Measure to define: characterization of urban shrinkage in France

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Context and issues

Literature review: a multidimensional and many-sided phenomenon

In recent years, there has been a growing interest in shrinking cities among political elites, policymakers, activists, journalists and the public opinion. The literature has provided important insights into the scope, causes and effects of the phenomenon of urban shrinkage (Fol and Cunningham-Sabot, 2010; Haase et al., 2013). Urban scholars have convincingly argued that urban shrinkage is above all the result of a global process (Oswalt, 2006; Fol and Cunningham-Sabot, 2010), and its intensity, its causes and consequences vary and interact differently depending on local contexts. At odds with traditional analyses pointing out the role of physical and social problems in the rise of urban decline (Mumford, 1970), recent works have identified three main causes of shrinkage: economic transformations, suburbanisation and demographic changes (Martinez et al., 2012). Economic transformations are probably the most evident cause of urban shrinkage. In Western cities deindustrialisation has long affected urban population structures by generating labour-related out-migration (Bradbury et al., 1982; Friedrichs, 1993). This classical manifestation of uneven development processes has especially been visible in former industrial regions – the Rust Belt, the North of England, some parts of Northern and Eastern France, East Germany and more generally Eastern Europe – where cities' productive fabric was not diversified (Gottdiener and Hutchinson, 2010). Along with economic decline, suburbanisation is a major underlying trend of urban shrinkage. It involves a radical change in the settlement system with the dispersion of people and activities beyond the traditional municipal boundaries. This trend has been central in the US where city-centres have been abandoned since the 1960s (Beauregard, 2003; Rieniets, 2005). It has also affected European cities where movements of population from city-centres and suburbs towards peripheries have also occurred due to the mix of changes in middle-class tastes, rise of the number of cars, increase of housing prices and fiscal policies (Pumain and Mattei, 2003). Finally, outmigrations resulting from economic decline or suburbanisation have been enhanced by structural demographic changes. In Eastern Europe, cities have faced an important decrease of fertility rates (Steinführer and Haase, 2007). More generally, the second demographic transition characterised by ageing, low fertility rates, decrease of the size of households and increase of their number has been an important factor in the shrinkage of German cities (Van der Berg et al., 1982). This trend is less influential in other contexts, but can still be part of the dynamic of the inhabitants redistribution between territories (Champion, 2001; Ogden and Hall, 2000; Buzar et al., 2005). Urban shrinkage is the result of a complex interplay between these three factors, which have all local, national and global roots.

However, through international comparative studies, varieties of shrinking cases have been highlighted. Indeed, this interplay produces a large set of shrinkage situations leading to housing vacancies, brownfield lands, underused infrastructures, changes in population structure, decrease in fiscal resources, etc. These phenomena are more or less amplified depending on the scope and speed of population loss. For examples, in cities like Detroit, Cleveland, Liverpool, Glasgow, Leipzig or Dresden, the high annual rates of population loss have been particularly prejudicial, creating major problems of social cohesion.

A unique phenomenon with multiple names and definitions

In spite of the growing number of academic works on urban shrinkage, there is no consensus on the most suitable term to name this phenomenon. For instance, alongside the term 'shrinking cities', some academic works use the ones of 'urban decline', 'regional decline' or 'place decline' (Beauregard, 2003; Polèse and Sheamur, 2006). If today authors converge towards the terms 'shrinking cities' and 'urban shrinkage' (Florentin et al., 2009; Fol and Cunningham-Sabot, 2010; Martinez et al., 2012), their definitions vary from one study to another. For example, some scholars consider that "Shrinking cities … are cities that have temporarily or permanently lost a significant number of their inhabitants. Population losses are considered to be significant if they amount to a total of at least 10% or more than 1% annually." (Rieniets, 2005). Meanwhile Shrinking Cities International Research Network defines "a shrinking city as a densely populated area with a minimum population of 10,000 residents that has faced population losses in large parts for more than two years and is undergoing economic transformations with some symptoms of a structural crisis." (Hollander and Nemeth, 2011). Some authors "identify as shrinking cities a special subset of old industrial cities with significant and sustained population loss (25% or greater over the last 40 years) and increasing levels of vacant and abandoned properties, including blighted residential, commercial and industrial buildings." (Schilling and Logan, 2008). A shrinking city can also "be defined as an urban area – a city, a part of a city, or an entire metropolitan area or a town – that has experienced population loss, economic downturn, employment decline and social problems as symptoms of a structural crisis." (Martinez-Fernandez et al., 2012). Others "conceptualize urban shrinkage as an empirical phenomenon resulting from the interplay of changing drivers of shrinkage at different spatial levels (from regional to global) that produces a decline in population at the local scale. (…) These drivers may be related to economic decline, demographic change, and settlement system changes in the form of suburbanization and sprawl." (Haase et al., 2013). Finally, a part of the litterature considers that "urban shrinkage is a multidimensional phenomenon encompassing regions, cities and parts of cities or metropolitan areas that are experiencing a dramatic decline in their economic and social bases and are facing population losses. " (Pallagst, Martinez-Fernandez and Wiechmann, 2013).

