Macropolization in the People's Republic of China, 1950–2015

Abstract

This article concerns the process of population concentration in large urban centres in China. The authors conclude that this process is reflected in the increase in the number of cities of a million or more, and the increase in their share of China's total population, as well as in the country's total urban population; the process is here termed 'macropolization'. We analyse and assess the process of macropolization and examine changes in the size structures of these cities (one million or more), and the accompanying transformation in the spatial differentiation of urban population concentrations in China. In addition, the effect that macropolization has on the level of urbanization of individual provinces is shown, as is its significance in the overall share of urban population. The macropolization process from 1950 to 2015 has been assessed. The data was collected from Chinese statistical offices, United Nations reports and the available literature on the subject.

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Introduction

The city is a living environment for the world's ever-growing population, and the place where various forms of human activity are concentrated. In 2006, for the first time in the history of mankind, the population in urban areas exceeded the number of rural residents. Cities have a decisive influence on the spatial organization of society; they reflect the development of their countries and regions and are a lever and carrier of progress. In the city, new ideas are born and spread. Major cities are often described as spiritual workshops of humanity or creative laboratories. As links in the settlement network, cities play a major role, constituting the most developed group of entities. Cities are, as it were, the leading component of a country, organizing its life in all its dimensions – social, economic, political, cultural and many others (Szymańska 2007).

People have experienced urbanization for hundreds of years and it is part of the development of societies all around the world. The city is the main locus of human activity, as well as being the source of the birth and growth of art, trade and culture. Urbanization processes are an integral part of human history. In ancient history, the valleys of the great rivers Euphrates, Tigris, Nile, Yangtze, Huang He, Indus and others, already hosted great cities that were the political and economic centres of the world of that time.

As the scientific and technical revolution progressed, western European countries and others began to establish cities around the world in order to control trade routes and increase their economic and political domination. Beginning in the second half of the twentieth century, urbanization has become a global phenomenon, embracing every inhabited continent, and this very dynamic progression continues in East and South East Asia (including China, India and Japan). In addition to impressive economic development and political changes, the countries of the Orient are experiencing rapid urbanization – China in particular. China has an extraordinarily long history of establishing cities and settlements; cities have always been the key link in socio-economic development. Chinese cities such as Kaifeng, Luoyang and Chang'an had for hundreds of years been among the largest cities in the world (Bracken 2012). Contemporary China – impressive economic growth and political changes aside – is also urbanizing dramatically (Jayne 2018).

The concept of urbanization is not fixed; it has different facets in different parts of the globe because of its many dimensions, including demographic, economic, social and spatial aspects. Urbanization is both a process by which socio-economic changes occur, and the state that results from this process, involving increases in the number and sizes of cities, in the proportion of the urban population to the general population, and the dispersal or surface area of urban spaces (Szymańska 2009, 2013).

Urbanization is an irreversible, global, multifaceted, socio-economic process inscribed into the development of humanity. It is a phenomenon that bestows an urban character upon a specific area and its inhabitants (transforming both place and people).

Urbanization is measured, and most often presented statistically, to distinguish between urban and rural populations. Today we are witnessing a true and global explosion of cities, especially in Asia. This explosion is not merely limited to an increasing number of cities, but also involves a transformation in their size structure – essentially, the numbers of cities in various

categories of size, or the numbers of inhabitants living in cities of various categories of size; in general, this process can be called polization (Szymańska 2009). Complex and extensive areas are created, and referred to as agglomerations, conurbations, megacities, gigacities, megalopolises, world cities, global cities (forming city networks). Regarding the city-size structure, we will describe the process of the increase in the number of cities of one million or more (referred to throughout by the term 'million cities') as the process of 'macropolization' (Greek *macro* – large, *polis* – city) (Szymańska 2007, 2009), and evaluate its course using the example of the People's Republic of China.

Contemporary urbanization is underway on all inhabited continents, but with varying intensities. Both typical demographic (extensive) urbanization and intensive (qualitative) urbanization can be observed (Szymańska & Biegańska 2011). New processes are emerging (including urbanization, conurbanization, deurbanization, suburbanization, etc.) and new urbanization structures are being created (metropolitan structures, monocentric and polycentric agglomerations, global city networks, as well as the phenomena of polization (generally), macropolization (≥ 1 million), megapolization (≥ 10 million), gigapolization (≥ 20 million), and many more. The PRC is an example of a country that has undergone rapid urbanization and the accompanying macropolization. The PRC is currently the most populous country in the world (its population was 1.378 billion in 2016), and the second largest economy in the world (GDP in 2016 was USD 11.199 trillion) (World Bank). In 2017, GDP was USD 12.240 trillion (15.4% of global GDP, which was USD 80 trillion) and in 2018, it was USD 14.605 trillion (World GDP was USD 86.370 trillion).

The social and economic transformations that have occurred in China since 1950 have resulted in the rapid growth of urbanization and have affected its course. Due to the dynamics and size scale, urbanization processes in this Asian country influence the dimensions of urbanization both regionally and globally, including its aforementioned size and dynamics, and the concentration of population. According to our calculations, based on data in *World Urbanization Prospects: The 2018 Revision*, China had 8.7% of the urban population of the world and 54% of the urban population of East Asia in 1950. Over the next 65 years (until 2015), China's share of the world's urban population increased to around 18% (17.9%), while its share of the urban population of East Asia reached 79.3% .

In the case of Chinese urbanization, the dominant feature is the phenomenon of macropolization, which is unparalleled in scale in other countries of the world. We understand macropolization in this article (as previously highlighted) as an increase in the number and population size of cities of populations exceeding one million, and in their population density (population per square kilometre).

This work aims to analyse and evaluate the phenomenon of macropolization in the PRC for the period 1950–2015, that is from the early days of the PRC until the middle of the second decade of the twenty-first century. The authors analysed changes in the number of cities of over a million inhabitants (million cities), and changes in their size structure and distribution. In addition to the process of people being concentrated into million cities at the provincial level for the period 1955–2015 presented here, the population density of cities of over one million inhabitants (population of million cities per square kilometre) was also considered, including these cities' shares in the urban population and total population of a given province. To better reflect the scale of macropolization in the PRC, based on available data, the authors constructed a 'macropolization index', which was calculated for individual provinces for 2005, 2010 and 2015 (see below).

The work uses data from Chinese statistical offices, United Nations reports and the available literature on the subject.

Materials and methods

The main sources of statistical data used to analyse the macropolization process are primary data from the report *World Urbanization Prospects: The 2018 Revision* (*WUP* 2018) and data from the Chinese statistical office – the *National Bureau of Statistics of China* (*NBSC*). The Chinese statistical office provided such data as the total population and urban population by province. In turn, the UN reports (WUP 2018) provided data on the number and population of million cities, as well as the urban and total population of China (these data are collected for five-year periods, which is why this research period was selected, and not another).

Due to the long research period, namely 1950 to 2015, the authors did not always have reliable or complete data for the entire period. For example, with regard to data from the NBSC, it should be noted that data on urban population by province are only available from 2005. A similar problem occurred when determining total population by province, where the results of 1954, 1964, 1982 and 1990 censuses were used for the analysis.

The time period of 1950 to 2015 was adopted because of several issues.

First, the authors wanted to show the process of urbanization (macropolization) that took place after 1949, namely from the end of the civil war between communists and nationalists, which ended over a hundred years of wars in the 'Middle Kingdom'.

Secondly, it resulted from the availability and reliability of the data. Data included in *WUP 2018* reports start from 1950 and are issued at 5-year intervals, with a forecast of up to 2035. The study period was narrowed down to 2015, as later years are only forecasts, and forecasts become less reliable the further ahead they look.

It should also be emphasized that the adoption of 1950 as the starting year for the analysis of macropolization is conditioned by the political, economic and social factors that transformed China's urban settlement network. In 1949, after the end of the civil war, the PRC was established, a state proclaiming communist values with a socialist, planned economy.

The creation of the PRC ended nearly 100 years of external and internal wars in the state.

In addition to the above-mentioned primary statistics, this work also uses secondary data contained in the literature on urbanization in the PRC – on its causes, course and effects in the years 1950–2015. These were publications by both Chinese researchers and researchers from other countries.

The data obtained and the information and literature produced from them were used to analyse and assess the macropolization process (changes in the number of million cities, changes in their size structure, transformations in the concentration of population living in these cities, broken down by province).

In the paper, three measures were used: population density of million cities (population of million cities per square kilometre), the share of the city's population among the total urban population, and the total general population of both China and the province. In addition, there was the so-called macropolization index (MI) which determined the intensity of macropolization in a given area. The article is supplemented graphically with maps made in the QGIS 3.2 program. This study covers continental China (excluding Taiwan and Special Administrative Regions, namely Hong Kong and Macau).

