China's rapid urban ascent: an examination into the components of urban growth

Kyle Farrell & Hans Westlund

Published online: 24 May 2018.

Submit your article to this journal ⬀

Article views: 174

View Crossmark data ⬀

China's rapid urban ascent: an examination into the components of urban growth

Kyle Farrell[a,b] and Hans Westlund[a,c]

[a]Urban and Regional Studies, Department of Urban Planning and Environment, KTH Royal Institute of Technology, Stockholm, Sweden; [b]Department of Economics, Harvard University, Cambridge, MA, USA; [c]Jönköping International Business School, Jönköping, Sweden

ABSTRACT

Having gone from 11.8% of its population inhabiting urban areas in 1950 to 49.2% by 2010, China represents the most dramatic urban transformation the world has seen. With the contemporary urban narrative presenting new challenges, particularly in terms of its unprecedented pace and scale, this paper conducts an inquiry into the nature and causes of China's rapid urban ascent. Making use of a new analytical framework, this paper maps out the changing stages of China's urban transition and examines the components of urban growth underpinning it. It arrives at several notable findings. Rural to urban migration has been the dominant component of urban growth, followed by urban natural population increase and reclassification. Although China's urban growth rates were high, it is the reduction in rural growth rates that underpinned China's particularly rapid urbanization rates. China is currently in the latter part of the accelerated stage of its urban transition, and is expected to enter the terminal stage by 2030. In light of China's ongoing urban transition, this paper concludes with reflections on China's *New-Type Urbanization Plan 2014–2020*.

1. Introduction

The urban transition, a process involving the reorganization of the population from a predominantly rural one to a predominantly urban one, is one of the defining features of modernization. In the case of *early-urbanizers*, such as those countries in Europe and the United States, the onset of the urban transition began around the end of the eighteenth century, and had largely completed by the middle of the twentieth century. Whereas, for those countries deemed *late-urbanizers*, which today is primarily confined to countries in Africa and Asia, the history is much more recent. In 1950, the majority of these countries were predominantly rural, with subsistence farming as the primary mode of production.

However, today, many of these economies have undergone structural transformations prompting a shift in population to urban areas.

No country better exemplifies the contemporary urban narrative than China. Between 1950 and 2010, China added more than 605 million inhabitants to its urban areas, increasing its level of urbanization from 11.8% to 49.2% (UN 2014). This characterizes the most dramatic urban transformation the world has seen. One of the defining features that differentiate China's recent experience from that of its predecessors is its sheer magnitude. In an attempt to identify the factors giving rise to its unprecedented pace and scale, this paper maps out the changing stages of China's urban transition and examines the components of urban growth underpinning it. Ultimately, this paper seeks to unravel the dynamics behind China's rapid urban ascent.

Utilizing a multidisciplinary framework as the primary mode of inquiry, this paper systematically investigates a range of material comprising demographic, economic and political indicators. Most notably, it examines a macro-level dataset of urban and rural populations compiled by the United Nations (2014) and micro-level datasets of officially designated cities from China's previous census counts. This paper arrives at several notable findings. Firstly, China's urban transition follows the often-observed attenuated S-shaped curve, with the initial stage having unfolded between 1950 and 1980, the accelerated stage (which is currently more than halfway complete) from 1980 to 2030, and the final terminal stage expected to set-in around 2030. Secondly, rural to urban migration has been the dominant component of urban growth, representing an estimated 50% of the overall urban increment between 1950 and 2010; followed by urban natural population increase (26%) and reclassification (24%). Thirdly, although urban growth rates were comparatively high, it is the reduction in rural growth rates that allowed China to achieve particularly rapid urbanization rates. In a more generalized sense, this seems to infer that the onset of rapid urbanization likely occurs when rural population growth stagnates and begins to decline. In light of these findings, this paper concludes with reflections on China's *New Type Urbanization Plan 2014–2020*.

The remainder of this paper is structured as follows: Section 2 provides a note on materials and methods; Section 3 offers some contextual insight into China's urban transition; Section 4 investigates the components of urban growth; Section 5 discusses the findings; followed by a brief reflection on policy in Section 6 before concluding.

2. Notes of caution, materials and methods

A common oversight among the urban studies discourse is a failure to distinguish between the concepts of *urbanization* and *urban growth*. These terms differ in that urbanization is a measure that reflects an increase in the proportion or share of the population residing in urban areas as opposed to rural areas, whereas urban growth is a measure that reflects an increase in the absolute number of urban inhabitants (Davis 1965; Brockerhoff 2000; Zhang, LeGates, and Zhao 2016). In most instances, these processes occur simultaneously, however, in some cases urban growth has been known to occur absent of urbanization (Fox and Goodfellow 2016). Both measures are a reflection of the contributions of the *components of urban growth*: rural to urban migration, urban natural population increase and reclassification of rural areas as urban (Rogers and Williamson 1982; Kasarda and Crenshaw 1991; United Nations 2001; Cohen 2004).

In recent years, the widespread availability of data has made it easier to investigate the dynamics underpinning urbanization and urban growth. The most comprehensive database of its kind is the *United Nations World Urbanization Prospects (2014)*, consisting of national accounts of all urban and rural areas, and detailed records of urban agglomerations greater than 300,000 inhabitants. The data has been standardized across consistent 10-year intervals, comprising retroactively adjusted census records dating back to 1950; and furthermore, offering future projections to 2050. Although such databases have made research in this area much more accessible, one needs to be aware of the accompanied limitations. Despite there being a tendency to treat measures of urbanization and urban growth as universal indicators, the lack of a common definition becomes a concern when it comes to the comparability of data across countries and throughout different periods in time.

In the case of China, criteria have varied considerably among different census periods (see Ma and Cui 1987; Chan, Henderson, and Tsui 2003; Yixing and Ma 2003). According to the *First Census (1953)*, there was no official criterion for denoting urban areas, with provinces, prefectures and counties reporting based on individual definitions. This problem of inconsistency was eventually addressed by the *Second Census (1964)*, which established strict criteria based on the household registration system (hukou system). According to Chan (1994), statistics during this period likely underestimated the actual figure, as residents holding a rural hukou also inhabited urban areas. To address this shortfall, the *Third Census (1982)* opted to include all individuals living in urban areas (counting both urban and rural hukou). Accuracy during the *Fourth Census (1990)* was more difficult to judge, as the introduction of arbitrary criteria resulted in a situation in which some districts were included as urban but not in the case of others. To further complicate matters, density criterion was introduced in the *Fifth Census (2000)*. Only those districts with a population density greater than 1500 persons per square kilometer were deemed urban. In the *Sixth (2010)* and most recent census, the density criteria were repealed and lower level administrative units were used to define urban areas. Standardization accompanied this census, and today most city statistics reflect urbanized area as opposed to city proper or metropolitan area (Qin and Zhang 2014). Although these differences tend to further complicate the matter, such discrepancies have not discouraged researchers and analysts from comparing urban trends over time. It has, however, underscored the need for caution when making comparative estimates and interpreting findings.

