose: the Structural Funds and the Cohesion Funds, which play a key role in the reduction of regional disparities in terms of income, wealth and opportunities and in the development of Europe's towns and cities.

However, in spite of the effort of the EU in the reduction of regional disparities, 'no single blueprint of sustainability will be found, as economic and social systems and ecological conditions differ widely among countries' (World Commission on Environment and Development, 1987, p. 52). Furthermore, as noted by Aldskogius (2000), the urban structures between the Member States of the European Union is very different for several reasons, from historical ones to the administrative subdivision through their economic structure. Table 1 shows selected characteristics of the Member States in 2011 and gives an interesting picture of the differences between countries in term of urban structure.

Total population and land size vary consistently among countries within the EU, however Member States show big differences also in term of population density, percentage of rural population, people who live in the largest city and also in other variables as agricultural land.

It is interesting to notice that different countries show different patterns in terms of urban structure. For instance, Belgium has a population density of 364 people per sq. km and it also shows a low percentage of rural population (2.5 over the entire population) but it presents an agricultural land equal to the 45% of the entire surface. On the contrary, the Netherlands, a country with almost same land size as Belgium, shows a higher population density than Belgium but also a higher rural population and a higher percentage of agricultural land, indicating a different allocation of people between urban and rural areas. This fact is also underlined by the amount of population living in the largest municipality: 18% for Belgium (Antwerp) and 7.7% for the Netherlands (Amsterdam).

Germany and Italy, instead, although presenting differences in size in terms both of population and land size, show similar urban patterns characterized by (among other characteristics) a low percentage of population in the largest city. This fact could be due to historical reasons, indeed since a long time both Germany and Italy have been politically fragmented. The competition between numerous states was

high and led to the creation of several market centers and capitals, large and small. As a result of this process, the two countries present a large numbers of towns and cities where - especially in Italy - the memory of city-state remains alive (Le Galès, 2002). However, Spain that is a country who faced a similar historical process as Germany and Italy, shows a slightly different pattern: the population density, 93, and the rural population, 22.6, are lower than in Germany and Italy. The population living in the largest city, instead, is relatively higher.

Finally, it should be noted that the so-called transition countries (e.g. Czech Republic, Estonia and so on) show a higher rural population than those countries denoting a lower level of development. Given these premises, it is easy to figure out that the urban structures between the Member States of the European Union is still very different for historical, geographical and economic reasons (Aldskogius, 2000). Nevertheless, as underlined by Beekhout (2004) people tend to concentrate within common restricted areas like cities in a way that is not random. Indeed, countries have faced a strong tendency toward agglomeration, namely population gathers within proper areas like cities, and currently the agglomeration within cities 'is an extremely complex amalgam of incentives and actions taken by millions of individuals, businesses, and organizations' Beekhout (2004, p. 1429).

All these facts underline that the European Union is still a multi-faceted entity, at least in terms of urban structure, where the harmonization between countries is still going on and, given those stylized facts, one could ask whether the deeper and deeper integration of European Union affected the hierarchical structure of the city system of the Member States. Indeed the creation of the European Union, the distortions caused by the introduction of a single currency in countries structurally very different and the expansion of mobility of people, capital and services due to the constitution of the so-called Schengen Area from the beginning of '90s might have had some impacts on the dynamics of city populations. Then, in this paper, the so-called Zipf's law (Auerbach, 1915; Zipf, 1949) is analyzed in order to examine whether the creation of the EU affected the hierarchical city system of the Member States.

In general terms, Zipf's law affirms that the size of a city is proportional to the rank that it assumes in a country city hierarchy, or more simply the size of the largest city is twice the size of second largest city, three times the third and so on. More formally, this can be represented by using the equation of a Pareto distribution that assumes a value of the unique parameter equals to 1: Formally, this can be written as:

$$R_i = KP_i^{-q}, \quad (1)$$

where P_i is the population of city i , R_i is the rank of the i th-city and K is a constant. Zipf's law holds precisely, when the coefficient q is equal to one. It predicts the degree of hierarchy of a system of cities and it can be seen as an indicator of the strength of the agglomeration forces in a system of cities (Brakman, Garretsen, & Schramm, 2004; Singer, 1930). According to the main aim of this work, an important question is whether city ranks change as a result of the deeper integration or not.

A possible answer to this question, that may also need further theoretical underpinnings, lies on two main strands of literature: first the role of the impact of institutions on urban and rural development (see for instance Chen, Henderson, & Cai, 2017; Kim & Law, 2012; Henderson & Wang, 2007). All the papers mentioned provide interesting considerations on the fact that centralization of political power can increase and make even more pronounced the creation of urban primacy.

The second strand of literature lies on the role of reduction of trade costs because of the elimination of the internal borders within the European Union and the improved 'mobility' of capitals, goods and people (see for instance Hassler, 1977; Storper, 2010). In general, it is possible to refer to the broad literature of the so-called New Economic Geography, that emphasizes the balancing between centripetal and centrifugal forces. For instance, firms would like to get access to larger

¹ At least from the publication of the Brundtland Report from the United Nations World Commission on Environment and Development (WCED) in 1987 which provided an analysis for a sustainable course of development within societies and suggested broad remedies and recommendations.

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