

# Chapter 1

## Shrinking Cities in China: The Overall Profile and Paradox in Planning



Ying Long and Shuqi Gao

**Abstract** Manifested by population loss, shrinking cities are currently under heated discussion in the developed countries. The emerging shrinking cities in developing world, however, have not attracted enough attention. This paper focuses on the shrinking cities in China, where has been witnessed fast economic growth, rapid urban expansion, and massive urbanization in the last decades. By collecting and analyzing township-level demographic data of the Census in 2000 and 2010, we identified 180 shrinking cities. We then classified them into two sets of categories based on their causalities and spatial patterns of depopulation, respectively. Despite their great quantity, shrinking cities are largely disregarded by China's planners and local authorities during the plan-making process. We conceptualized the causalities of the disregard into the systematic paradox and technological paradox, both of which are the effects of a combination of China's specific planning system, land marketization, cadre promotion system, and the national urbanization policy. We then further conceptualize the overwhelming growth-oriented paradigm into a vicious cycle that continuously exacerbates oversupply of the built environment in shrinking cities. This paper ends with a discussion of appealing for more attention on shrinking cities in China and a paradigm shift from the growth-oriented planning, as well as the future research agenda for shrinking cities' research in China.

**Keywords** Shrinking cities · Depopulation · Chinese cities · Growth-oriented paradigm

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## 1.1 Introduction

After the 1980s, scholars always associated Chinese cities with growth, including fast urban expansion, roaring housing price, and increasing urban population (Wu 2015). To most outsiders, it seems that most Chinese cities' growth is too fast to be an undesirable burden, and local governments have to establish various ways to curb the unexpected growth (Zhao 2011). However, such impression is based on the disproportionate academic coverage that most literature focus on China's large cities by leaving most medium and small cities underrepresented. Overshadowed by the large cities' fast growth, medium, and small cities are understudied though the fact that many of them have been identified as shrinking cities (Long and Wu 2016).

We assume that the problem of shrinking cities ought to appeal for more attention. First, the stringent one-child policy has triggered severe aging problem that China's population growth is going to a stagnation (UN DESA 2015). Second, China's urbanization progress is also going to a stagnation after last decades' fast growth (UN DESA 2014). Third, the enhancing regional disparity further exacerbates the unequal spatial distribution of population. In contrast to megacities' overwhelming in-migration, many medium and small cities are suffering from drastic out-migration. These facts justify our research motivations. Although some studies (Wu et al. 2014; Long and Wu 2015; He et al. 2017) have addressed certain aspects of this issue, the overall knowledge is still too limited.

This paper aims to offer two new perspectives to the current knowledge of Chinese shrinking cities: what is the overall profile of shrinking cities in China, and why is planning for shrinking cities so difficult in China? This paper is organized as follows. Followed by a literature review of shrinking cities and their planning problems in Sect. 1.2, data and research methodology are discussed in Sect. 1.3. In the next section, we analyze the demographic data to identify shrinking cities. We then classify them into two sets of categories based on their causalities and depopulation's spatial pattern. In Sect. 1.5, we analyze the causalities of the Chinese planning' growth-oriented paradigm through conceptualizing it into the systematic paradox and the technological paradox, as well as a vicious cycle. In the next section, we appeal for more attention to shrinking cities and an alternative paradigm from the growth-oriented one. The last section presents our concise concluding remark.

## 1.2 Literature Review

### 1.2.1 Concept

Although shrinking cities date back to the very beginning age of urban history, the concept of "Shrinking Cities" literally did not gain international notoriety until the mid-2000s, when scholars from Germany, France, Australia, and other countries established the Shrinking Cities International Research Network (SCiRN) in

Berkeley, California, USA. Meanwhile, through the organization of German and Swiss architects Philipp Oswalt and Tim Rieniets, a series of the shrinking cities' exhibitions toured around the world's famous shrinking cities after its initial success in Germany. These exhibitions have greatly inspired more scholars' interest on shrinking cities and thus related publications burst forth. However, shrinking cities have varied context and background that their causalities and manifestations may largely differ with each other. Shrinking cities' major causalities include globalization, deindustrialization, suburbanization, and demographic transition, while their manifestations include depopulation, vacant and abandoned properties, urban decay, etc. (Schilling and Logan 2008; Hollander et al. 2009). The essence of shrinking cities' concept is like the stuffing of a sandwich with two breads, the causalities, and manifestations on its upside and downside (Bernt 2016), while Mallach (2011) points out that shrinkage as a symptom, not a disease. Therefore, except the depopulation, which is the mostly mentioned feature by different definitions, the other features are like the two breads of a sandwich that may differ in everywhere.