With these caveats in mind, this paper examines the *United Nations World Urbanization Prospects database* (2014) and the more detailed National Bureau of Statistics Census Data (1953, 1982, 1990, 2000 and 2010) made available by the *China Data Center at the University of Michigan*, to conduct an inquiry into the nature and causes of China's rapid urban transition between 1950 and 2010. To mitigate any shortfalls, however, we compare the general trends of the data with well-known trends that have been observed throughout history. Despite the noted limitations, periods such as the Great Leap Forward, the Cultural Revolution and opening-up reforms, as well as observable policy measures such as the county-to-city upgrading policy, were all clearly reflected in the data. This is an indication that any shortfalls in the data are not of the magnitude that they contradict what is already known about China's population trends and their determinants. Additionally, we also turned to auxiliary data to support the outputs of

the decomposition of the components of urban growth. The estimates of urban natural population increase, rural to urban migration and reclassification of rural areas as urban generally correspond with the changes in birth and death rates, urban–rural income ratios and increases in the number of cities, respectively.

This paper employs a number of demographic accounting techniques; most notably, it applies the *National Growth Rate Method* to decompose the components of urban growth (Siegel and Swanson 2004). Particular attention has been directed to the post-reform period (1978–present) consisting of Deng Xiaoping's four modernizations: the 1978 initiation of industrialization and the onset of urbanization, the 1990s opening of the country, and the 2000s relaxing of restrictions on migration (Swerts 2017).

3. A history of urban China and stylized trends

The history of China is immense, spanning dynasties that both unified and divided the country over millennia. However, the history of contemporary China can largely be divided between the pre-reform era (1949–1978) and the post-reform era (1978–present). One of the most noticeable features distinguishing these periods is the extent of urbanization. This section provides a brief historical account of China's urban transition during these periods followed by some stylized trends.

3.1. Pre-reform China (1949–1978)

The Chinese Revolution that unfolded in 1949 began as a rural movement that rejected the serving Nationalist Party, eventually expelling the former government and establishing the People's Republic of China (PRC) led by Mao Zedong, Chairman of the Communist Party (Kirkby 1985; Chan 1994; Chow 2002; Ma 2002). The onset of China's urban transition during the pre-reform era can be found in China's *First Five-Year Plan* (1952–1957). According to Ma (2002), this was centered on post-war reconstruction and the Soviet model of urban industrialization, which was characterized by the development of city-based industries. Thus, the role of the city during this time was to serve as engines of industrial production; with little to no emphasis placed on leisure or consumption (Ofer 1976; Kwok 2002; Lin 2002). Having grown impatient with China's late effort to industrialize, Chairman Mao initiated what he referred to as the *Great Leap Forward* (1958–1962), a tragic campaign aimed at transforming China from an agrarian society to an industrial one (Banister 1997; Friedmann 2005). Through establishing production targets for heavy industry, this policy was designed to enhance the effectiveness of China's *First Five-Year Plan* and function as a catalyst for accelerated industrialization (Zhou and Ma 2000). During this time, the entire nation was mobilized to achieve improbable targets in the sectors of iron and steel production. Although remnants of a population registration system existed since the founding of the PRC in 1949, it had not yet been used to restrict rural to urban migration and thus cities experienced a sharp increase in population (Zhang, LeGates, and Zhao 2016).

Following the *First Five-Year Plan* and the *Great Leap Forward*, periods of political instability thwarted industrial production and construction, bringing the development of the entire nation to a standstill (Liu, Li, and Zhang 2003; Yeh, Xu, and Liu 2011). Most devastating was the effects of the *Cultural Revolution*, in which "26 million rural migrants

were sent back to the countryside, and some 17 million urban youth were forced to go 'up to the mountains and down to the countryside' to be rusticated and re-educated by the peasants" (Ma 2002, 1550). During this time, the process of urbanization had nearly halted entirely. The period from 1966–1976 is often referred to today as the *lost decade*.

3.2. Post-reform China (1978–present)

It was not until the death of Chairman Mao in 1976 and the reforms ushered in by Deng Xiaoping in 1978 that paved the way for a sustained period of economic growth and a steady rise in urbanization (Ma 2002; Chow 2002; Ren 2013; Chauvin et al. 2017). According to Naughton (1995), during this time, China cautiously adopted a strategy of disarticulation, which involved the strategic separation of specific sections of the national economy from the planned economy. Tactical reforms giving way to market mechanisms in the form of land, labor capital and technology set the stage for China's economic miracle (Banister 1997; Yeh, Xu, and Liu 2011). The most significant of which was the *household contract responsibility system*, introduced in 1978, providing farmers autonomy in production and management decisions (Yang 1996; Zhang, LeGates, and Zhao 2016). Other major reforms came in the form of *decentralization* of decision-making capabilities during the 1980s, providing local governments with more freedom (Wong 1991; Zhu 1999); the establishment of *town and village enterprises*, which were designed to promote industrial activities and provide access to urban amenities in rural areas (Friedmann 2005; Zhu 2014); a series of *hukou reforms* throughout the 1980s and 1990s, which relaxed restrictions and permitted the freer movement of people (Pannell 2002; Liu, Li, and Zhang 2003); and, the establishment of *manufacturing cities* and *special economic zones* in coastal cities during the 1990s and 2000s, to attract foreign direct investment (Friedmann 2005). Collectively, these efforts helped to pave the way for China's rapid urban ascent.

3.3. Stylized facts about China's urban transition

A defining feature of China's urban narrative is the unprecedented pace and scale to which it unfolded. Taking advantage of the long time horizon and the consistent intervals offered by the United Nations database (2014), Tables 1 and 2 provide a detailed account of the

Table 1. Urban and rural population trends, 1950–2050.

Year	Total population (Thousands)	Rural population (Thousands)	Urban population (Thousands)	Urbanization Level (Percent)
1950	543,776	479,596	64,180	11.8
1960	650,681	545,254	105,427	16.2
1970	814,378	672,676	141,702	17.4
1980	984,016	793,533	190,483	19.4
1990	1,165,429	857,262	308,167	26.4
2000	1,280,428	821,045	459,383	35.9
2010	1,359,821	690,435	669,386	49.2
2020	1,432,867	558,440	874,427	61
2030	1,453,297	454,372	998,925	68.7
2040	1,435,499	391,104	1,044,395	72.8
2050	1,384,977	335,029	1,049,948	75.8

Source: United Nations (2014).

Table 2. Urban and Rural Population Growth Rates and Speed of Urbanization, 1950–2050.

Decade	Annual rate of growth of rural population (%)	Speed of urban growth and urbanization	
		Annual rate of growth of urban population (%)	Urban–rural annual growth differentials (%)
1950–1960	1.29	5.17	3.88
1960–1970	2.12	3	0.88
1970–1980	1.66	3	1.34
1980–1990	0.77	4.98	4.21
1990–2000	−0.4	4.11	4.51
2000–2010	−1.75	3.86	5.61
2010–2020	−2.14	2.7	4.84
2020–2030	−2.08	1.34	3.42
2030–2040	−1.51	0.45	1.96
2040–2050	−1.55	0.05	1.6

Source: United Nations (2014). Author's own calculations.

changing magnitude of China's urban transition. The timeline provides both a historical overview dating back to 1950 and future projections to 2050.