Macropolization in the People's Republic of China, 1950–2015

Urbanization in the PRC depends on many factors affecting urban settlement, including the natural environment (altitude, climate, hydrology, soil, raw materials) and processes occurring in the environment (droughts, earthquakes, floods), as well as

the effect of these factors on the local level of socio-economic development and administrative and political conditions (better living conditions in cities, industrialization and government policy, and particularly the *Hukou* farm registration system) (Malik et al. 2017). On the one hand, these factors may attract populations to urban areas, while on the other they may limit and not favour the development of cities and urbanization. In China, urbanization and its associated metropolization are mutually conditional; the correlation coefficient between urban population and population in million cities is as much as 0.99 for the period 1950–2015. This dependence means that macropolization, like urbanization, is influenced by the same factors that shape its size, structure and dynamics.

As previously mentioned, the PRC is the most populous country in the world; in 1950 it had 554.4 million inhabitants, and 1.397 billion in 2015. In reference to urban population, it should be emphasized that during the research period (1950–2015, i.e. 65 years), the population of Chinese cities increased sharply from 65.4 million in 1950 to 775.4 million in 2015. The share of urban population among the total population was 11.8% in 1950, and had increased fivefold to 55.5% by 2015 (calculated based on WUP, 2018), and to 58.5% in 2017 (National Bureau of Statistics of China 2018*).

An even greater growth rate was recorded for million cities; in 1950 there were 15.3 million people living in such cities, and in 2015 this was as many as 344.2 million, which is more than a 22-fold increase. In the course of changes in the size of urban population in million cities, two stages are highlighted that differ in dynamics. The first covers the period from 1950 to 1980, the second from 1980 to 2015 (see Figure 1). The first period, of thirty years (1950–1980), is characterized by a fairly moderate increase in urban population (by 127 million) and in the population of million cities (by 26 million). This stage is connected with Mao Zedong's rule (1945–1976), which promoted anti-urbanism, and the level of urbanization was low. In the so-called 'Maoist' times urban areas were intended to be centres of industrialization, while rural areas were centres of agricultural production. Cities were seen as places of capitalist ideas and considered a necessary evil. According to the authorities of the time, the aim of cities was primarily industrial activity (mainly heavy industry), while nearby rural areas were to be subordinated as their food and raw material supply base (Chien 2010).

In turn, in the second stage, namely 1980–2015, the PRC underwent huge socio-political and economic changes, beginning in the late 1970s. During this period, there was a steady increase in the total urban population, and in the population of million cities in particular. Within just 35 years, the urban population of China had grown threefold from 192 million to 775 million (by 583 million), while the population of million cities had grown as much as eightfold from 41.6 million to 344.2 million (by 302 million) (Figure 1). Since the 1980s, urbanization in China has seen the highest growth rate in the world (Kojima 1995). The rapid dynamics of urbanization changes in China that began in the 1980s are the result of socio-economic transformations introduced by Deng Xiaoping. In the case of China, the simplest confirmation that economic changes and their related social and political changes affect urbanization processes may be the high correlation ratio we have calculated between *per capita* GDP (based on data. worldbank.org) and the urban population share in the Chinese population, which is 0.88 (for 1960–2015). There is also a strong relationship between *per capita* GDP and level of urbanization for 2005–2015, at the provincial level in PRC (e.g. Zhejiang, Shandong, Jiangsu – 0.99; Guangdong, Anhui – 0.98; Guangxi – 0.97; Jilin – 0.94).
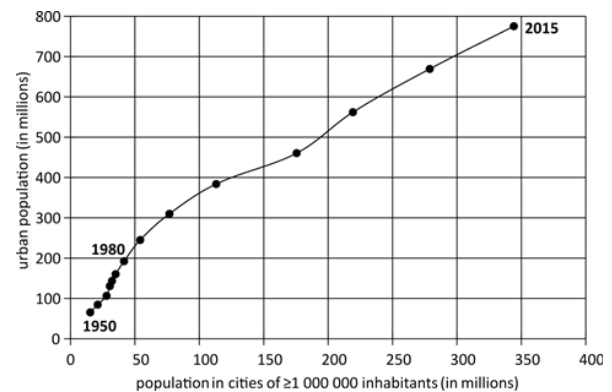

Figure 1. Total urban population and population in million cities in the PRC (excluding Taiwan, Hong Kong and Macau) in the years 1950–2015 (in 5-year intervals)
Source: Own study based on: United Nations, Department of Economic and Social Affairs, Population Division 2018, World Urbanization Prospects: The 2018 Revision

Macropolization in China in the context of general urbanization

The number of million cities, and the share of the population living in cities in this size category, have also changed. It is worth mentioning that in 1950, there were eight 'million cities' in China, hosting 23.4% of the urban population and 2.8% of the total Chinese population (i.e. 15.3 million people). By 1970, the number of million cities had increased to 14, with 22.4% of the urban population and 3.9% of the total population, namely 32.2 million people (see Table 1). Twenty years later, in 1990, there were already 34 'million cities', or 2.5 times more than in 1970. In 1990, residents of million cities accounted for 24.8% of the urban population and 6.5% of the total population (77 million people); then, in 2010, the number of million cities increased to 86, home to 41.7% of the urban population and 20.5% of the total population (279 million people). Over the next five years, 23 'million cities' were added to the PRC, meaning that in 2015 there were 109, hosting about 344.2 million people, or 44.4% of the urban population and 24.6% of the total population (Table 1) (calculations based on WUP data) Almost one Chinese resident in four lived in a million city, and half are inhabitants of cities.

Concerning the macropolization process in the PRC in the years 1950–2015, it should also be noted that not only the number but also the size structure of million cities has changed. In 1950, none of the million cities was inhabited by more than five million people. Twenty years later, in 1970, one city in China's network of settlements stood out for having a population of over 5 million, while by 1990 there were already two. By 2015, the size structure of million cities had undergone even greater transformations. Of the 109 million cities in 2015, in 11 of these the population ranged between 5 and 10 million people, in 2 between 10 and 20 million people, while in one of the largest cities in China, the population exceeded 20 million people. Comparing 2010 to 2015, we note that within just five years 16 cities in the PRC acquired a population of 1–2 million, 5 cities entered the 2–5 million category, and 2 cities acquired a population in the range of 5–10 million (Table 1). The development of million cities, which results in the creation of multi-million urbanized units (which can be seen in the 21st century in the PRC), is referred to as the process of megapolization (the increase in the number of cities of >10 million inhabitants) or gigapolization (the increase in the number of cities of >20 million inhabitants).

Table 1. Characteristics of million cities in the PRC in 1950–2015 (excluding Taiwan, Hong Kong and Macau)

	Structure of cities	≥ 1 million	1–2 million	2–5 million	5–10 million	10–20 million	> 20 million
1950	number of cities with a population of 1 million or more	**8**	5	3	-	-	-
	population in cities of ≥1 million (in thousands)	**15 295**	6 393	8 903	-	-	-
	population in cities of ≥1 million as a percentage of total urban population	**23.4**	9.8	13.6	-	-	-
	population in cities of ≥1 million as a percentage of total population	**2.8**	1.2	1.6	-	-	-
1970	number of cities with a population of 1 million or more	**14**	8	5	1	-	-
	population in cities of ≥1 million (in thousands)	**32 192**	10 963	15 176	6 052	-	-
	population in cities of ≥1 million as a percentage of total urban population	**22.4**	7.6	10.6	4.2	-	-
	population in cities of ≥1 million as a percentage of total population	**3.9**	1.3	1.8	0.7	-	-
1990	number of cities with a population of 1 million or more	**34**	20	12	2	-	-
	population in cities of ≥1 million (in thousands)	**76 795**	25 275	36 126	15 394	-	-
	population in cities of ≥1 million as a percentage of total urban population	**24.8**	8.2	11.7	5.0	-	-
	population in cities of ≥1 million as a percentage of total population	**6.5**	2.2	3.1	1.3	-	-
2010	number of cities with a population of 1 million or more	**86**	45	26	9	5	1
	population in cities of ≥1 million (in thousands)	**278 852**	62 330	80 576	57 295	58 336	20 314
	population in cities of ≥1 million as a percentage of total urban population	**41.7**	9.3	12.0	8.6	8.7	3.0
	population in cities of ≥1 million as a percentage of total population	**20.5**	4.6	5.9	4.2	4.3	1.5
2015	number of cities with a population of 1 million or more	**109**	61	31	11	5	1
	population in cities of ≥1 million (in thousands)	**344 153**	81 287	98 159	73 946	67 280	23 482
	population in cities of ≥1 million as a percentage of total urban population	**44.4**	10.5	12.7	9.5	8.7	3.0
	population in cities of ≥1 million as a percentage of total population	**24.6**	5.8	7	5.3	4.8	1.7

The populations in the various size categories of million cities are very diverse. In all the years analysed, the category containing cities with the greatest total number of people was the 2–5 million inhabitant category. In 1950, this represented 8.9 million people, constituting 13.6% of the urban population and 1.6% of the country's population. In 1990, cities of 2–5 million inhabitants comprised 36.1 million people, or 11.7% of the urban population and 5% of the total population.