The multiplicity of these definitions demonstrates the difficulties encountered in setting up rigorous criteria in terms of city size, administrative scales, amount and also period of decline. These difficulties are reinforced when more ambitious scholars try to focus not only on population loss, but also on economic transformations (Wiechmann, 2008) and on the evolution of urban functions (Zakirova, 2010). All definitions, though, focus on population loss as the major characteristic, yet with different thresholds. Furthermore, empirical studies reveal situations where cities are losing population due to an increased mortality rate and a declining birth rate (as Donetsk), or due to the introduction of contraceptives (as Timisoara), but are economically prospering. Also, most definitions point towards a number of macro-trends in urban development but with arbitrary theoretical foundations. Moreover, further of these definitions mention a set of common problems (outmigration, vacancies, social problems, fiscal stress) which are regarded as typical, without taking into account the great variety regarding the actual composition. These difficulties are partly explained by problems with data quality, different definitions, evolving territorial boundaries, contradictions between administrative or functional definitions of "cities".

Urban shrinkage in France: a still emerging field of research

In France, the situation is quite different from the examples mentioned above (Detroit, Cleveland, Liverpool, Glasgow, Leipzig or Dresden). Indeed, cities (wrongly) appear as 'shrinkage-proof' because population losses are weaker, the abandonment of city-centres has mostly affected small and middle-sized cities and fertility rates are still much higher than in many

developed countries (Sardon, 2002; Prioux, 2006). The French literature about shrinking cities is also still emerging, which tend to illustrate that the phenomenon is of lesser importance than in other contexts. (Wolff et al., 2013). And yet, several cities experienced skrinkage, like for example Saint-Etienne, Le Havre or Montbéliard. It will therefore be very useful to identify these shrinking cities, to evaluate the part of shrinking cities in France and to characterize them by crossing the three dimensions underlined in the first paragraph.
In this context, this paper aims firstly at identifying how "alternative definitions" of shrinking cities may offer different intensity of the phenomenon in France. Indeed, it will illustrate how cities concerned by shrinkage may sometimes diverge sharply, both in form than in intensity. A variety of periods and statistical units considered in the extent of the decline (inhabitants, households, occupation of housing, employment, etc.) will be used for this purpose. Our analysis will be based on significant available data.
The paper will secondly offer a typology of shrinking cities by including this large variety of dimensions of decline. Its originality lies on the emphasis of different clusters of shrinkage built on empirical evolution of degrowth, and not on theoretical definition of shrinkage predetermined.
Thirdly, the different profiles of the typology and the relevance or not of considering some profile of decay as shrinkage will be discussed.

Methods and data

To understand the diversity of urban shrinkage in France and more especially to measure and characterize this phenomenon, a quantitative and variable-oriented analysis will be developed. This systemic and exhaustive approach requires the use of a wide range of data sources: census and civil records, the permanent facilities database, the Register of Companies and their Establishments, the Local knowledge of the productive system, the Annual Declaration of Social Data, the Localised tax revenues System. These data – partly available since 1968 – will provide historical depth to the quantitative analysis and will easily fit into statistic methods. From these data an Ascending Hierarchical Classification (AHC) will be performed to offer a new picture of shrinkage considering the interlocking of different dimensions. In order to carry out this quantitative analysis of urban shrinkage in France and to establish a typology of French shrinking cities, the paper will focus on a specific territorial scale – the urban area ('aire urbaine') as it is defined by INSEE[1]. The choice of this territorial unit can be justified by three different arguments. First, it enables us to avoid using arbitrary size thresholds for the analysis. With the urban area unit, the importance of a territory is not defined primarily by its population but by its influence on its hinterland. Second, it highlights complex dynamics of interconnection such as the link between employment and residential mobility or the exchange of flows between different spaces at the metropolitan scale. Last, this choice is central in the articulation between quantitative and qualitative analysis. Many of the strategies developed to govern urban decline and promote smart shrinkage strategies have been devised at the metropolitan or city-regional scales. For this reason, the urban area seems to be the most relevant scale to understand urban shrinkage phenomena in terms of developing a capacity to govern this issue.