According to Table 1, between 1950 and 1980, which roughly aligns with the pre-reform era, China added 126 million inhabitants to its urban population; experiencing a rise in the level of urbanization from 11.8% to 19.4%. Although vast in terms of the absolute number of people (urban growth), this represented a rather marginal increase of only 7.6 percentage points between these two periods (urbanization). This is in stark contrast to the post-reform era (roughly 1980–2010 in Table 1), in which China added approximately 478 million inhabitants to its urban population; representing a 29.8 percentage point increase in the level of urbanization. Remarkably, China's urban population during the post-reform era grew by nearly four times the amount achieved in the pre-reform era. If the United Nations projections are accurate, China is expected to add an additional 380 million inhabitants to its urban areas between 2010 and 2050, raising the level of urbanization from 49.2% to 75.8%.

Another remarkable feature of China's urban narrative is the speed at which the urban transition unfolded. There are a number of techniques for measuring the speed/ tempo of the urban transition; however, the ones most commonly used by the United Nations are the *annual urban growth rate* and the *urban–rural growth differentials*. The annual urban growth rate indicates the rate of increase in the absolute number of urban dwellers, providing an indication of the speed of urban growth, whereas urban–rural growth differentials measure the rate of increase of both the urban population and the rural population, providing an indication of the speed of urbanization (United Nations 1974). Table 2 depicts the changes in the annual rate of rural growth, the annual rate of urban growth and the urban–rural annual growth differentials between 1950 and 2050.

According to the data in Table 2, at the onset of the pre-reform era, both the annual urban growth rate and the urban–rural annual growth differential were comparatively high. This was followed by a significant decline in the urban growth rate and a simultaneous increase in the rural growth rate in the aftermath of the Great Leap Forward and the Cultural Revolution. Subsequently, this resulted in a rather low urban–rural annual growth differential of 0.88%. The trend of declining rural growth rates persisted, with little change in urban growth rates over the course of the 1970s. However, following the opening-up reforms of 1978, China began to experience a radical transformation

affecting the spatial composition of its population. During the 1980s, urban growth rates experienced a record high of 4.98%. This coincided with the continued decline of rural growth rates; more than halving (0.77%) between 1980 and 1990. This gave rise to a period of particularly rapid urbanization (4.21%). A number of the policy reforms highlighted above resulted in further restructuring of the spatial economy, setting the stage for a period of unprecedented urbanization. The last decade of the twentieth century and the first decade of the twenty-first century, would thus be characterized by negative rural growth rates, accompanied by high (albeit declining) urban growth rates; 4.11 and 3.86, respectively. Average urban–rural annual growth differentials would peak at 5.61% during the first decade of the twenty-first century, marking the middle of what is projected to be a 50-year period of rapid urbanization. According to the forecasts in Table 2, by 2030 all measures of growth are expected to slow, signaling the end of China's period of particularly rapid urbanization.

4. Analysis of the urban transition in China

The aforementioned overview of the urban trends in China illustrates its tumultuous past, the onset of its rapid economic transformation since the beginning of reforms in 1978 and some subtle insights into its future trajectory. That being said, such an overview, which is not uncommon among the literature, continues to fall short of capturing the detailed complexity of China's urban transition. Data and methodological limitations are often cited as the main obstacle to providing a more comprehensive account of the urban transition; however, a tendency among researchers to work within the confines of their discipline is another element inhibiting a more detailed understanding of the urban transition (Farrell 2017). An overview of the literature on China demonstrates that the components of urban growth are often dealt with individually; with economic explanations viewing rural to urban migration as a response to rural–urban wage differentials (Wang, Maruyama, and Kikuchi 2000; Zhao 2005) and demographic explanations viewing natural population increase through changes in birth and death rates (Feng 2011). Furthermore, Zhang, LeGates, and Zhao (2016) notes that much of today's research on China's urbanization fails to acknowledge that a sizeable portion of the increase in urban population since the 1980s is a result of changes in administrative divisions. This has created a situation in which the components of urban growth have become polarized within their respective disciplines, preventing a more holistic account of China's rapid urban ascent. In an attempt to fill this void, a recent paper by Farrell (2017) put forward a multidisciplinary framework that uses the components of urban growth as the primary mode of analysis. Figure 1 illustrates this conceptualization.

According to the conceptual framework noted above, *urban natural population increase*, which is considered a demographic factor, is understood through changes in fertility and mortality patterns; *rural to urban migration*, which is considered an economic factor, is understood through urban pull and rural push dynamics; and, finally, *reclassification of rural areas as urban*, which is considered a political/administrative factor, occurs through the annexation of small settlements by larger ones, rural areas upgraded as urban, changes in urban definitions, and settlements crossing urban population thresholds. Another element of this framework is the indirect contributions stemming from the mutual interaction among the components of urban growth. An example of this can be
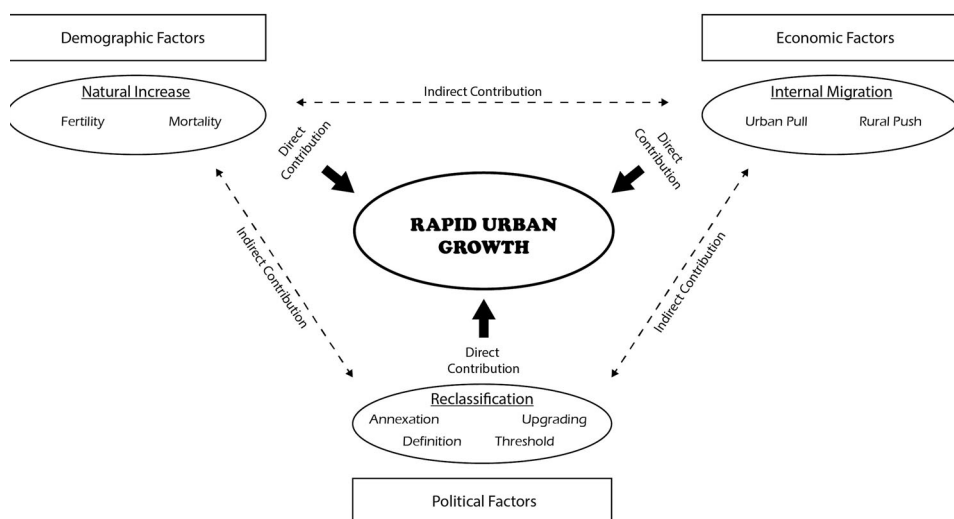
Figure 1. Rapid urban growth triad. Source: Farrell (2017).

seen in young female migrants, in which those of childbearing age carry the potential to have both direct and indirect contributions: direct in that rural to urban migration increases the overall urban increment and indirect through impending births that contribute to future urban natural population increase. Although important, due to a lack of available data, the indirect contributions are outside the purview of this paper.