### ***1.2.2 Typologies of Shrinking Cities***

Given varied causalities and manifestations, there are various types of shrinking cities around the world. From the perspective of geographical location and literatures, we find great difference between shrinking cities in the US and East Europe.

Deindustrialization in tandem with suburbanization is deemed as the main cause of most shrinking cities in the US Rust Belt (Pallagst 2010). Since the post-war age, the rise of the Sun Belt attracted a great amount of population from the Rust Belt. Meanwhile, the rise of newly industrialized countries like Japan and South Korea has continuously squeezed the market of the Rust Belt, while several energy crises further deteriorated the situation. These endogenous and exogenous factors came together and initiated tides of plant closure, economic decline, and population loss in most Rust Belt cities (Bluestone and Harrison 1982). Moreover, the massive suburbanization further hemorrhaged the inner city, which was the former place for most industrial plants. Therefore, the US shrinking cities' spatial pattern is conceptualized as the "doughnut", which means a combination of a hollowing-out inner city and a ring of booming suburb (Hollander et al. 2009).

In the east European countries, many shrinking cities have emerged during the drastic social and economic transition since the post-socialist era (Turok and Mykhnenko 2007). In the post-socialist countries, the fast privatization and marketization triggered the structural crisis that further led to a massive closure of formerly state-owned plants and subsequently, a considerable out-migration (Bontje 2005). Because of their homogeneous spatial structure, the depopulation areas in most east European shrinking cities are not polarized but evenly distributed in the urbanized regions, which are conceptualized as "perforated shrinkage" (Schetke and Haase 2008).

Regarding China, some recent studies have revealed some emerging shrinking cities, some of which are even located in its booming regions. For example, Yixing, a county-level city located in a prosperous province named Jiangsu, has endured population loss due to jurisdictional boundary change (Wu et al. 2014). Furthermore, according to the latest study by He et al. (2017), resource-based cities, especially resource-depleted cities, have high vulnerability of population loss. However, due to some specific features of Chinese cities, it is very easy for the outsiders to mistake some cities as shrinking cities. Since most Chinese cities are still under urbanization and have a large amount of rural population, some of them may have population loss in the rural area that surpasses the population gain in the urban (Wu et al. 2014). These cities do lose population in their jurisdictional areas but have increased urbanized population. Therefore, it is necessary to define and identify Chinese shrinking cities before furthering the study.

### *1.2.3 Planning for Shrinking Cities*

In the US, a coalition of local political-and-social elites formed the “urban growth machine” and thus the growth-oriented paradigm is the mainstream of urban governance (Logan and Molotch 1987). This growth-oriented paradigm is not only popular in the US but also well accepted in other countries like the UK (Rydin 2013), Germany (Wiechmann and Pallagst 2012), and China (Wu 2015). From the perspective of growth-oriented paradigm, urban shrinkage is a counter-vision reality and a stigma to the “urban growth machine.” Therefore, it is common that no shrinking cities’ government will accept the reality of population loss, needless to say, taking any corresponding strategies (Bernt 2009). It thus justifies the contradict and ridiculous coexistence of population loss and growth-oriented planning in many shrinking cities.

This mismatch has caused various problems. In shrinking cities, growth-oriented planning is in favor of creating excessive properties instead of dismantling redundant properties, which further strikes the dilapidated real estate market. Growing urban built-up area yields a higher maintaining cost while declining population exacerbates local fiscal revenue, both of which further impair shrinking cities’ fiscal healthiness. Growth-oriented planning also expands urban infrastructure and amenities that further decreases the efficiency of public goods and increases municipal expenditure, which finally increases the burden of remnant taxpayers. In order to make both ends meet, most shrinking cities’ government has to keep raising various taxes’ rate (Rybczynski and Linneman 1999). However, any marginal increase of living cost can be the last nail in the coffin that pushes people to leave shrinking cities. Moreover, the mismatch between growth-oriented planning and decreasing population has caused more problems on public security, sanitation, environment, and so forth (Bernt 2009; Hollander et al. 2009).

Recently, some scholars have appealed for a paradigm shift from growth-oriented planning to rightsizing for shrinking cities (Schilling and Logan 2008; Hollander et al. 2009). However, rightsizing is still more about conceptual discussion, and

although some cities have released self-claimed rightsizing plans, their implementation remains to be questionable. Rhodes and Russo (2013) revealed that Youngstown had failed to reach most of the goals in Youngstown 2010 Plan, which was the first rightsizing plan in the US. Regarding China, and planning for shrinking cities is an unprecedented topic for urban scholars in a context that growth has been overwhelmingly underscored, whereas shrinking cities have existed and their amount is quite large according to a UN-HABITAT (2008) report.