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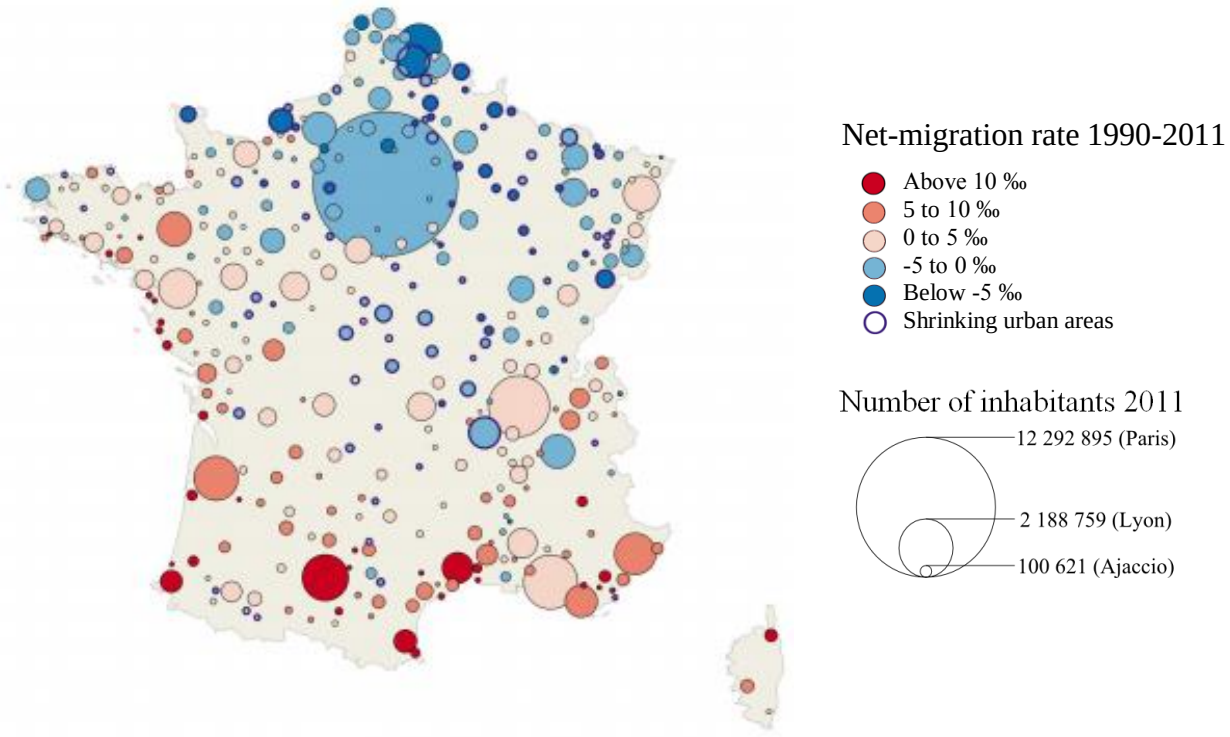
[1] An urban area is a group of touching municipalities, without pockets of clear land, encompassing an urban centre (urban unit) providing at least 10 000 jobs, and by rural districts or an urban units (urban periphery) among which at least 40 % of employed resident population works in the centre or in the municipalities attracted by this centre.
The 2010 zoning of urban areas also distinguishes:

- The "average areas", a group of municipalities, without pockets of clear land, constituted by a centre from 5 000 to 10 000 jobs, and by rural districts or urban units among which at least 40 % of the employed resident population works in the centre or in the municipalities which are attracted by this centre.
- The " small areas", a group of municipalities, without pockets of clear land, constituted by a centre from 1 500 to 5 000 jobs, and by rural districts or urban units among which at least 40 % of the employed resident population works in the centre or in the municipalities attracted by this centre.