Ultimately, this framework strives to go beyond the common descriptive overview of the urban transition, like the one noted above, and instead seeks a more nuanced understanding of the urban transition. In doing so, it takes into consideration the unique economic and political circumstances particular to a China case study, noting subtleties that go beyond the scope of the framework. Stemming from this, we now turn to the analysis to see what it reveals about China's urban transition over the past 60 years.

4.1. Decomposition of the components of urban growth

Without accurate tallies of births and deaths by sector, urban in/out-migration and documented records of urban areas that have been reclassified and declassified, governments are unable to accurately know the contributing factors underpinning the urban transition in their countries. Consequently, attempts to manage this process become misguided. Where such data is not available, as is the case in China, demographic accounting techniques can be used to indirectly estimate measures of migration or population growth. From this, a decomposition of the components of urban growth can be derived.

This paper applies the national growth rate method, which is considered to be a crude but common method for estimating rural to urban migration in circumstances where data is not ideal for more accurate techniques (Shryock, Siegel, and Larmon 1971; Siegel and Swanson 2004; Rahman 2013). The formula can be applied as follows:

$$mi = \{[(P_i^1 - P_i^0)/P_i^0] - [(P_t^1 - P_t^0)/P_t^0]\} * k,$$

where, P_t^0 and P_t^1 present the national population at the beginning and end of the inter-censal period, respectively, with P_i^0 and P_i^1 presenting the urban population at the beginning and end of the period; k presents a constant such as 100 or 1000. This yields an estimate of the urban increment attributed to internal migration and reclassification (mi), with the remainder being credited to urban natural population increase. By separately adding up the population of areas reclassified as urban (minus declassified areas), one then arrives at a figure that can be deducted from the migration residual to achieve individual contributions of each.

This method is based on two assumptions. The first of which assumes that there is zero net international migration within the country (Rahman 2013). In the case of China, this is not expected to be a concern given their historically low levels of net international migration, which has averaged −0.19 per thousand during the post-reform era (United Nations 2013). The second assumption is that it treats the rates of natural increase the same across the country (Siegel and Swanson 2004). To further distinguish among different areas, vital statistics for urban and rural populations are required. Unfortunately, in the case of China, such data is not available.

The results from Table 3 suggest that rural to urban migration has been the dominant component of urban growth between 1950 and 2010; accounting for approximately 50% of the overall urban increment. This was followed by urban natural increase representing approximately 26% and reclassification of rural areas estimated at 24%. Although these figures should not be treated definitively, they are useful in providing an indication of the trends unfolding in China over this 60-year period. It is interesting to note that the contribution of urban natural increase has experienced a steady decline since the pre-reform era, whereas, aside from a brief period during the 1980s, rural to urban migration has been on the rise. Reclassification, on the other hand, has been variable, reaching its peak in the decade between 1980 and 1990. To validate these findings and gain further insights into China's urban transition, the remainder of this section examines each of the individual components of urban growth in greater detail.

4.2. Urban natural population increase

Natural population increase is best understood through the *demographic transition model*. This model illustrates how a country goes from a state of stagnated population growth characterized by high death and high birth rates, on to a state of rapid population growth characterized by low death and high birth rates, to a final state where growth is limited due to low death and low birth rates (Thompson 1929; Dyson 2011). Whereas many developing countries today have experienced significant success in bringing down mortality rates, fertility rates for one reason or another have tended to remain high. China, on the other hand, has experienced significant reductions in both indicators earning itself a reputation as a "demographic overachiever" (Feng 2011). Evidence of this can be seen in Table 4, which denotes changes in births, deaths and the overall rate of natural increase between 1950 and 2010.

Having gone from a rate of natural increase of 19 per 1000 individuals in 1950 to less than 5 by 2010, China's demographic transition has been a remarkable one. The significant reduction in death rates can largely be attributed to concerted efforts on behalf of the government to provide widespread access to public health services; particularly for

Table 3. Contribution of the components of urban growth.

Components	Thousands				Percent distribution				
	1950–1980	1980–1990	1990–2000	2000–2010	1950–1980	1980–1990	1990–2000	2000–2010	1950–2010
Urban Natural Increase	51,854	33,871	31,031	26,250	41	29	21	12	26
Rural–Urban Migration	48,024	25,623	84,745	177,483	38	22	56	85	50
Reclassification of Rural Areas as Urban	26,425	58,190	35,440	6,270	21	49	23	3	24
Urban Increment	126,303	117,684	151,216	210,003	100	100	100	100	100

Source: Data to compute urban natural population increase and rural to urban migration is taken from United Nations (2014); whereas, data to compute reclassification is based on primary and secondary data from the National Bureau of Statistics Census Data (1953, 1982, 1990, 2000 and 2010). Census years apply to nearest decade in Table 3 above.

Notes: Measures of reclassification are based on newly added/subtracted cities and estimates taken from the following sources: *1950–1980*: calculated from 1953 census data from Shabad (1959) and 1982 census data provided by the China Data Center, University of Michigan (2017); *1980–1990* and *1990–2000*: figures taken from Zhang, LeGates, and Zhao (2016), originally published in Chinese in Zhang (2010); *2000–2010*: calculated from 2000 and 2010 census data made available by Thomas Brinkhoff: City Population (2018), http://www.citypopulation.de. Data last accessed on January 7, 2018.

those in hard to reach areas. Examples of this can be seen in a number of state-sponsored initiatives: targeted poverty reduction and food redistribution programs, increased access to public healthcare and immunization, wider accessibility of medical provision through barefoot doctors, and education and information outreach programs (Riley 2004; Feng 2011; Zhao, Chen, and Jin 2016). On the other hand, periods of political instability have at times reversed such trends. This can be seen in the spike in death rates during the 1960s, which primarily coincides with the tragedies surrounding the Great Leap Forward. This event is believed to have resulted in the death of more than 30 million people (Riley 2004).

In terms of fertility rates, a national birth campaign under the slogan "later [marriage], longer [birth intervals], fewer [births]" and the infamous *one-child policy* have had lasting effects on the fertility of the country (Feng 2011, 178). Although China experienced significant reductions in birth rates between 1950 and 2010, upward fluctuations during the 1970s (33.43 births per 1000 individuals) and the 1990s (21.06 births per 1000 individuals) have been attributed to reprisals stemming from the strict population controls and government campaigns aimed at deterring early marriage (Feng 2011). Contrary to popular belief, the impact of the one-child policy is perhaps less significant than assumed. A number of studies have pointed out that the onset of fertility decline preceded the rolling out of the controversial one-child policy in 1979 (Riley 2004; Cai 2010). Other

Table 4. Births, deaths and rates of natural increase per 1000 Persons, 1950–2010.