By 2015, 12.7% of the urban population and 7% of the Chinese population lived in this group of cities – that is, about 98.2 million people. In the 21st century, those urban centres with populations exceeding 10 million (megapolises) and 20 million (gigapolises) are also significant regarding the concentration of Chinese populations into million cities. In 2010, cities with a size range of 10–20 million inhabitants hosted 58.3 million people, namely 8.7% of the urban population and 4.3% of the total
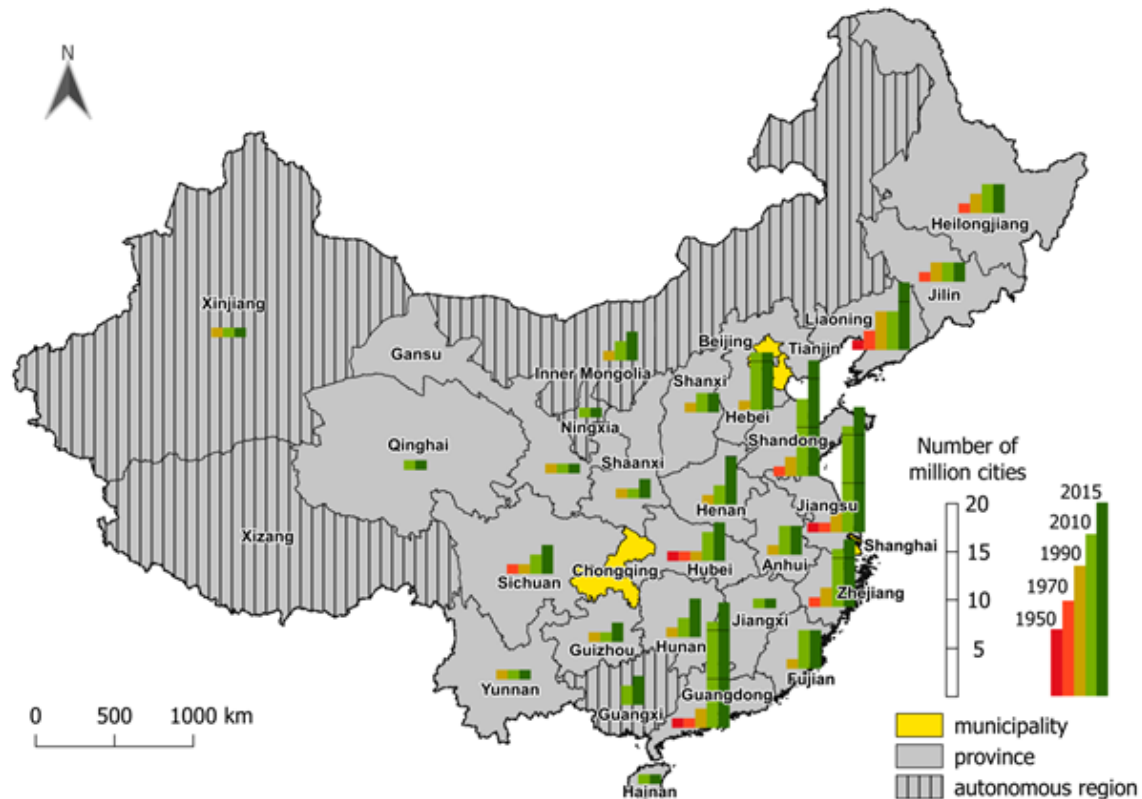
Figure 2. Number of cities in PRC with a population of 1 million or more, by province, 1950–2015
Source: Own study based on: United Nations, Department of Economic and Social Affairs, Population Division 2018, World Urbanization Prospects: The 2018 Revision

population, while by 2015 this was already 67.3 million people, or 8.7% of China's urban population and 4.8% of its total population. It is noteworthy that in 2015, the largest city (with over 20 million people) in the PRC was inhabited by 3% of the urban population and 1.7% of the total population of the country – about 23.5 million people (Table 1).

The analysis leads to the conclusion that in the years 1950–2015 there was a rapid increase in urban population and population in million cities in the PRC. The number of million cities changed (growth from 8 cities in 1950 to 109 in 2015), but so too did their size structure (with urban units of 5, 10 and 20 million appearing). For example, of the eight 'million cities' of 1950, in none did the population exceed 5 million, while in the 109 'million cities' of 2015, 17 cities had populations of more than 5 million (including five that ranged between 10 and 20 million, and one that exceeded 20 million people). Cities with a population ranging from 2 to 5 million are home to the greatest number of people who live in million cities (in all analysed years). In addition, the population is concentrated increasingly in cities of over 5 million people.

The tendency for growth in urban population, in the population of million cities and in cities themselves in the PRC was not always characterized by the same dynamics in the studied period of 65 years. As already mentioned, these dynamics reveal two stages, with the first relating to the years 1950–1980, and the second to 1980–2015. These stages are closely related to the political, economic and social situation of the PRC.

In the first period (1950–1980), Chinese urbanization was shaped by Mao Zedong's policy and the socialist economy, which did not favour the rapid development of cities (Chien 2010).

In the second (1980–2015), it was influenced by socio-economic transformations that made cities into centres of economic growth. The reforms introduced became the main factor in the rapid development of urban areas (Batisse et al. 2004).

The dynamics and spatial diversity of macropolization, 1950–2015

Changes in number of million cities by province

The PRC is divided into 22 provinces, five autonomous provinces and four municipalities (Beijing, Shanghai, Tianjin and Chongqing). In addition, there are two Special Administrative Regions in the People's Republic of China, namely Hong Kong (since 1997) and Macau (since 1999), which have extensive autonomy in accordance with agreements up to 2047 and 2049 – for a period of 50 years. Taiwan is considered by the central government in Beijing to be a 23rd ('rebellious') province but, in reality, it is a sovereign state, describing itself as the ROC (Republic of China).

We will analyse the distribution of million cities in terms of 27 provinces (the 22 provinces and five autonomous provinces), thus matching the administrative division in analyses of past and recent years.

When assessing the distribution of million cities (i.e. cities of one million or more inhabitants) we note (as expected) that it is very uneven (see Figure 2). The vast majority of million cities are located in the eastern provinces. Our research shows that the number of cities of this size category is growing year by year (especially in eastern and central provinces). Growth is the smallest in western and south-western provinces.

It is worth noting that in 1950 there were only eight 'million cities' in the PRC, of which four are currently administratively municipalities (Shanghai, Beijing, Tianjin and Chonqging – under the direct administration of central government). Three of the four municipalities are located in East China (Shanghai, Beijing and Tianjin), two of which are port cities. Only Chongqing lies in the centre of the country. The remaining four 'million cities' (of these eight cities) are located in the eastern provinces (3 cities), and one in a central province (Figure 2).

By 1970 there were already 14 'million cities' and they were spread across nine provinces and four administratively separated cities. Most of them lay in the eastern and north-eastern provinces (Figure 2). The province of Liaoning was the only one to host two cities with a population of ≥1 million.

By 1990, the number of million cities had doubled to 34; it should be noted that the number of provinces hosting million cities increased to 21. Most such cities were in the province of Liaoning (four cities), and two cities each in the provinces of Guangdong, Heilongjiang, Jiangsu, Jilin, Shandong and Zhejiang. Analysing the distribution of million cities after 1990, we immediately note a certain concentration in the eastern, north-eastern and central provinces. In 1990, the only western province with a million city was Xinjiang.

Over the next 20 years, in the period 1990–2010, the number of million cities increased from 34 in 1990 to 86 in 2010. Of the 27 provinces (22 provinces and five autonomous provinces), the main million cities (11 cities) were in the provinces of Guangdong and Jiangsu; Shandong increased to eight, and in Zhejiang and Hebei to six 'million cities'. The only province from which macropolization is absent is Xizang (Tibet), where the only large city (about 600,000 people) is its capital (Lhasa). Comparing 1990 to 2010, we note that the increase in the number of million cities is largest in eastern (coastal) provinces, slightly smaller in central ones, the smallest in western ones. This distribution of million cities reflects both the different conditions resulting from natural environmental characteristics and from historical, administrative-political and other conditions. Another conclusion that can be drawn is that there are increasingly emerging differences between individual areas (western, central, eastern) of China.

In 2015, the number of million cities increased to 109, and differences in the level of macropolization between the eastern and western areas of the PRC began to be clearly discernible. Similar to 2010, the majority of million cities in 2015 were concentrated in eastern coastal provinces such as Guangdong, Jiangsu (13 cities), Shandong (12 cities), Zhejiang and Liaoning (7 cities) (Figure 2). Differences in the number of million cities between China's geographical regions have deepened. Tibet (Xizang) is still the only province without such a large city. The growth of million cities in 2010–2015 is still fastest in the eastern regions, and slowest in the west of the country (in the westernmost areas, the macropolization process concerns only the province of Xinjiang – the city of Urumqi).

The study showed that the PRC has a particular urbanization dichotomy. The west of China, with poorly delineated macropolization processes, and the east (especially the coast) with intense macropolization. At the provincial level, there is a noticeable differentiation in the spatial distribution of million cities. Most of the million cities are concentrated in the eastern provinces – Guangdong, Shandong and Zhejiang each already host more than 10. In the central provinces, too, we notice a fairly rapid growth in big cities. There are significantly fewer big cities in the western provinces. The dichotomy in the distribution of these cities (as already mentioned) results from environmental, political, economic, social and administrative factors.