## 1.3 Research Materials

### 1.3.1 Research Targets

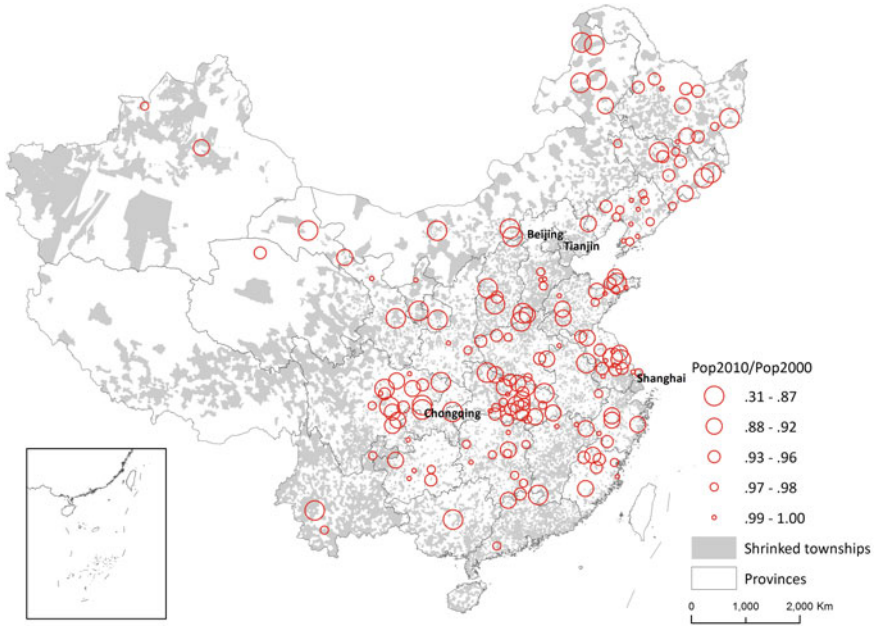
The Chinese city system has long been defined through the administrative dimension, and each city is represented by its administrative boundary.<sup>1</sup> There were 653 Chinese cities in 2014, which can be categorized into five administrative levels: municipalities (MD, *zhi xia shi*) being directly under charge of the central government (4 cities, tier 1), sub-provincial cities (SPC, *fu sheng ji cheng shi*) (15 cities, tier 2), other provincial cities (OP, *sheng hui*) (17 cities, tier 3), prefectural-level cities (PLC, *di ji shi*) (250 cities, tier 4), and county-level cities (CLC, *xian ji shi*) (367 cities, tier 5). We focused on all of these administrative cities in this paper, aiming to identify shrinking cities nationally. The jurisdictional boundaries of these cities (see Fig. 1.1 in Jin et al. (2017)) were used for extracting demographic and spatial information for each city.

### 1.3.2 Population Census in 2000 and 2010

We reconstructed the township-level population data for identifying shrinking cities in China. The fifth and sixth Population Census of Mainland China, conducted by the National Bureau of Statistics (NBS) of China, were used to retrieve the tabulation of township-level population (“de facto” population not “hu kou” population) information (NBS 2000; Population Census Office under the State Council & Department of Population and Employment Statistics under the National Bureau of Statistics 2012). There were 43,536 and 50,518 township-level census units in 2010 and 2000, respectively. We geocoded the tabular records which generated the point feature class in GIS using Google Map API. Considering China’s township-level administrative boundaries kept changing during 2000–2010 due to jurisdictional adjustment, we

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<sup>1</sup>The information of Chinese cities from spatial entity dimension (urbanized areas) and functional dimension (e.g., functional urban areas) is not open in China officially, and we use the administrative cities as the study area and object of this paper. We admit that identifying shrinking cities using the cities defined from spatial entity or functional dimension is more feasible.



**Fig. 1.1** Shrinking cities in China (2000–2010). Note: It should also be mentioned that the territorial population shrinkage is not only limited to the city proper scale, we identified that 4 provinces, 105 prefectures, 897 counties, and 19,822 townships are experiencing population shrinkage in China. In addition, 3,364 subdistricts (one type of townships) with a total area of 442,000 km<sup>2</sup> lost their population during 2000–2010. *Source* Long and Wu (2016)

adopted the township boundaries in 2014 (39,007 townships in total) for calculating population density in 2000 and 2010. This guaranteed the further comparison of population density between 2000 and 2010 (see Mao et al. 2016 for more details). We overlaid the township points with the township boundaries in GIS. Each township boundary was associated with at least one census unit in 2000 and 2010. Then the demographic data of 2000 and 2010 for each township were retrieved in order to calculate population density. The data of township-level population was then synthesized for 2000 and 2010. We found 19,882 among total 39,007 townships have population loss during 2000–2010. The total area of these townships was 3.24 million km<sup>2</sup>, which is almost one-third of the total territory of China (see shrinking townships in Fig. 1.1). These shrinking townships are located in both rural and urban areas.