Decade	Birth rate (per 1000)	Death rate (per 1000)	Rate of natural increase (per 1000)
1950	37.00	18.00	19.00
1960	20.86	25.43	−4.57
1970	33.43	7.6	25.83
1980	18.21	6.34	11.87
1990	21.06	6.67	14.39
2000	14.03	6.45	7.58
2010	11.9	7.11	4.79

Source: Data for 1960–2010 is taken from the World Bank (2017); last accessed October 29, 2017. Data for 1950 is taken from Feng (2011).

studies have noted that in areas where the one-child policy was not enforced, fertility rates have also dropped below replacement levels, and among those permitted to have more than one child, the majority of families favor having just one, citing economic considerations as the primary reason (Gu and Wang 2009; Zheng et al. 2009). This goes to show that although the government has taken a lead in bringing down rates of natural increase, other forces may also be at play – sociodemographic, economic and cultural factors to name a few (see Coale and Freedman 1993; Riley 2004; Cai 2010). Nevertheless, China's progress in both these areas has been greatly influenced by the unique powers of the state in its ability to quickly roll out and enforce major policy reforms.

4.3. Rural to urban migration

Migration, according to the *Lewis Dual Sector model*, occurs as a response to income disparities between sectors and continues until incomes are eventually equalized (Lewis 1954). Given that wages are often higher in urban areas, this creates strong economic pull factors, attracting migrants from the countryside. In the case of China, despite income disparities between urban and rural areas during the pre-reform era, migration at this time was limited. This is because policies had been established to restrict the free movement of people. The most famous of which was the *hukou system*. Established in 1955 as an administrative mechanism to distinguish the *agricultural population* (rural) from the *non-agricultural* population (urban), the hukou system was originally designed to monitor (as opposed to control) the movement of the population (Chan and Zhang 1999; Liu, Li, and Zhang 2003). Under such conditions, the non-agricultural population was given a lifetime employment guarantee in urban areas, and extended benefits in the form of subsidies pertaining to housing, food, healthcare, pensions and education (Solinger 1999; Zhang, LeGates, and Zhao 2016). Those that comprised the agricultural population on the other hand, belonged to "People's Communes," which provided them with basic benefits and a plot of land to harvest crops (Liu, Li, and Zhang 2003). During the early stages of the hukou system, only a small proportion of the population was permitted to live in urban areas, with the remainder assigned to the agricultural sector; which was largely responsible for absorbing surplus labor (Pannell 2003). The onset of China's vast rural to urban migration only began once these institutional barriers had been dismantled.

Figure 2 illustrates China's urban–rural income ratio between 1978 and 2010. Prior to the post-reform era, urban incomes were more than 2.5 times that of rural incomes. A series of decollectivization programs beginning in 1978 enabled the structural transformation of the economy, resulting in the growth of the non-agricultural sector. It was not until institutional barriers had begun to be dismantled that rural to urban migration began to take off. The most significant policy amendment came in the way of hukou reforms. According to Wang and Cai (2007), this gradually unfolded over three stages: permitting rural labor mobility (1980s); guiding rural labor mobility (1990s) and, encouraging rural labor mobility (2000s). In the early stages of the post-reform period, the government's stance was to permit surplus labor to *leave the land without leaving the village* by creating non-agricultural employment opportunities through the promotion of town and village enterprises and later permitting long-distance migration to urban areas that demanded rural labor (Liu, Li, and Zhang 2003). By the 1990s, an influx of foreign investment led to the growth of cities in the eastern coastal region, creating a large demand for
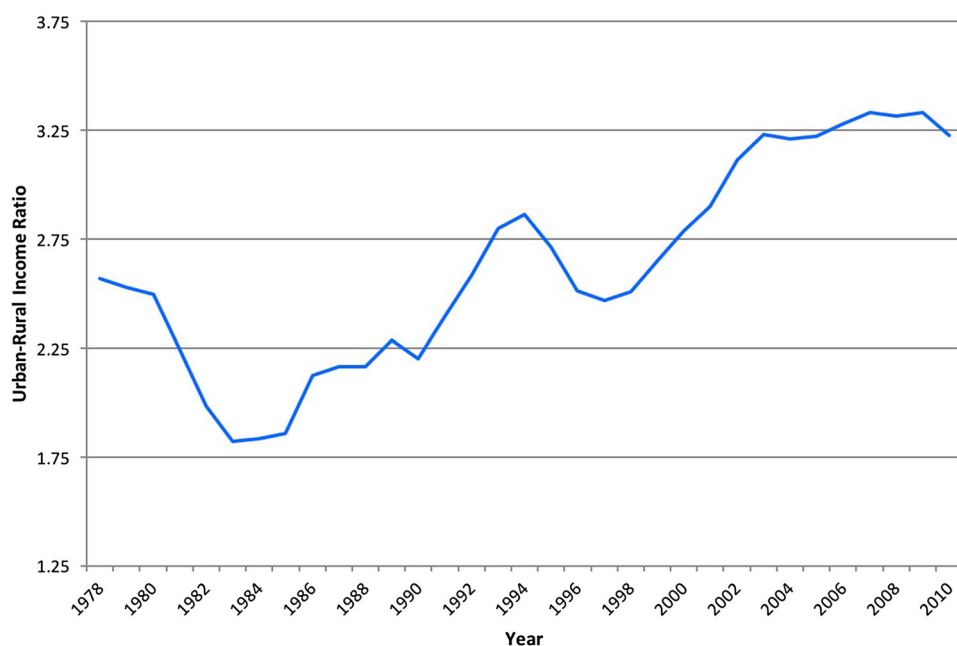
Figure 2. Urban–rural income ratio. Source: Data is from the National Bureau of Statistics (2015), made available by the China Data Center, University of Michigan. Last Accessed: November 2, 2017.

Notes: Urban income reflects per capita annual disposable income (Yuan), and rural income reflects per capita net income (Yuan). Author's own calculations.

construction workers. Rather than suppress rural to urban migration, the government instead promoted a range of support services and required migrants to register at the location in which they were employed (Goldstein 1990; Lin 2002). Although this led to a brief narrowing of rural–urban income gaps for those participating in non-agricultural employment or those willing to migrate to coastal areas in search of employment, conditions continued to get worse for many (Riley 2004). This was eventually followed by further policy reforms aimed at the removal of unreasonable barriers and promotion of fair treatment of migrant workers (Wang and Cai 2007). As of today, the hukou system has not entirely been done away with, and migration has begun to occur under conditional programs such as the *temporary residence certificates* and the *removal of migrant quotas* in some county-level cities and towns (Liu, Li, and Zhang 2003; Chan 2014). That being said, much of today's migration continues to occur outside of these formal channels.

Although the rural–urban income gap narrowed during the fast growth years of China's economy, it is clear that the wage gap between urban and rural areas has persisted. The existence of institutional barriers today continues to inhibit the efficient allocation of labor. This prevents any opportunity for wage equalization as is implied by the Lewis Dual Sector model.