The east of the country comprises mainly lowland areas (the Chinese Plain and the Manchurian Plain) and coastal areas, while western China is classified as upland, especially south-western areas, which have a typical mountain landscape. Due to natural conditions (terrain, water and climate), eastern China was the locus of the main activity and development of Chinese civilisation, and thus of the process of urbanization and urban development and the concentration of population. It can also be said that it was eastern China that was most influenced by the activities of western countries that established their trading colonies on the coast, for example Hong Kong, Macau and Qingdao. The eastern provinces of the country have become a place of economic experiments that have been systematically introduced since the 1980s. The success of economic transformations has resulted in unusually high economic growth (Hongyan et al. 2012). Economic growth has become the main stimulus for the development of city-forming processes (and thus also for macropolization) in China. Due to the location of the first reforms, the eastern provinces have undergone a dynamic process of urbanization and macropolization.

Million cities and their impact on population concentration and population density by province

The concentration of the population in cities of a million and over in individual provinces of China was determined by three indices: population density of the million city for a given province (number of people per km^2); the population of these cities as a proportion of the province's total population; and the same 'million city population' as a share of the province's total *urban* population. Population density was calculated for eight selected years with reliable and complete data: 1955, 1965, 1980, 1990, 2000, 2005, 2010 and 2015. Meanwhile, the population of million cities as a share of the total urban population in provinces was calculated for 2005, 2010 and 2015. These three years were selected due to the lack of data on urban population by province (sometimes due to low reliability) for earlier years. Meanwhile, the concentration of the million city population among the total population of a given province was calculated for eight years, as in the first case (1955, 1965, 1980, 1990, 2000, 2005, 2010 and 2015). In this instance, a simplification was made, as PRC population censuses were carried out in 1954, 1964, and 1982, and data from these years were treated as data for 1955, 1965 and 1980. Data for 1990, 2000, 2005, 2010 and 2015 come from the annual data available on the National Bureau of Statistics of China website. For both population density and the population in cities of ≥1 million people as a percentage of total population, the selected years are identical, which allows for general interpretation and the drawing of certain dependencies.

The first measure to be analysed is the population density of a province's million city, namely the number of people (in this case the number of inhabitants of million cities) per square kilometre of the province's area (see Figure 3).

In 1955, only six provinces had million cities (in the north-east, east and centre of the country). The population density of a given province's million city was less than 20 persons per km^2 in all six provinces. Over the years, the number of provinces with million cities increased. In 1965, there were eight such provinces. The highest population density of a province's million city was in the Liaoning province (at 20.00–69.9 persons per km^2 – see Figure 3) while in the other administrative units it did not exceed 20 persons per km^2. In turn, in 1980 there were 12 provinces with million cities and the largest population density of the group of cities analysed, similar to 1965, was in Liaoning province, while in the remaining provinces it was below 20 persons per km^2. Year by year, the number of provinces with million cities increased (mainly in central and eastern China) and with this there was an increase in general population density, and in the population density of million cities in particular. It should be mentioned here
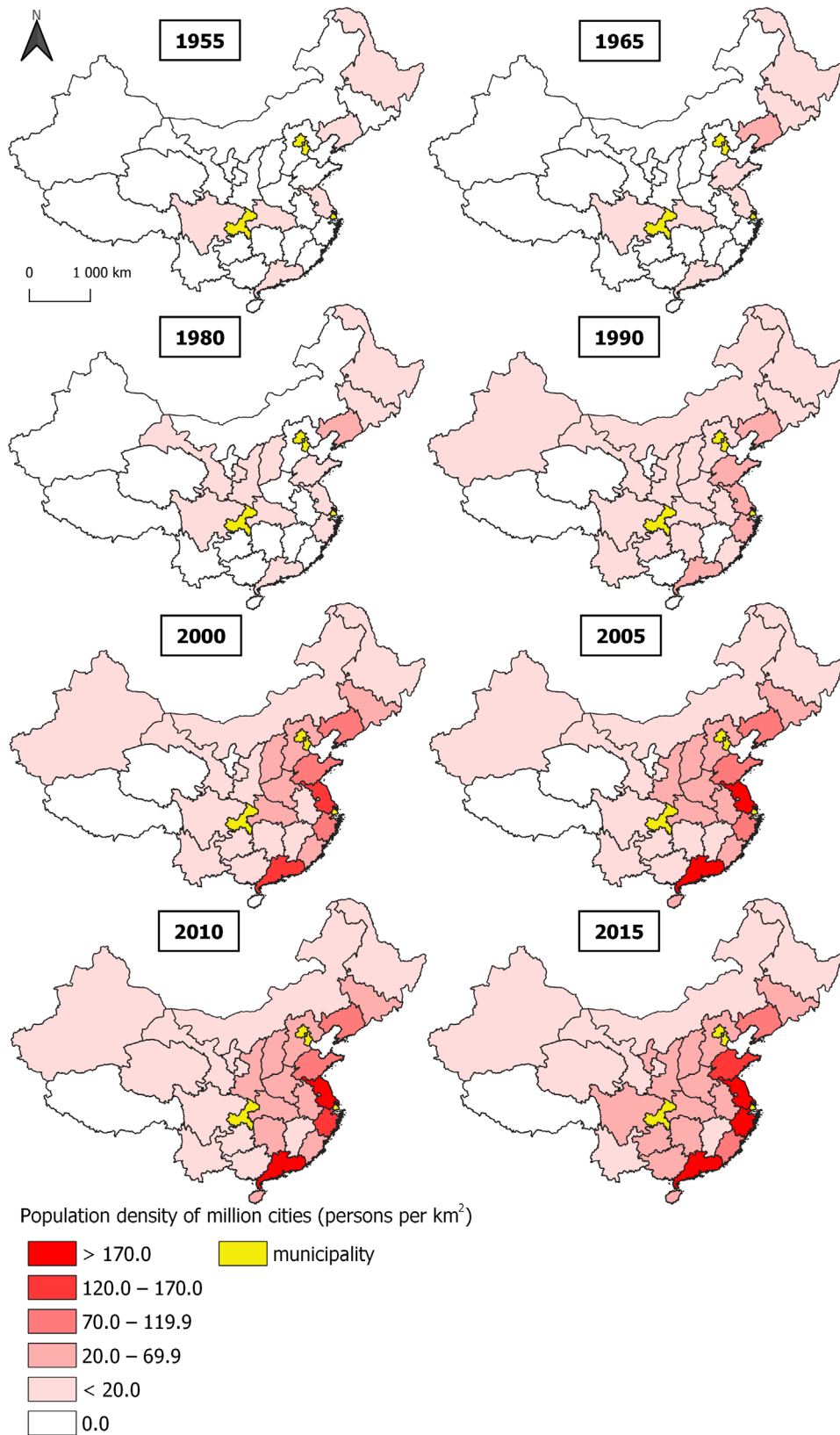
Population density of million cities (persons per km^2)

- > 170.0
- municipality
- 120.0 – 170.0
- 70.0 – 119.9
- 20.0 – 69.9
- < 20.0
- 0.0

Figure 3. Population density of million cities (persons per km^2) in PRC by province, 1955–2015
Source: Own study based on: United Nations, Department of Economic and Social Affairs, Population Division 2018, World Urbanization Prospects: The 2018 Revision and National Bureau of Statistics of China 2018

that in 1990, for example, there were 21 provinces (among 27 in total) that had million cities. In five provinces, the population density of the million cities was in the 20.00–69.9 persons per km^2 range; these are Guangdong, Liaoning, Shandong, Jiangsu and Zhejiang (all in eastern China). In the remaining 16 provinces, the population density of the million cities was below 20 persons per km^2 (Figure 3).

Decade by decade, the number of provinces with million cities grew. In 2000, there were 23 provinces with million cities, and 26 in 2015. Year by year, there has been a dynamic increase in the population density of million cities, especially in eastern and south-eastern China. In 2000, the most densely populated provinces in terms of million cities were Guangdong and Jiangsu (120–170 persons per km^2), Liaoning, Shandong and Zhejiang (70.00–119.9 persons per km^2). The population density is increasing all the time: by 2015, in the provinces of Guangdong, Jiangsu and Zhejiang, it totalled over 170 million city residents per km^2, and in Shandong there were 120–170 persons per km^2 (Figure 3). In general, in 2015, population density of million cities was lowest in the western and northern provinces, and highest in the eastern and south-eastern provinces. It is also worth noting that there is no million city in the province of Xizang. In addition, we note that in the central and western provinces, too, there has been an increase in the population density of million city inhabitants. In 2000, in most of the central and western provinces, the population density of million cities was below 10 persons per km^2, while in 2015 in most of them the density had increased from 10.00–19.9 persons per km^2, and in a few it was slightly larger, ranging between 20.00 and 29.9 persons per km^2. The lowest population densities of million cities in 2015 is recorded in the south-western provinces and some provinces in the south (Figure 3). In analysing the results, it should be noted that million cities have a major impact on a province's population density.