### 1.3.3 Master Plan Texts and Online Survey

We also gathered additional information for an in-depth understanding of Chinese shrinking cities. Via web crawling for official websites, we collected master plans of 64 cities, which accounted for a large portion of total shrinking cities identified by us. To have a deep understanding of present research conditions of shrinking cities in Chinese planning academia and practice, we conducted an online survey. Most interviewees of our survey were scholars, planners, and planning school students.

## 1.4 Identification and Classification of Shrinking Cities in China

### 1.4.1 Identifying Shrinking Cities

At the first step of this study, we identified shrinking cities during 2000–2010 in China. We referred to SCIRN’s definition of shrinking cities for identification. According to the definition, a shrinking city is a city meeting the following criteria: (1) with having a total population of 10 thousand or more, (2) witnessing the population loss for more than 2 years, and (3) experiencing structural economic crisis (Wiechmann 2007). Considering the fact that we do not have access to the data for describing economic crisis, which is uncommon and even secret in China, we took the former two criteria to identify shrinking cities in China.<sup>2</sup> Using population census at the township level in 2000 and 2010, the population variation between 2000 and 2010 of each city’s proper area (*shi xia qu*) was calculated.<sup>3</sup> Note that we are using the boundaries of city proper, rather than the metropolitan areas (*shi yu*), which include both city proper and counties (if any), of all Chinese cities in 2014 for calculating the population variation within each city proper to avoid the issue of spatial adjustment of city proper in China. The spatial adjustment of city proper makes it not easy to compare the population of a city from the same boundary. Employing fine-scale (e.g., the township level rather county or district level) population data for calculating the population totals within an adjusted city proper boundary during a historical period is a better solution for identifying shrinking cities in China. In addition, since we are using “de facto” population, rather than hukou population, floating population are also accounted in our analysis. Totally, 180 shrinking cities out of all 653 cities were identified, including one provincial capital city, 39 prefectural-level cities, and

<sup>2</sup>As what we have mentioned in Sect. 1.4.3, almost all identified shrinking cities in China have experienced increased economy during 2000–2010. Therefore, it is not feasible to incorporate economy factors into the identification of shrinking cities in China at the current stage.

<sup>3</sup>We admit that the inconsistent between spatial entity of a city and the administrative area of a city (city proper). Generally, a city proper contains several natural cities if we refer to the USA or EU definition on a city. In this paper, we do not challenge the definition of a city in China and still use the administrative-oriented city proper.

140 county-level cities (Fig. 1.1). The whole list of these shrinking cities is available at the website of Beijing City Lab.<sup>4</sup> The identified shrinking cities distribute widely across China and are not limited to a specific region like northeastern China or central China. We find that most shrinking cities are small- to medium-sized cities. The potential causalities of shrinking cities will be discussed in Sect. 1.4.2.

### 1.4.2 *Classifying Shrinking Cities*

For better understanding of the 180 shrinking cities in China, we classified them mainly by two dimensions, cause and spatial patterns. Four types of shrinking cities were identified regarding causes. (1) Resource-based cities that were facing resource depletion or severe devaluation of their main product. For example, Yumen in Gansu Province and many others in Northeast China fell into this pool. These cities generally experienced more drastic shrinkage than others during 2000–2010 and have received extensive attention from the central and local governments. (2) Cities in less-developed areas, which took a large share of shrinking cities in China. Most of these cities are located in mountainous western China where mass population migrated to the eastern coastal China since 1980s, e.g., Sichuan, Guizhou, and Fujian. In the recent years, there are also extensive media reports and journal papers (mainly in Chinese and therefore not cited here) in the recent several years revealing that these migrants are floating back to these cities, which are to be carefully examined by the 2020 population census. (3) Industrial cities which experienced painful economic transition, manifested by high unemployment and social unrest. Leshan in Sichuan Province and Loudi in Guizhou Province are examples. Some cities in southeastern coastal provinces also fall into this category. (4) Shrinking cities due to spatial administrative adjustments like Wuzhong and Guyuan in Ningxia. These cities have annexed more rural areas in the spatial adjustments, and these new areas have experienced population shrinkage during 2000–2010. This thus makes the newly formed cities to fall into shrinking cities. This type of shrinking cities may be termed as “man-made shrinking cities in China.”