First results

Due to relatively high fertility rates, as a European country, urban shrinkage in France is mainly the result of a negative migration balance (as shown in Figure 1). Therefore, unattractive urban areas are located in Northern and Northeastern France, as well as most of the shrinking urban areas. If some territories with a negative net-migration rate do not experience population losses on the period 1990-2011, all shrinking urban areas are characterized by negative migration balances which sometimes overtake a positive natural population growth.

(Figure 1) Net-migration rates by urban area: 1990-2011



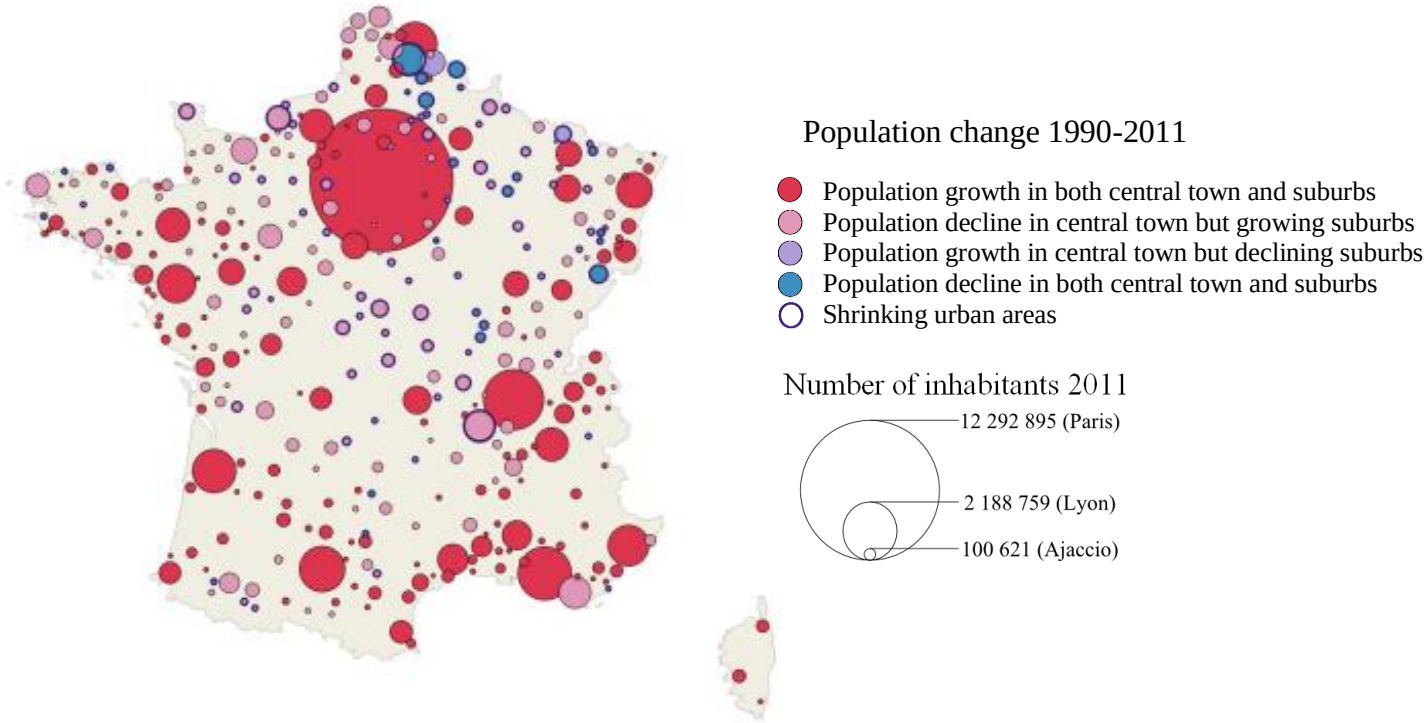
Source: INSEE, RGP1990 & RRP2011.