The second measure discussed is the percentage share of the population of million cities among the total population of a given province. In 1955, of the six provinces in which there were million cities, the million city population did not exceed 10% of the total population in five of these. Only in the province of Liaoning did the population of million cities constitute a larger percentage, ranging between 10% and 20%. In subsequent years, as the number of million cities in individual provinces increased, so too did the share of the provinces' million city inhabitants among the total population, especially in the eastern and north-eastern provinces, and, in time, the central provinces too (see Figure 4). For example, in 1990, from among 21 provinces with million cities, in the province of Liaoning the share of million city inhabitants was between 20% and 29.9%, while in the provinces of Jilin and Heilongjiang it ranged from 10% to 19.9%. In the remaining 19 provinces, the million city population accounted for less than 10% of the province's total population. Fundamental changes were noted in the years 1990–2015; during this period there was an increase in the share of million city inhabitants among the total population in almost all provinces.

And so, in 2000, on the east coast of China and in the north of the country, the million city population as a share of the general population was even 40% in some provinces. For example, in Guangdong, the million city population was between 30% and 40% of total population, and between 20% and 29.9% in Liaoning. In the other eastern and northern provinces, and in some central provinces, the equivalent figures ranged from 10% to 19.9%. The smallest share (below 10%) in 2000 was in the western and south-western provinces. In the following years, the share of million cities in the general population increased; for example, in 2005, more and more provinces on the east coast of China had a share of 20% to 40% (Guangdong: 30% to 40%; Jiangsu, Zhejiang and Liaoning: 20% to 29.9%). In 2015, the share of the

population of million cities among the general population of the given provinces was still growing; in Guangdong and Jiangsu, the share was above 40% of the province's population, and in Liaoning and Zhejiang, it was up to 30% to 40%. In turn, the smallest share is recorded in a few provinces in the south (Yunnan, Jiangxi). Despite the visible differences between eastern and western parts of China, the distribution of provinces by million city population as a share of total population is even more than for the previous measure (population density). In some central and western provinces (e.g. Qinghai, Jiangxi and Hubei), the share of million city residents among the total population is between 20% and 29.9%, as in some eastern provinces (e.g. Fujian, Shandong) (see Figure 4).

However, it should be emphasized here that the relationship between the number of million cities and their populations as a proportion of total population is not as clear as for the previous indicator (population density). On the one hand, in provinces such as Guangdong, Jiangsu and Zhejiang, the large number of million cities translates into a high population concentration of these cities relative to the total population of the provinces. On the other, there are also provinces such as Qinghai, Shaanxi and Ningxia where a relatively small number of million cities (one or two cities) results in these cities' populations constituting a relatively large share of the province's total population (specific settlement macrocephaly) (Figure 4).

Generally, however, it should be noted that the variations in population density and in the million city population share among the total province population show clear differences between eastern/north-eastern regions and the rest of China.

To capture the differences in the level of urbanization in the provinces' data even more clearly, the million city population as a percentage of the province's total *urban* population was also analysed. In 2005, the highest percentage of million city inhabitants among the total urban population was recorded in Guangdong, Jiangsu, Zhejiang and Liaoning, where the share in Guangdong exceeded 50%, and in the other provinces ranged from 40% to 50%. All these provinces are located on the east coast of China. The lowest share of million city population relative to total urban population (less than 20%) occurred in some central provinces (e.g. in Yunnan and Jiangxi) and in Qinghai and Xizang (0% share). In 2015, in the above-mentioned four eastern provinces (Guangdong, Jiangsu, Zhejiang and Liaoning), the million city population was already more than half the total urban population. At the other extreme are provinces in which the population living in million cities is less than 20% of the province's urban population (Yunnan and Jiangxi), and there is also Xizang province (Tibet), in which there was no million city in any year analysed. Thus, we can say that the population of million cities constitutes the largest share of the total urban population in eastern provinces, but the share is much lower in south-western, southern and central provinces (see Figure 5). Broadly, the growth rate of this index is highest in the eastern provinces of China, and lowest in central and southern provinces (Figure 5).

The analysis shows that when considering the million city population density of a province (persons per km^2, Figure 3), the million city population as a share of total population (Figure 4) and the million city population as a share of the total urban population (Figure 5), there are clear differences in the size of these indices between eastern and north-eastern provinces on the one hand, and western, north-western and southern provinces on the other.

Macropolization Index

Considering the aforementioned indicators, it should once again be emphasized that the share of million cities in the settlement network in China is constantly growing. To explain the level of macropolization in a synthetic way using a single
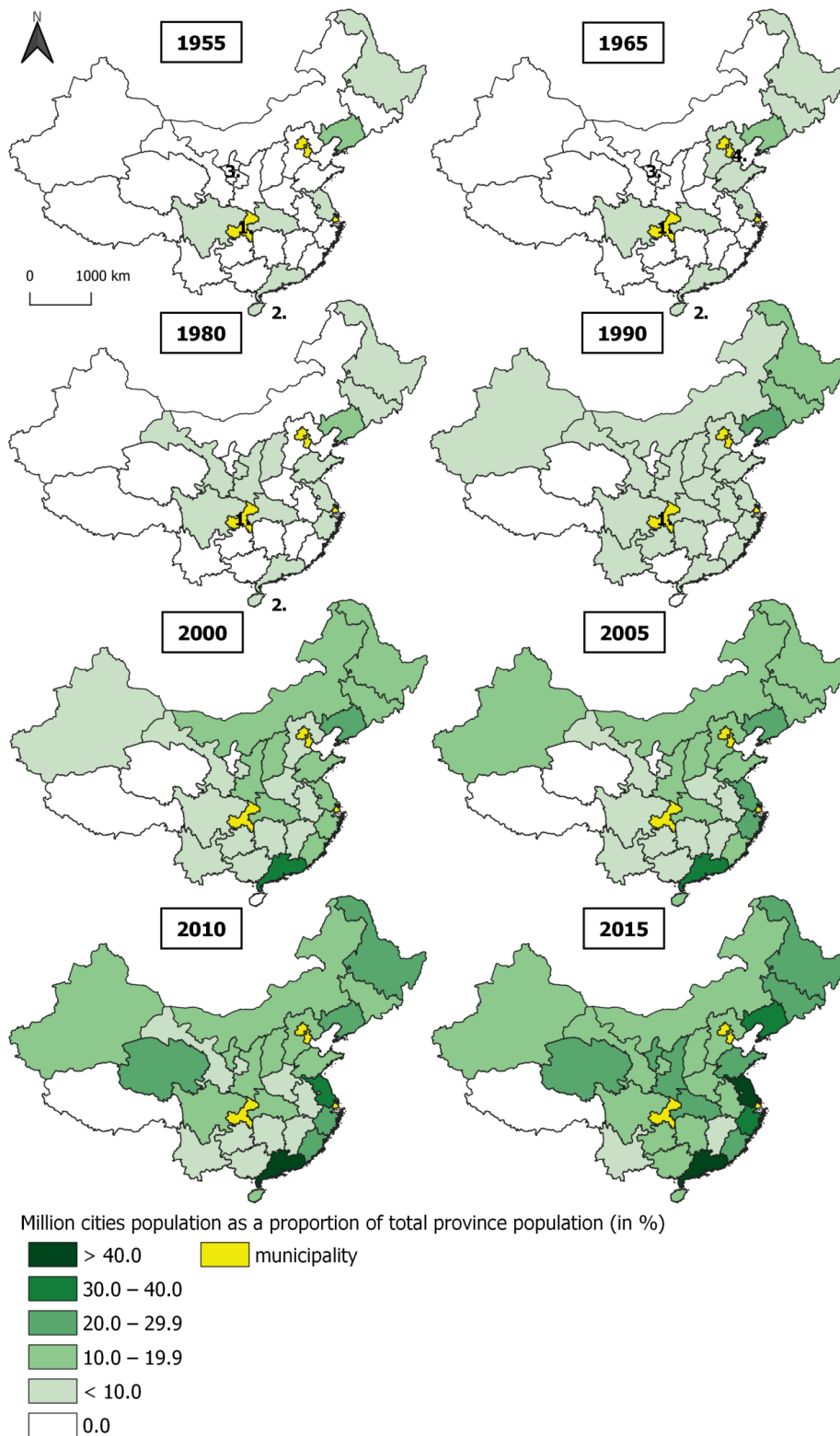
Million cities population as a proportion of total province population (in %)