Given the spatial pattern, two types of shrinking cities were identified. (1) Reversed doughnut shrinking cities (Fig. 1.2a), which is in contrast to the doughnut shrinking cities in the USA. These cities had experienced population loss in their outskirt areas and population densification in their core areas. Some typical examples were Zhangye, Wuwei, Huai’an, Guang’an, and Suining. (2) The second type is the cities with a homogeneous spatial population shrinkage like Guyuan, Dingxi, and Qingyang (Fig. 1.2b). Perforated shrinking cities, which are common in Europe, did not manifest in China.

Considering that almost all cities in China were not associated with declining economy during 2000–2010, we did not take the economic factors into our consideration of classification.

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<sup>4</sup>For more information, please visit <https://www.beijingcitylab.com/ranking/>.





**Fig. 1.2** Two types of shrinking cities in terms of morphology. *Note* Red denotes population increasing and blue for population decreasing. The grey boundaries are for the city proper

### 1.4.3 *The Unique Characteristics of Shrinking Cities in China*

Chinese shrinking cities have some unique characteristics that are not similar to their counterparts in developed countries. First, China has a large number of shrinking cities, 27.5% of all cities in China. These shrinking cities are located across the whole country. Second, almost all shrinking cities have experienced rapid urban expansion during 2000–2010, which contrast with the depopulation experience and their counterparts in developed countries. Third, the proportion of depopulation of Chinese shrinking cities is much lower than their counterparts in developed countries. A total of 134 shrinking cities in China are associated with less than 10% depopulation loss during 2000–2010. Fourth, most shrinking cities have experienced economic growth during their depopulation process. These cities may fall into the transition areas classified by Wiechmann and Pallagst (2012). Therefore, the four unique characteristics suggest that it is necessary to study shrinking cities in China add to global literature for enriching the related urban theories.

## 1.5 The Paradox of Planning for Shrinking Cities in China

Predominated by the growth-oriented paradigm, pursuing urban expansion and fiscal revenue, as well as economic growth has become the exclusive value of China’s local authorities. Thus, regardless of population loss, Chinese shrinking cities also adopt the growth-oriented paradigm and therefore yield two paradoxes. First, although

keeping losing population, their built-up areas continue expanding. Second, in contrast to the population loss, most shrinking cities' master plans project population growth in the future.

### ***1.5.1 The Institutional Paradox***

After the "reform and opening-up," China's grand marketization transition has triggered a series of subordinate reforms, in which the 1994 tax reform and land marketization have largely contributed to the growth-oriented paradigm. The 1994 tax reform created a large gap between local governments' revenue and expenditure, which subsequently galvanized local authorities' incentives to lease out the urban land. Lin and Yi (2011) have presented the sophisticated context and background of the 1994 tax reform. Before the reform, the central government had to negotiate a "lump-sum" remittance with the local governments annually as "fiscal contract." Before the tax reform, the fast-growing economy was accompanied with a drastic inflation, both of which forced the central government to request more remittance from local governments to fulfill the former's escalating expenditure. However, many local governments resisted such request, and therefore the central government had to compromise with the amount of remittance. Insufficient revenue led to central government's fiscal hardship between the late 1980s and the early 1990s. Aiming to solve this problem, the central government inducted a new tax system named "tax sharing," which separated all Chinese taxes into three categories: central government's tax, local governments' tax, and shared tax. The tax reform eliminated the negotiation process and drastically increased the central government's share in total governmental revenue. According to a World Bank Study (2002, p. 16), the central government's share in total governmental revenue has increased from 22.0% in 1993 to 55.7% in 1994. Nonetheless, the governmental expenditure structure has not been changed. Thus, the new tax system transferred the financial hardship from the central government to local governments. In order to deal with the hardship, local governments have to expand the extra-budgetary funds, including the state-owned land leasing fee, which takes the largest share of its kind (Holzer and Zhang 2004).

On the other hand, during the economic transition, urban land has been gradually commercialized. Although the land marketization process does not change the urban land's state-owned tenure status, it has commercialized its use right by creating "state-owned land leasing system," which subsequently generated a large amount of leasing fee and boosted local economy through emerging developers. Before 1998, local governments transferred most of the state-owned land's use rights to state-owned enterprises through negotiation or administrative allocation, and state-owned enterprises utilized most of the land to provide their employees with welfare housing (Wu 2001). It was not until 1998 when the central government canceled governmental and state-owned enterprises' welfare-housing programs that the urban land leasing market was finally established, and soon the real estate market started booming. The cancelation of welfare housing coincided with China's rapid urbanization growth that

millions of new urbanized residents have switched to the real estate market to seek residence. Booming real estate market successfully attracted large sums of developers to engage in urban land leasing auctions, which have generated massive revenue for local governments and have largely covered the aforementioned gap between local governments' revenue and expenditure. This process has been interpreted as the "second capital circulation" from the Neo-Marxism perspective (Harvey 1978) that the growing fixed asset investment has become the major momentum of local economy.