4.4. Reclassification of rural areas as urban

Reclassification, a political/administrative process, involves the administrative upgrading of a settlement from a rural one to an urban one (Goldstein 1990; Montgomery

et al. 2004). Depending on the administrative criteria of a country, this can occur in a number of ways – expansion of urban boundaries to include rural areas, annexation of neighboring settlements, lowering of criteria to qualify settlements as urban, and settlements that grow beyond designated population thresholds (United Nations 1980; Montgomery et al. 2004; Farrell 2017). Although economic factors are believed to be the most important determinants for understanding the urban transition in Western contexts, Fan (1999) cautions that when it comes to socialist and socialist-transitional countries, institutional factors play an equal, if not more important role. Unfortunately, due to unclear definitions and measurement constraints, reclassification is often overlooked among the literature.

Figure 3 illustrates the change in the number of cities in China between 1950 and 2010. In 1950, China consisted of 145 officially designated cities. Apart from minor fluctuations, this number stayed relatively stable until around 1978. Following opening-up reforms, an emerging economy placed a demand on infrastructure, housing and land, resulting in the conversion of agricultural areas to make room for new and expanding cities (Wei and Fang 2003; Glaeser et al. 2017). According to Ma (2005), the process of reclassification in China primarily took the form of three national spatial policies: *city administering county, converting county to city and large cities annexing surrounding counties as districts*. This resulted in the rapid expansion of the built environment and the addition of more than 430 cities to China's urban system. By 2010, China consisted of 657 officially designated cities. Most administrative restructuring occurred in small cities and towns as part of a concerted effort calling for the "strict control over the growth of big cities, rational development of medium sized cities, and encouragement of the growth of small cities and towns" (Kwok 1987; Fan 1999; Fang, Li & Song, 2016). Reclassification at the township
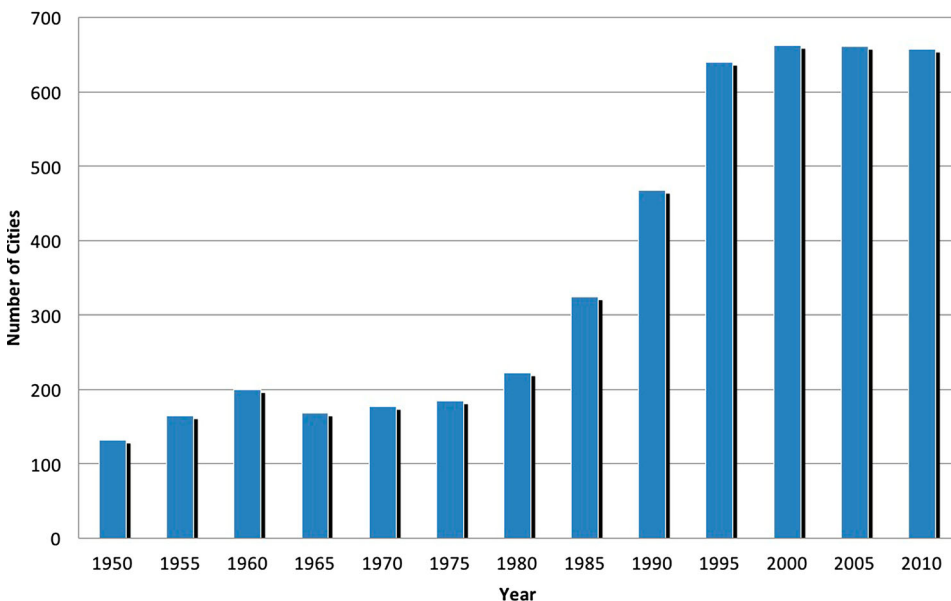

Figure 3. Total number of cities in China, 1950–2010. Source: Compiled by author using data from Ma and Cui (1987) and National Bureau of Statistics (2017); last accessed October 29, 2017.

level also saw an increase in the number of officially designated towns from 2687 in 1978 to 19,881 by 2012 (Zhu 2014).

From the perspective of local governments in China, the process of reclassification of rural settlements as urban becomes a desirable pursuit. This is because an upgrading of administrative status is often accompanied by a number of advantages: increased autonomy, heightened political power, access to infrastructure and investment opportunities, and revenues resulting from land-based financing (Fan 1999; Song and Zhang 2002; Yeh, Xu, and Liu 2011). In the case of the latter, land ownership structures in which rural land is owned collectively by villages while urban land is owned by the state, creates an incentive for local governments to incorporate rural areas within their administrative boundaries. This is because the future sale of land use rights serves as an incoming revenue stream for local governments. According to Gao (2010), these transactions have become the most important source of local governments' revenue. Such incentives have enticed local officials to pursue administrative upgrading by any means necessary. At times this has resulted in extreme instances of falsification of data, corruption and even bribery (Hsu 1994; Zhang, LeGates, and Zhao 2016). By the late 1990s, it was realized that the criteria for reclassifying rural areas as urban had become too lenient and this process was suspended (Zhang, LeGates, and Zhao 2016). Since the mid-1990s, reclassification has become much less pervasive, and the increase in the number of cities has largely stagnated, but the incorporation of rural areas into existing cities still continues.