- > 40.0
- 30.0 – 40.0
- 20.0 – 29.9
- 10.0 – 19.9
- < 10.0
- 0.0
- municipality

Figure 4. Million city population as a proportion of total province population (in %) in China, 1955–2015
Source: Own study based on: United Nations, Department of Economic and Social Affairs, Population Division 2018, World Urbanization Prospects: The 2018 Revision and National Bureau of Statistics of China 2018
Notes: 1. Chongqing during the censuses of 1954, 1964, 1980 and 1990 was part of the Sichuan province; 2. Hainan during the censuses of 1954, 1964 and 1980 was part of the Guangdong province; 3. Ningxia during the census of 1954 and 1964 was part of the Gansu province; 4. Tianjin during the census of 1964 was part of the Hebei province
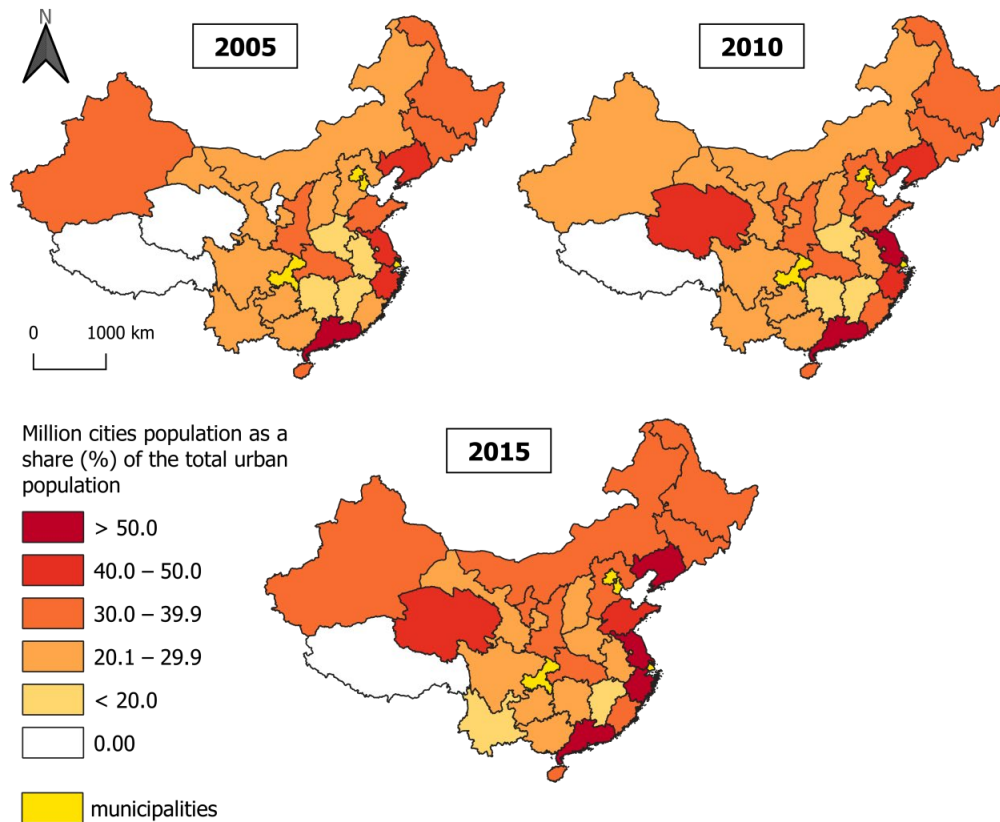
Figure 5. Million city populations as a share (%) of the total urban population of a given province, 2005–2015
Source: Own study based on: United Nations, Department of Economic and Social Affairs, Population Division 2018, World Urbanization Prospects: The 2018 Revision and National Bureau of Statistics of China 2018

indicator, the Macropolization Index (MI) has been proposed; it is constructed based on million city population, urban population and total population, by province:

$$MI = [(x^1/x^2) + (x^1/x^3)] *0.5$$

Where: x^1 – million city population, x^2 – urban population, x^3 – total population, by province. This index returns values from 0 to 1 (see Figure 6).

The closer the index is to 1.000 the greater the extent of macropolization. A value of 0.000 indicates no macropolization, while 1.000 means total macropolization of the settlement network (the entire population of a given province is concentrated in million cities). Constructing the index in this way allows us to determine the level of macropolization, which here is understood as the concentration of the million city population relative to urban population and total population.

Analysing the changes that have occurred and the extent of macropolization in 2005 and 2015 across provinces, we notice a progressive macropolization of the settlement network in almost all Chinese provinces (see Figure 7). In most of the provinces the macropolization index increased between 2005 and 2015. For example, MI exceeded 0.450 in only one province in 2005, while by 2015 this was true of three provinces. The rates of change are not the same; the fastest increase in macropolization was recorded in those provinces where the phenomenon was already well developed. This means that the differences between individual provinces have become increasingly marked, and we

continue to see the contrast in the growing settlement network. Macropolization in the PRC is progressing rapidly; in 1990 the MI of the whole country was only 0.157 (weak), while in 2015 it was 0.354 (moderate). It should also be noted that MI is very varied between particular provinces. On the one hand, we note provinces with a very low MI (<0.150), while on the other, provinces with MI in excess of 0.450 stand out (Figure 7).

While discussing the level (value) of the macropolization index across provinces for 2015, we note (as in the case of the previous measures) marked differences between the east and west of China. The highest macropolization index relates to eastern and north-eastern provinces, while the lowest concerns a province in the south-west of the country. In Guangdong, MI exceeded 0.600, so macropolization is very strong here. In two provinces – Zhejiang and Liaoning – the macropolization index ranges from 0.451 to 0.600 – that is, strong macropolization (see Figure 8). In the next five provinces (three coastal, one north-eastern and one central) the level of macropolization can be described as moderate – MI ranges from 0.301 to 0.450. The weakest macropolization is seen in Yunnan and Jiangxi, where MI is below 0.150 (very weak macropolization) and in Xizang province, where there is no macropolization at all). In general, the intensity and level of the macropolization index is affected by the number of million cities and the size of the population of these cities. However, there are some exceptions, e.g. in the provinces of Qinghai, Hebei and Henan. In Qinghai, despite the small number of million cities and populations of these cities, the macropolization index is in the range of 0.301–0.450 (moderate
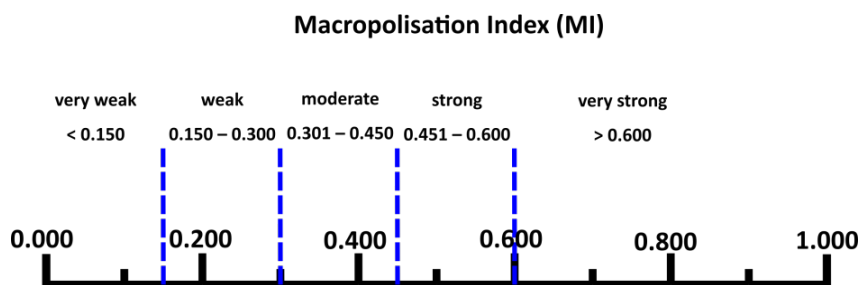
Figure 6. Macropolization index value
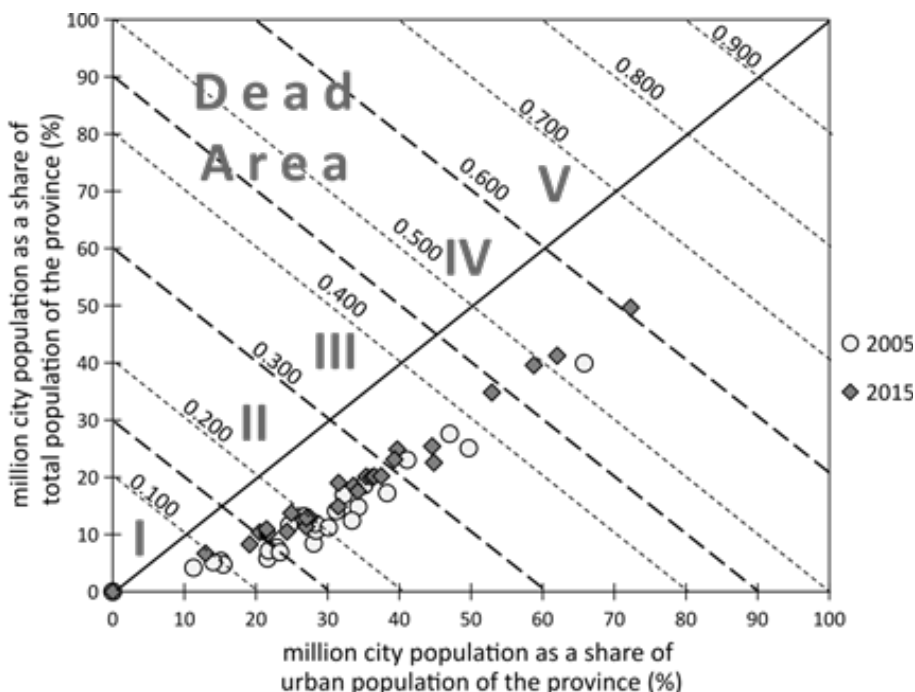*Source: Own study*

Figure 7. Distribution of provinces by million city population (%) relative to urban population and total population, and MI index value in 2005 and 2015
Source: Own study based on: United Nations, Department of Economic and Social Affairs, Population Division 2018, World Urbanization Prospects: The 2018 Revision

macropolization). Meanwhile, in Hebei and Henan, a relatively large number of million cities and the large number of people living in them is not reflected in the size of the MI, which ranges 0.150–0.300 (weak macropolization) (Figure 8).