Moreover, new cadre promotion system becomes another major incentive for China's urban expansion. The grand economic reform has changed the Chinese governmental officials' evaluation criteria from political conformity to a package of new features including good education, good local economic performance, and expertise in the specific sector. Li and Zhou (2005) have demonstrated that local economic performance is the most influential factor for governmental officials' political prospect. Under the fierce competition, municipalities have tried various ways to maximize the local economic growth, among which urban land expansion and its related industries have played an important role. Therefore, a great amount of fiscal revenue, a substantial GDP growth rate, and the bright political prospect come together to induce local governmental officials' obsession on urban land expansion, and to push themselves to engage in the land development process (Lichtenberg and Ding 2009).

However, the government officials' frantic desire for urban land development has to be authorized through the legitimate urban plans. This gives rise to the booming industry of urban planning in China. In contrast to the role of curbing irrational urban development in the Western world, Chinese urban planning has served as the facilitator of urban expansion (Wu 2015). Additionally, threatened by unemployment and salary cut, China's urban planners voluntarily evade from the plan-making process and became the pure executors of governmental officials' decision (Zhang 2002). However, China's legislations confined planners' discretion by requiring a higher level government to approve some important urban plans from a lower level government. Thus, many Chinese urban planners have defined themselves as "technicians", whose job is to specify governmental officials' vision through a series of ostensibly "reasonable" blueprints.

Among multiple urban plans in China, the urban master plan has the largest influence on shaping a city's future urban landscape. It designates a city's future pattern of land use, as well as a city's major economic and political function in the region and the large urban agglomeration. Besides, a city's urban master plan also guides many related plans. For example, according to the Land Use Administration Law, a city's urban master plan guides its overall land use plan, which authorizes the maximum amount of land that a city can develop in the near future (National People's Congress 2004). This also means a city's urban master plan can indirectly determine the annual amount of land that can be converted from agricultural to urban, namely, "land quota," which closely related to the amount of land fiscal and fixed asset investment (Ding 2003). In this respect, China's urban master plan and many other related plans have become the most important media for local authorities to

pursue fiscal revenue, economic growth, and personal gain. Therefore, under local authorities' pressure, even shrinking cities have planned for urban space expansion.

### ***1.5.2 The Technological Paradox***

Although some legislations and regulations have confined planners' discretion, their effectiveness is still at stake under the growth-oriented paradigm. The "Urban Land Use Classification and Planned Built-up Land Standard" normalizes the urban master plan process via mandating that a city's planned built-up area should be closely related to the projected future urban population, which is hovering around 10,000 residents per square kilometer. Under the growth-oriented paradigm, urban planners are in favor of a large number of projected population to justify the exaggerated planned built-up area. However, restrained by the regulation, Chinese planners are facing with a problem about projecting future population in shrinking cities. Fortunately, some Chinese planners have found certain loopholes in the population projection process, which can be utilized to meet both the regulations' standard and local authorities' expectation.

The first loophole is the data problem of population projection. In China, various governmental entities keep releasing differentiated demographic data, in which the "de facto" population and the hukou population are the most common demographic data for planners (Chan 2007). The National Population Census, starting from 1953, is the largest socioeconomic census in China. The Census publicizes data that includes the "de facto" population with the definition that the residents who have lived in an area for more than a half year. The data of "de facto" population has been praised for its accuracy and reliability, whereas many planners criticized that the interval between two censuses (10 years) is too long. In many cases, the census data is out of date when planners are projecting the city's future population. On the other hand, the hukou population means the number of residents who have registered in a specific, exclusive municipality's Public Security Bureau. Therefore, local municipalities can acquire the information of hukou population from the Public Security Bureau at any time. In most cases, a jurisdiction's hukou population is published annually in the jurisdiction's yearbook. In contrast to the long interval of "de facto" population survey, the data of hukou population can be more up-to-date on planners' request. However, a large amount of "floating population" impairs the hukou population data's accuracy. In China, large and megacities establish a very high threshold for newcomers to migrate their hukou from former residence to current residence (Chan and Zhang 1999). Those newcomers who cannot reach the threshold thus become the "floating population," since their hukous are not in the same place as themselves. China's grand urbanization process has created a binary opposition that prosperous cities and shrinking cities have differentiated discrepancies between hukou population and "de facto" population, respectively. Most prosperous cities have a great amount of "floating population" that their "de facto" population exceeds the hukou population a lot. In contrast, many shrinking cities' former residents have

migrated to elsewhere while their hukous remain there, thus these cities' hukou population exceeds their "de facto" population a lot. Although the "Urban Land Use Classification and Planned Built-up Land Standard" has stipulated that the projected population should be "de facto" population, it does not stipulate the base population for projection. Therefore, some shrinking cities' planners adopted the hukou population as base population for projection, since it is more up-to-date, and more importantly, it is larger than the "de facto" population.