5. Discussion

According to changes in the pace and scale noted above, China's urban transition between 1950 and 2050 appears to follow the commonly observed attenuated S-shaped urbanization curve first documented by Davis (1965). The urbanization curve is said to undergo three stages: an *initial stage* characterized by a gradually rising slope; followed by an *accelerated stage* reflecting a sharp incline as a country experiences a dramatic shift in its population to urban areas; to a final *terminal stage* where the urbanization curve flattens as it reaches a point of saturation (Northam 1975). This is made clear in Figure 4, which delineates among the different stages of China's urbanization curve. Between 1950 and 1980, which closely resembles the pre-reform era, China was in the initial stage of its urban transition, with its level of urbanization gradually rising from 11.8 to 19.4%. Aside from a brief moment during the 1950s, the speed of urbanization, as measured by urban–rural growth differentials, remained considerably slow (averaging 2.03%). Prompted by a structural transformation of the economy and a relaxation of previously restrictive policies following the opening-up reforms in 1978, China entered the accelerated stage of its urban transition experiencing a significant rise in its level of urbanization to 49.2% by 2010. The speed of urbanization during this stage more than doubled, averaging 4.78%; a rate that is still going strong. China is now in the latter part of the accelerated stage, which is expected to continue until around 2030. After which, China will enter the terminal stage, with 68.7% of its population residing in urban areas. As China reaches this point of saturation, its urbanization rate is expected to fall below levels experienced during the initial stage (averaging 1.78%). By 2050, approximately 75% of China's population will inhabit urban areas, marking the end of China's urban transition.
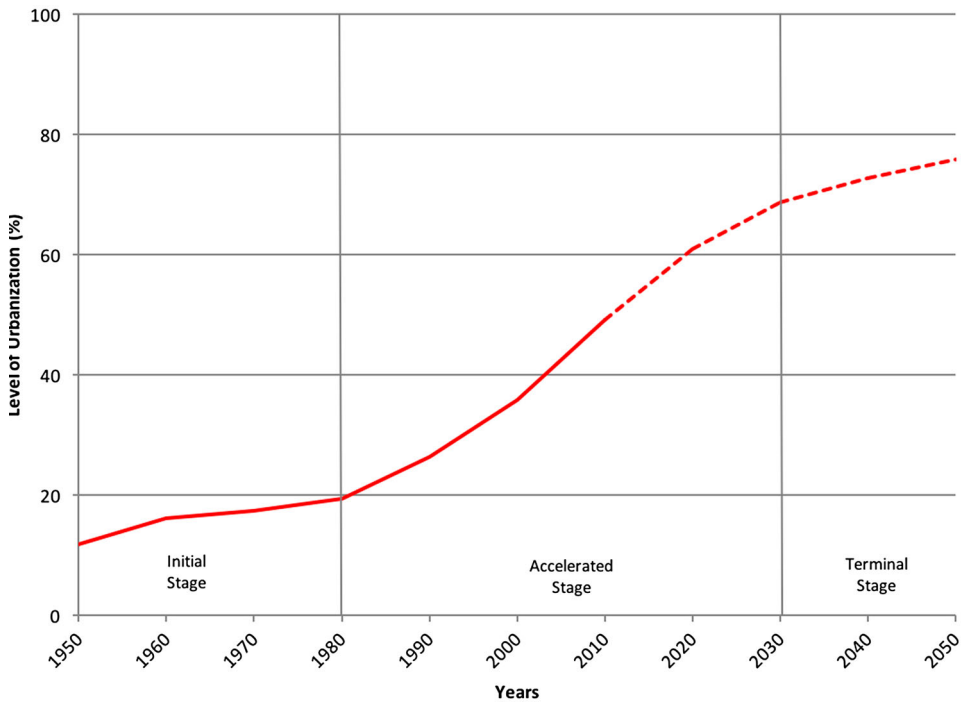
Figure 4. China's urbanization curve, 1950–2050. Source: Data from United Nations (2014).

According to the analysis above, rural to urban migration, which accounted for approximately 50% of the overall urban increment between 1950 and 2010, has been the dominant component underpinning China's urban transition. This was followed by urban natural population increase at approximately 26% and reclassification of rural areas as urban at approximately 24%. Previous studies have arrived at similar findings (see United Nations 2001; Chan, Henderson, and Tsui 2003; Zhang and Song 2003). Liu, Li, and Zhang (2003) attributes the notable rise of rural to urban migration in the post-reform era to three distinct factors: rural push factors due to surplus labor resulting from decollectivization programs, urban pull factors due to rapid industrialization and wide rural–urban income disparities, and the relaxation of the hukou system allowing for easier population mobility. This study differentiates itself in that it also computes the contributions of the components of urban growth in the pre-reform era, a procedure that is often avoided due to the difficulty of compiling analogous datasets (Zhang, LeGates, and Zhao 2016). In doing so, it finds that urban natural population increase was the dominant component of urban growth between 1950 and 1980. This can possibly be explained by the reverse migration that was experienced during the Cultural Revolution in which, youth and scholarly elite were sent to the countryside for "rustication" and "re-education" (Ma 2002; Lin 2002). This, coupled with the barriers of the hukou system secured that the little urban growth during this time would have had to happen from within. To some extent, these figures may also reflect reprisals that followed strict policies aimed at limiting fertility (Feng 2011). Given that the decomposition of the components of urban growth

operates under a number of assumptions, the results should not be viewed definitively, but instead as an indication of representative trends. These tendencies are reaffirmed by the auxiliary data demonstrating concurrent trends in rates of natural increase, urban–rural income ratios and changes in numbers of officially designated cities. Without improved data and new statistical techniques, however, the precision of such measures remains limited. Furthermore, this study also differentiates itself in that it includes the contribution of reclassification to the overall urban increment, which is more often than not grouped with rural to urban migration as a combined residual (United Nations 1980; Chen, Valente, and Zlotnik 1998; United Nations 2001). In doing so, it finds that reclassification was at its peak during the 1980s, representing the dominant component of urban growth at this time. This makes sense given that this was the period that experienced China's most intense administrative upgrading; resulting in the addition of 244 new cities over the span of 10 years. In recent years reclassification has played a diminishing role.

Another notable finding is that the period of particularly rapid urbanization (1980–2010) was experienced when rural growth rates began to experience significant declines, and truly accelerated when they were in the negative. According to Bhagat (2012), this is because the speed of urbanization is a reflection of not only urban growth rates, but also that of rural growth rates. When analyzed in the context of the urban transition, one notices that during the initial stage although urban growth rates were high (averaging 3.72%), they were being offset by higher than usual rural growth rates (averaging 1.69%), ultimately restricting China's urbanization rate (averaging 2.00%). Whereas, during the accelerated stage, the urban growth rates increased rapidly (averaging 4.32%), while the rural growth rate began to decline into the negative (averaging −1.38%); the effects of which accelerated the urbanization rate from a rather moderate rate (averaging 2.00%) to a rapid one (averaging 4.78%). What is interesting is that the change in the urbanization rate during the accelerated stage had more to do with the slowing of rural growth rates than the actual speeding up of urban growth rates. This can be seen in the comparatively larger declines experienced in rural growth rates in Table 2. According to Rogers (1982), this has to do with the role of the components of urban growth, where he argues that the principle effect of urban natural increase is to establish the level of urban growth, whereas the principle effect of rural to urban migration (and reclassification for that matter) is to establish the level of urbanization. Rural to urban migration and reclassification can thus be described as encompassing a dual effect, a decline in rural population and an increase in urban population; whereas urban natural population increase in most instances only reflects the latter. Therefore, it makes sense that when reclassification took on the largest share of the urban increment between 1980 and 1990, the speed of urbanization began to takeoff, and as it was shortly after replaced by rural to urban migration (1990–2010) urbanization continued to accelerate. Nevertheless, as the potential stock of rural to urban migrants and rural areas to be reclassified as urban are depleted, the pace of urbanization will begin to slow; and eventually urban natural population increase will likely take on a growing share of the overall urban increment once again.

While the *Rapid Urban Growth Triad* offers a more nuanced account of the urban transition, the unique features of a China case study appear to push beyond the scope of the framework. An important element of consideration is the different political and economic conditions separating the pre-reform and the post-reform periods. During the pre-reform era, a closed economy meant that external influences played a limited role; however, in the

post-reform era, China joined the World Trade Organization in 2001, resulting in its further integration into the global economy. A subsequent influx of foreign investment and a growth in exports resulted in an employment boom, which attracted migrants to coastal cities in search of employment opportunities; this accelerated the urbanization process. Furthermore, despite the framework having neatly distinguished among economic, demographic and administrative factors, in the case of China, the centralized powers of the state meant that these factors at times became blurred. For example, the hukou system and the one-child policy availed the government administrative instruments that could be used to influence economic and demographic outcomes. Needless to say, the external influences of the global economy and the unique powers of the state are important considerations that need to be built into any analysis of China's urban transition.