As a result of suburbanization, most of French urban areas have experienced an increase of their population in peripheries (Figure 2). However, during the period 1990-2011, the process of suburbanisation have not always led to declining city centres (or central town): this case only concerns half of the urban areas, mainly in middle-sized ones and among them, 40 % are shrinking, like Saint-Etienne or Le Havre. Shrinking urban areas with population decline in both central town and suburbs are almost all located in Northeastern France, whereas there is only one shrinking city with a growing central town (Thionville).

Figure 3 focuses on shrinking urban areas during the period 1990-2011 and displays the results of an AHC. Five different types of shrinkage have been defined based on different periods of population change (1990-1999, 1999-2006 and 2006-2011), the size of the urban area, and natural and migration population balances. The different classes mainly reflect the various dynamics of shrinkage. The biggest shrinking urbans areas all belong to the same class and experience a slow-down of population decline, even sometimes leading to population growth in the most recent years. The opposite dynamic, a worsened shrinkage, concerns only cities located in the post-industrial region of Northeastern France. Cities with a discontinuous shrinkage are found in Western and Southern regions of France which are generally less affected by this phenomenon.

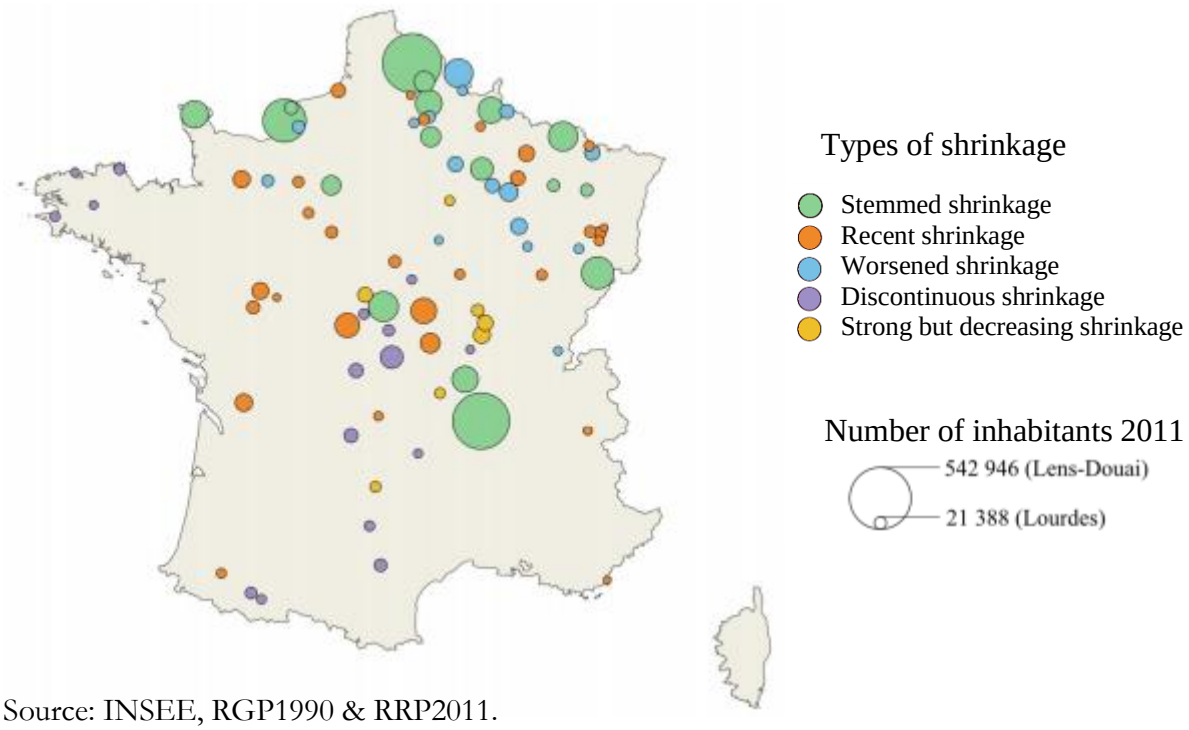
Finally, all over France a certain number of middle-sized urban areas have started to face a declining population since 2000s, such as St-Tropez, Cognac or Châteauroux.

(Figure 2) Population change in central town and suburbs, by urban area: 1990-2011



Source: INSEE, RGP1990 & RRP2011.

(Figure 3) Different types of urban shrinkage in shrinking urban areas: 1990-2011



Source: INSEE, RGP1990 & RRP2011.

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