The macropolization index confirms the significant contrast within the settlement network between eastern and western provinces, and the increasing macropolization is not conducive to equalizing the level of socio-economic development; we can venture to claim that macropolization is strengthening this contrast and deepening imbalances in the development of individual Chinese provinces.

Discussion and conclusions

Urbanization processes in China are of interest to many researchers, including economists, geographers, historians and many other specialists. Researchers from various academic centres have undertaken research in which they have discussed

the level of urbanization in China, rural–urban migrations and their impact on urbanization, and the role of state policy and the economic system in shaping city-forming processes. Many researchers have emphasized that the social and economic policy created by the central Chinese authorities has been a key factor in shaping urbanization and its various facets. There are relatively few studies on macropolization.

Based on the results obtained and the subject literature, in the analysed period of 1950 to 2015 we can distinguish two stages (two different paths) of development for contemporary urbanization and related macropolization in China. The first stage of the development of urbanization and macropolization lasts from the 1950s to the end of the 1970s. Its main features are a moderate increase in urban population and the number of million cities. The distribution of these cities did not display such a large dichotomy between the eastern and central parts of China. Over this period, during the reign of Mao Zedong (1949–
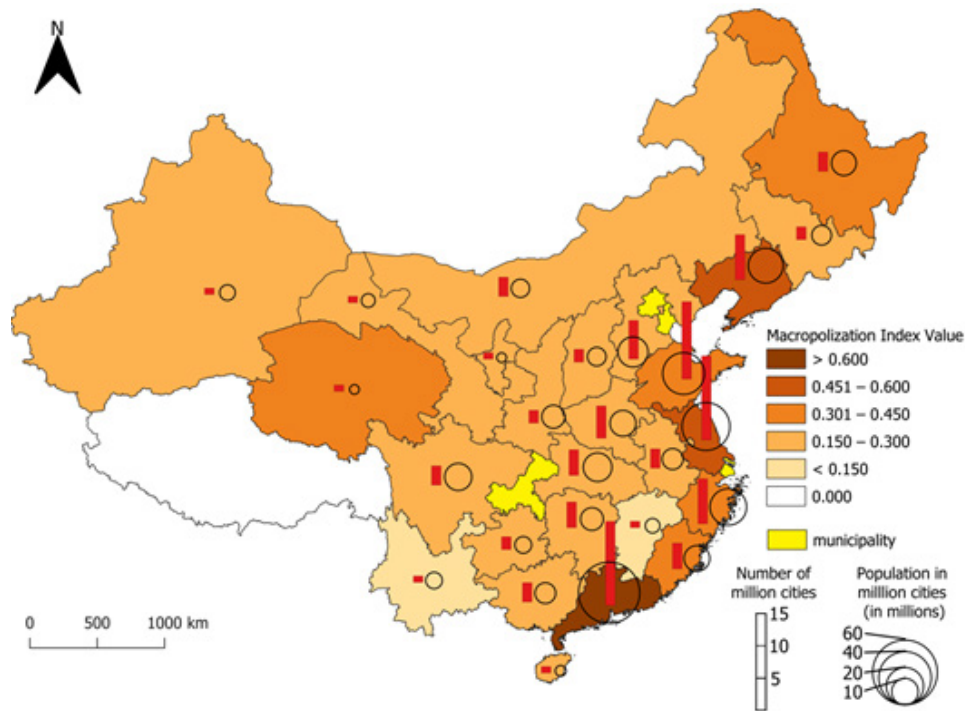
Figure 8. Provinces in China by size of million cities, number of million cities, and macropolization index value, 2015
Source: Own study based on: United Nations, Department of Economic and Social Affairs, Population Division 2018, World Urbanization Prospects: The 2018 Revision and National Bureau of Statistics of China 2018

1976) efforts were made to limit the development of cities. In the times of so-called Maoism the city's role was limited to providing housing to city dwellers, and industrial activities – urban centres were supposed to be the country's centres of industrialization (Kojima 1995; Chien 2010). Another factor in the relatively slow development of urbanization was the ideology of the communist authorities, which perceived cities as a source of capitalist ideas contrary to the socialist model of the Maoist state (Chien 2010). The central authorities were trying to soften antagonism between urban and rural areas. The Chinese anti-urban policy involved measures to stop urban development, especially during the Cultural Revolution (Chu 1996). From the 1950s to the mid-1960s, the Chinese economy focused on developing heavy industry, which provided many rural workers with employment in private enterprises. The development mainly involved industrial cities in central parts of the country. In 1950–1965, a steady increase in the urban population was recorded in China. Meanwhile, at the time of the Cultural Revolution (i.e. 1966–1976), as part of the fight against opponents, millions of urban residents (including urban youth) were forcibly displaced in order to subject them to 'education' in rural areas and to reduce ideologies contrary to socialism. During the Cultural Revolution, Chinese urbanization experienced a severe crisis – the increase in urban population was either negative or very small (Song & Zhang, 2012). When analysing the first period of the development of urbanization in China, it should also be emphasized that rural–urban migrations were already playing an important role in shaping the settlement network of China in the times of Mao Zedong. In the years 1966–1970, nearly 30 million people were displaced from urban areas to rural areas (17 million young people and 13 million urban workers and intellectuals). There was also illegal migration (migration without amending the *Hukou* register) from villages to cities, although it was not yet large-scale (Chan & Xu, 1985). In

the years 1953–1957, rural–urban migration was estimated at 8 million people, and at 54.6 million in 1957–1975 (Sit, 2010). A factor in shaping migration in China since the late 1950s is the *Hukou* household registration system. The *Hukou* system initially only covered cities (where it was introduced in 1951), but in 1958 it became a mandatory system that was extended to the whole country. The household registration system was initiated out of a desire to allocate resources and to have strict control over internal migration (Luo 2012). *Hukou* is a registration system for identifying all citizens, who are registered at their place of birth. In practice it separates the Chinese population into two separate groups – non-agricultural and agricultural populations (Chen et al. 2011). *Hukou* only permits employment in the place of birth, and while changing the place of registration is possible, in practice it has always been extremely difficult. Legal restrictions on official migration have led to the development of illegal population flows between the countryside and the city. Illegal migrants from rural areas do not have the same rights as city dwellers (e.g. they have no access to social assistance) (Luchino & Ruggero 2014). In addition, they face worse conditions of employment and lower earnings than their local counterparts. The *Hukou* system still plays a key role in the social and economic life of China and continues to contribute to reinforcing (and sometimes aggravating) differences and contrasts between urban and rural areas (Luo 2012). With the introduction of features of a market economy at the turn of the 1980s, there was rapid growth in labour-intensive sectors, creating significant demand for cheap labour. Rapid, uncontrolled flows of people from rural to urban areas necessitated a reform of the *Hukou* household registration system (Cai 2012).

In general, it should be noted that this first stage (from the 1950s to the end of the 1970s, i.e. from 1950 to 1978/80) saw a low level of urbanization, a low or moderate increase in urban population, and limited migration, while the main migration flows

were organized and controlled by the central authorities. Regional policy was based mainly on shifting economic concentration from the coast towards the centre of the country and focusing growth mainly on industry and natural resources, while the economy was centrally planned and the general standard of living was low (Sit 2010).

The second stage of the development of Chinese urbanization and macropolization extends from the late 1970s to the present day. Its main features are: a rapid growth in urban population and the number of million cities; the concentration of million cities and their populations in eastern coastal provinces (creating multi-million urban units among the largest in the world); and mass illegal rural–urban migration, which is the main component of the demographic development of urbanization in China (Shen 1995; Liu et al., 2003). The rapid development of urbanization was caused by the socio-economic and political transformations initiated by Deng Xiaoping, which put the People's Republic of China on a track of rapid economic growth (Hongyan et al. 2012). Deng Xiaoping's reforms ended China's isolation and supplanted the Maoist vision of socialism, replacing it with a 'socialist market economy' (Sit 2010). China's economic centres became Special Economic Zones (SEZs) and open cities (Batisse et al. 2004). In 1980, the first four SEZs were created in Shenzhen, Zhuuhai (Guangdong province), Shantou and Xiamen (Fujian province). In 1988, the next SEZ to be created was the entire island of Hainan (Lu 2012b). SEZs were located in port cities to attract industrial investment and improve the urbanization of coastal areas (Luchino & Ruggero 2014). In 1984, 14 east coast cities were granted the status of coastal open cities (Shanghai, Guangzhou, Tianjin, Dalian, Yantai, Qingdao, Qinhuangdao, Lianyugang, Nantong, Ningbo, Wenzhou, Fuzhou, Zhanjiang and Beihai), in which local municipal governments were granted the right to approve incoming foreign investment projects (Batisse et al. 2004; Lu 2012b). In 1992, the number of open cities was expanded from the 14 established in 1984 to 43 cities, with the addition of 5 cities along the Yangtze River, 13 border towns and 11 interior provincial capitals (Lu 2012a). Another form of economic incentive to foreign investment was the creation of open economic regions in the Pearl River delta and the Yangtze River delta (Sit 2010). The 'open door' policy supports further urbanization, and foreign direct investment (FDI) became foundational to rapid city-forming processes in the eastern provinces. In 1989–1998, an FDI of USD 260 million went to China, of which 87.7% was allocated to the coast. The main factors supporting rapid growth in urbanization and macropolization were the industrialization of the country, the inflow of foreign investments, and changes in the approach to migration (Song & Zhang 2012; Zhang et al. 2012). The increasing urbanization and the concentration of population into cities is the result of expansion in industrial and service sectors. It is worth noting that urbanization in this period (the period of reforms) resulted from two actions: on the one hand it was run and managed by the central authorities, while on the other it was spontaneous, driven by market mechanisms and globalization processes (Batisse et al. 2004). Other important factors in the growth in urbanization were: the agricultural reform, the construction boom, the policy supporting an increase in agricultural productivity, and growing consumption (Schneider & Mertes 2014) Before the reform period (until the 1970s and 80s), urban housing was covered by the socialist welfare system. Changes introduced in the 1990s set market mechanisms into action and revived the municipal housing market. Before the reform period, 80% to 90% of all housing investments in cities resulted from government or state-owned enterprises. However, by as soon as 2001, about 80% of apartments in Chinese cities belonged to private owners. Changes in the housing market have had some consequences: in the years 1995–2005, house prices and the scale of housing