The second and more problematic loophole lays in the mismatch between the demographic data boundary and the planned built-up area boundary within a city's urban master plan. The demographic data boundary is consistent with the jurisdictional boundary, while the built-up area boundary usually differs a lot with any jurisdictional boundaries. According to the Urban and Rural Planning Law (2007) and Measures for Formulating City Planning (2005), all urban and rural plans are only eligible within the "planned area," which is a combination of the planned built-up area and some other crucial areas that require planning control. Regarding urban master plan, its major "planned area" is the future "central urban area," which is usually consisted of the current "central urban area" and a buffer zone that is designated as the urban expansion area. However, in most cases, neither the current "central urban area" nor the future "central urban area" matches with any jurisdictional boundaries, and thus planners have to estimate the number of residents that live within the two boundaries.

Because of these loopholes, it is very difficult for the higher level government authorities to check the correctness of population projection within the lower level government's urban master plan. In addition, the population projection is problematic not only with the base population data but also with the projection method. In the urban master plan, the land use layout is the most pivotal part that presents the planned built-up area and relates to the aforementioned local fiscal revenue and economic growth. Therefore, the growth-oriented paradigm generates another paradigm, effectively the blueprint-oriented paradigm, in which local authorities and planners prioritize the land use layout as the foremost section within an urban master plan. Thus, although the "Urban Land Use Classification and Planned Built-up Land Standard" commands planners to project the future population before to calculate the area of future "central urban area" according to the number of projected future population, the actual process is usually the opposite that planners use the planned built-up area to back calculate the future population. Afterward, in order to justify the back-calculated population data, planners use a variety of population projection methods that offer a broad range of interval to include the back-calculated population data. In some cases, in order to enlarge the base population for projection and to make the future of over-exaggerated population more justifiable, local governments would submit applications to upper level governments for annexing their contiguous districts and towns.

Moreover, the growth-oriented paradigm has incurred another two problems in shrinking cities' population projection process. First, how to deal with the exaggerated population projection in a shrinking city's former urban master plan. According to the Measures for Formulating City Planning (2005), planners should evaluate

the former urban master plan before making a new one. In most cases, because of the growth-oriented paradigm, planners will find out that a shrinking city's current population is less than the over-exaggerated population projection in the shrinking city's former urban master plan. Meanwhile, they will also find out that a shrinking city's current built-up area has reached or even surpassed the planned built-up area in the shrinking city's former urban master plan. Similar to their precedents, planners have to make a more exaggerated population projection to justify a larger planned built-up area in the new urban master plan for a shrinking city. Therefore, the growth-oriented paradigm has created an incremental fallacy in projecting shrinking cities' population that the discrepancy between real population and projected population is keeping enlarging. Second, how to deal with the exaggerated population projection in the upper level plans. According to the Measures for Formulating City Planning (2005), a city's urban master plan should rely on the upper level plans, including the national urban system plan and corresponding provincial urban system plan. However, under the growth-oriented paradigm, many provincial urban system plans have also projected over-exaggerated population for their subordinate cities. Therefore, under China's top-down governance regime and planning system, the over-exaggerated projected population has trickled down from provincial-level jurisdictions, to prefectural-level jurisdictions, to county-level jurisdictions, and even further to townships.

### ***1.5.3 The Vicus Circle***

In conclusion, China's growth-oriented paradigm has created a vicious cycle (Fig. 1.3) that enlarges the mismatches of the two interrelated paradoxes: shrinking population and growing urban built-up areas; and shrinking population and increasing population in the projection. The huge amounts of fiscal revenue from urban land leasing, as well as subsequent large amounts of fixed asset investment and GDP growth, have induced local authorities to maximize a city's future urban built-up area to pursue their own gain, e.g., a larger possibility of promotion. However, restrained by legislations and regulations, local authorities' pursuit of urban growth has to be released by urban plans and planners. Therefore, in contrast to the self-proclaimed market economy status, planning in China is still largely led by administrative mandate. Local authorities not only initiate the planning process but also supervise the process. Although urban planners are supposed to be the chief creators of urban plans, their actual roles are downgraded to the local authorities' command executors. Though it has been restrained by several regulations and legislations, because of its close relationship with the planned built-up area, the population projection process within a city's urban master plan has been deteriorated and becomes a pathetic media for urban planners to achieve local authorities' over-exaggerated urban visions. Using multiple problematic and vague methods, urban planners enlarge the result of population projection to justify the over-exaggerated

**Fig. 1.3** The vicious cycle of urban planning in China



future urban built-up area, which has been designated by planners and local authorities in advance. Finally, triggered by local authorities’ magnificent urban vision, the vicious cycle keeps pushing shrinking cities into the downward spiral and enlarging the aforementioned mismatches.