transactions both increased in all provinces (Chen et al. 2011). In the capital of the Middle Kingdom, Beijing, the price per square metre of housing increased from RMB 1,613 in 1992 to RMB 5,337 in 1997. In turn, the total living space in China in 1985 amounted to 1,130 million square metres, while by 2001 it was 6,650 million square metres (Li 2005).

The rapid growth in urbanization and developing industrialization are absorbing ever more agricultural areas, thus exacerbating land shortages, which is an increasingly serious problem in China. Since 1952, over 13 million hectares of arable land have been lost (Zang et al. 2012). Major changes have also been made to agriculture, where the household responsibility system was introduced for farming households (Cai 2012). This reform led to increased yields and productivity, and freed up a million surplus rural workers. Many farmers found employment in Township and Village Enterprises (TVEs), although the development of TVEs was uneven; urban and rural enterprises grew fastest in coastal provinces (Zang et al. 2012; Xu 2001; Shen & Ma 2005). In 1985, only 18.8% of the 372 million rural farmers worked in TVEs (Cai 2012). The industrialization of the country created employment opportunities in the cities, which, along with the relaxation of migratory restrictions in the *Hukou* system, led to mass migration from rural to urban areas. Economic transformations eased administrative control over the *Hukou* register. The rapidly expanding economy needed an injection of cheap labour, which stimulated mass migration from rural areas to the cities. The cities have been attracting migrants from rural areas for their superior living conditions and higher incomes (Chan & Xu, 1985). Illegal migration from villages to cities is tolerated by the authorities, although newcomers cannot count on the same social provisions as city dwellers (e.g. cheap housing, services, medical care, education) (Chen et al. 2011). Migrants are excluded from the formal housing distribution system, which results in the emergence of a housing market on the outskirts of cities where living conditions are poor. Migrant villages are the result of inequalities between rural and urban populations (Zhang & Song 2003). The deepening gap between the inhabitants of urban and rural areas is forcing the central authorities to reform the *Hukou* system. The changes introduced are intended to alleviate the conflict and differences between incoming migrants and local residents. For example, the *Blue Seal Hukou* has been introduced, which gives the bearer the same rights and status as local citizens of cities, and the possibility of obtaining permanent local *Hukou* status. The criteria for obtaining such a *Hukou* were largely education, skills and financial status. In turn, in 1984, peasants in market towns were allowed to obtain a municipal *Hukou* (known as a 'self-supplied food grain' *Hukou*), if they met certain conditions such as: owning or being employed in a business, owning their own accommodation, and self-sufficiency in terms of grain (Luo 2012). Despite the differences and divisions resulting from the household registration system, the Chinese authorities have not abolished it completely; they are moving towards transforming it and adapting it to the current socio-economic situation. Reforms and the economic opening up to the world have led to mass migration from the countryside to cities, which is estimated at several hundred million people. According to data from the Chinese statistical office, in 2011, the population of China was 1,354,040,000 people, of which 541,355,000 are urban dwellers, and 170,464,000 make up an urban population without a local *Hukou*. In 2012, the number of migrants was calculated at 260 million, or one third of the country's urban population. Forecasts for 2050 are for about 500 million migrants – that is, half of the forecasted urban population (Luchino & Ruggero 2014). The number of workers who have been away from their families for six months or longer increased from 114 million in 2003 to 145 million in 2009. Of 145 million migrant workers,

51% are migrants from outside their province. In turn, other authors report that the number of people who emigrated from the countryside to cities and have lived in them for six months or longer was 84 million in 2001, 125.8 million in 2004 and 154.4 million in 2009 (Du & Wang 2012). It is also worth mentioning that migration flows are a key factor in maintaining China's economic development. The richest provinces, mainly in the east, are ageing demographically in comparison with the poorer provinces in other parts of China. Thus, economic migration from less developed provinces allows for the economically negative effects of ageing populations in richer areas to be alleviated (Lu 2012c). In general, in the second stage of the development of urbanization and associated macro-populations we note a further growth in urbanization, and regional policy is mainly directed towards the east coast, while migrations, despite further legal restrictions, are accepted and result from socio-economic transformations. The standard of living is increasing. The Chinese economy has opted for growth based on foreign direct investment (FDI) alongside a socialist market economy (which has replaced the centrally planned economy), and we note ever more market and globalization mechanisms (Batisse et al. 2004; Sit 2010).

In summary, following our analysis of the phenomenon of macropolization in the PRC in the years 1950–2015, we can say that it is strongly related to a general process of urbanization that has taken place in two stages. In the first stage (i.e. from the 1950s to the end of the 1970s), there was a slow but noticeable increase in the number of million cities and the populations they hosted, and vague concentration processes. In the second stage (i.e. from the end of the 1970s to 2015), many million cities appeared in the Chinese settlement network and the population of these cities increased rapidly. Suffice to mention that in 1950 the PRC had 15 'million cities', where only 2.8% of the country's population was concentrated, which was 23.4% of the total urban population – namely 15.3 million people. In 2015, there were 109 'million cities', hosting 344.2 million inhabitants, which by then constituted 24.6% of the Chinese population and 44.4% of the total urban population. Not only did the number of million cities change, but so too did their size structure. In 1950, no Chinese city had more than five million residents. By 2015, Chinese urban structures contained 17 such cities, including five megapolises (>10 million inhabitants) and one gigapolis (>20 million inhabitants). Increasing numbers of million city dwellers are living in the largest agglomerations of over 10 million people (in 2015, these represented 11.7% of the urban population and 6.5% of the total population of China). The rapidly progressing macropolization

is reinforcing the contrast in the settlement network between particular provinces (regions) of China (in particular between the eastern coastal provinces and western provinces). Most million cities are located in the eastern provinces, such as in the provinces of Guangdong, Jiangsu (13 cities each) and Shandong (12 cities). The fewest such cities are in the western and south-western provinces, for example in Xizang (The Tibet Autonomous Region, with no million city), and in Qinghai (1). In addition, in terms of the population density of a given province's million city, differences must be highlighted between eastern provinces (high population density) and south-western and western provinces (low population density). For example, the population density of a million city was the highest in the eastern coastal provinces in 2015 (in as many as three provinces it was above 170 persons per km^2), and lowest in western ones (below 20 persons per km^2). In addition, the million city population as a proportion of total population is also varied. It is highest in the eastern provinces (e.g. in Guangdong and Jiangsu it is greater than 40% of the total provincial population), and lowest in the south-west (e.g. 0% in Xizang, and below 10% in Yunnan). Changes in the structures and processes of urbanization in China are reflected in an increase in the macropolization index (MI). For China as a whole it was at 0.131 (very weak macropolization) in 1950, but by 2015 this had increased to 0.345 (moderate macropolization). There is great diversity in the MI between individual Chinese provinces, with the highest in the east and north-east (e.g. Guangdong >0.600 – very strong macropolization), and the lowest in south-western and southern regions (Xizang 0 – phenomenon does not occur, and Jiangxi scores below 0.150 – very weak). The key factors generally shaping macropolization and urbanization are economic, political and social. In the first stage (i.e. from 1950 to 1978/80), macropolization and urbanization were slow, which was a reflection of central planning, a vision of development based on natural resources and industrialization, a harsh (restrictive) migration policy (the *Hukou* system) and a 'Maoist' view of the city. In the second stage (1978/80 to present), the course and dynamics of urbanization and its accompanying macropolization are related to the opening up of China's economy to the world, which led to an influx of FDI, with social changes relating to a positive perception of cities and their role in socio-economic development, in addition to a 'loosening' of the household registration system.

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