## 1.6 Discussion

### 1.6.1 Shrinking Cities in China’s Growing Context

Overshadowed by the high-speed growth rate, Chinese shrinking cities are underrepresented, understudied, and underreported in the academia. This study has offered the academia with a new perspective into an unexplored territory of shrinking cities. Echoing Hollander (2011)’s study on shrinking cities in the US Sunbelt, this study has also revealed the unexpected phenomenon of shrinking cities in the similar fast-growing China and most of its urban agglomerations. At the national scale, both fast-growing urban agglomerations and shrinking urban agglomerations can be observed, while at the regional scale, shrinking cities and growing cities are coexisting in most of the China’s urban agglomerations. Moreover, similar to the diverged population development scenarios of Chinese cities, heterogeneity also exists within Chinese shrinking cities. Resource-depleted cities, underdeveloped cities, deindustrialized cities, and administrative division adjusted cities are all subjected to urban shrinkage. The diversified causalities of Chinese shrinking cities offer the academia more abundant research objects to explore and to compare with their counterparts in and beyond the Western world.

### ***1.6.2 China's Growth-Oriented Paradigm***

The growth-oriented paradigm is an important platform to bridge the different contexts between Chinese shrinking cities and their Western world's counterparts. Triggered by the cadre promotion system, Chinese local authorities utilize the urban land leasing and development process to maximize their personal gains, which also pushes forward the "urban growth machine." Similar to Western world's urban regime that population growth is a critical benchmark for measuring the success of local authorities (Wiechmann and Pallagst 2012), urban shrinkage and economic decline are the two worst realities for Chinese local authorities and thus become stigmatized political taboos. The growth-oriented paradigm brings forward some specific problems in China's shrinking cities. One of the biggest differences in land development between China and most western countries lays in the land tenure system. China's state ownership of urban land excludes the property tax, which constitutes a major section of municipal revenue in the US and some other western nations. In contrast to the fact that American shrinking cities can accrue property tax as a major local fiscal revenue, China's shrinking cities stop spatial expansion, they will lose urban land leasing fee and related fixed investment, while no substitutions have been invented to compensate for that loss. Therefore, shrinking cities' mismatch between spatial growth and demographical shrinkage is keeping enlarging in China. On the other hand, Chinese planning and land development system remain a highly top-down paradigm that administrative orders overwhelm property market's role in restraining irrational momentum of urban expansion in dilapidated property market areas. Therefore, some shrinking cities' spatial manifestations, like urban vacancy and decreasing urban infrastructure efficiency, are emerging and becoming more conspicuous in Chinese shrinking cities than their counterparts who have same depopulation ratio in the Western world.

Appealing for a paradigm shift is a common pursuit of international shrinking cities scholars. For Chinese shrinking cities, the paradigm shift cannot be achieved without a top-down institutional reform. Tax reform, land leasing reform, property tax reform, and many other reforms that have relationship with the land development and planning system are still underway of China's grand socioeconomic transition. However, because of Chinese immature regime system, many remaining problems, including property rights, land tenure system, central-local relations, and potential stakeholders' conflicts, have impeded the further reforms and are worth of furthering studies.

## **1.7 Conclusion**

In this paper, we have illustrated the overall picture of shrinking cities in China by identifying 180 shrinking cities among all 653 Chinese cities. These shrinking cities are further categorized into two sets of categories from different perspectives.



China's shrinking cities exhibited specific characteristics like large quantity, rapid urban expansion, inconspicuous depopulation level, and growing economic indicators. Compared with their counterparts in the developed countries, these unique characteristics of Chinese shrinking cities suggest the deficiency of corresponding studies. China's growth-oriented paradigm and related regime have created the aforementioned institutional paradox and technological paradox, which are very challenging to be reformed. Regarding Chinese shrinking cities' complicated situations and understudied status, we expect future research should reveal the specificities of different causalities and manifestations of China's shrinking cities from a finer spatial scale. Transnational comparisons between Chinese shrinking cities and foreign shrinking cities are also needed to help scholars to better understand the unique situation of Chinese shrinking cities and provide worthwhile strategies to reform Chinese planning and land development system. We also suggest experimental planning strategies to be applied to Chinese shrinking cities and subsequent evaluation of these strategies. In sum, China's shrinking cities are far from enough studies and corresponding strategies, and more efforts are needed to be done.

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