6. Reflections on policy and future predictions

As China forges ahead into the latter part of the accelerated stage of its urban transition, forecasts indicate that the speed of urbanization will begin to slow. In the absence of future projections for the components of urban growth, it is not clear what will have led to this, however. Drawing from ongoing trends and policy potentials taken from the *New-Type Urbanization Plan 2014–2020*, this section briefly speculates on the future contributions of the components of urban growth.

To avoid an "aging before affluence" scenario, the Chinese government has made it clear that they are committed to stemming the threat posed by a shrinking working-age population (see Cai 2010). In terms of interventions, this has come in the form of efforts to scale back the *one-child policy* and replace it with a so-called *two-child policy* (Gu and Wang 2009). Remarkably, this policy priority was incorporated into the *Xi Jinping Thought* doctrine that was recently adopted at the 19th National Congress of the Communist Party in October of 2017, hinting at the significance of this issue. That being said, a recent omission of fertility rates data from the newly released statistical yearbook has led many demographers to accuse the government of having covered up for a less than meaningful increase in fertility rates over the past year (South China Morning Post 2017). Other reports have indicated only a marginal increase in birth rates of 7.9% (*The Guardian* 2017). Although it is too early to draw any definitive conclusions regarding the impact of this intervention, current trends lead one to believe that China will likely continue navigating its demographic transition, tracing the footsteps of other aging populations like Japan and South Korea. Should this be the case, it is unlikely that urban natural population increase will play a notable role in the growth of cities in the future.

The *New-Type Urbanization Plan 2014–2020* also makes reference to a continued relaxation of the hukou system; which as noted above, has already undergone a number of reforms since 1978. The most recent of which comes in the form of policies that tighten restrictions on migration to big cities, while scaling back restrictions to smaller cities (Chan 2014; State Council 2014). This becomes a clear signal that the government will continue to use the hukou system as a mechanism to "guide" rural to urban migration. However, with much of today's migration already occurring outside of the formal channels of the hukou system, any efforts to direct migrants to smaller cities will likely only work if job opportunities are of similar quantity and quality as those in the larger ones. Regardless of attempts to engineer migration patterns, as long as hukou restrictions continue to

reinforce rural–urban wage gaps, migration will continue to be a notable force in the future.

In line with China's commitment to promote harmony between humans and nature, strategies to contain urban sprawl and promote the densification of urban areas instead of extending them spatially, have been identified as a key commitment of the government (State Council 2014). However, in light of the current shift to a consumption-based society, equipped with automobile-friendly infrastructure, this will likely be a difficult outcome to achieve. Although, the number of newly classified cities in China has remained relatively stagnant since the mid-1990s, it is plausible that reclassification will continue to unfold in the form of cities expanding beyond established boundaries and rural areas becoming urbanized through structural transformations away from the agricultural industry. Given that local governments' budgets are highly dependent on incorporating rural areas and selling the land use rights to private actors, this constitutes a strong incentive for them to continue such transactions.

7. Conclusion

Through a new conceptual framework, which utilizes the components of urban growth as the primary mode of analysis, this paper has advocated for a more nuanced approach for examining the urban transition. In doing so, new insights have been put forward. China's urban transition follows the often-observed attenuated S-shaped curve, with the initial stage having unfolded between 1950 and 1980, the accelerated stage from 1980 to 2030, and the final terminal stage expected to set-in around 2030. Rural to urban migration has been the dominant component of urban growth, representing approximately half of the overall urban increment between 1950 and 2010; followed by urban natural population increase and reclassification each representing approximately a quarter. Although urban growth rates were comparatively high, it is the reduction in rural growth rates that allowed China to achieve particularly rapid urbanization rates.

The findings of this paper have implications for national urban policy. It points to the need to view the urban transition not only as an urban phenomenon, but also as a rural one. This means that efforts need to be made to mitigate the risks posed by urban growth, and also those posed by rural decline. Although the government is currently relocating villages from remote and infertile lands as part of its poverty alleviation strategy, that will probably only have marginal effects on the rural–urban income gap. Nor will it solve the problem caused by the flight from the countryside. Much of this has to do with the disproportionate amount of investment going to more developed regions and the subsequent urban pull factors that accompany it. Only a dramatic increase in agricultural productivity combined with the growth of new rural industries would be able to reduce this gap. National urban policies thus need to include new approaches for scaling on both sides of the dichotomy. Given that the majority of new entrants to urban areas will come in the form of rural migrants, it will be essential for the government to allocate resources and establish programs that promote upward mobility. Examples of this can be seen in the form of removing social and institutional barriers, promoting non-discriminatory access to employment, education and training opportunities, and ensuring an increased supply of infrastructure and housing. Most of this will likely need to come in the form of hukou reforms; encouragingly, some of these are already underway – plans to expand

urban hukou and residency permits to 100 million workers by 2020, wider access to housing subsidies and other benefits for migrants, and campaigns aimed at reducing discrimination towards migrant communities (*The Diplomat* 2017). Furthermore, given that the increased pressure posed by the accelerated stage of the urban transition will unlikely let up until after 2030, budgets and plans need to reflect this.

Like all studies, a number of impediments have prevented a more thorough understanding. A lack of consistency in definition across census periods has made it difficult to offer a definitive assessment of the contributions of the components of urban growth dating back to the founding of the People's Republic of China. Furthermore, the national growth rate method, used to decompose the components of urban growth, has also relied on a number of assumptions. Fortunately, due to the unique circumstances of a China case study, some of these generalizations have been minimized.

Although this paper has helped to widen our understanding of the urban transition, further research in this area is needed. A comparison of the contribution of the components of urban growth among a number of countries would help to illustrate the similarities and differences as a country transitions from one stage to another. Equally as important is the need to understand how the contributions of the components of urban growth unfolded in different provinces. Finally, there is also a need to further explore the rural–urban nexus and the implications of a growing urban population accompanied by a shrinking rural population. Although there are vast amounts of research attempting to make sense of China's contemporary urban narrative, due to the political, economic and social complexity enshrined in it, there is clearly more work to be done.

Acknowledgements

Disclosure statement

Funding

References

Banister, J. 1997. "China: Internal and Regional Migration Trends." Working Paper on Chinese Politics, Economy and Society. Cologne China Studies Online, 14, 1–18.

Bhagat, R. 2012. "A Turnaround in India's Urbanization." *Asia-Pacific Population Journal* 27 (2): 23–39.

Brinkhoff, T. 2018. "City Population: People's Republic of China." Accessed January 7, 2018. http://www.citypopulation.de.

Brockerhoff, M. 2000. "An Urbanizing World." *Population Bulletin* 55 (3): 1–44.

Cai, F. 2010. "Demographic Transition, Demographic Dividend, and Lewis Turning Point in China." *China Economic Journal* 3 (2): 107–119.

Chan, K. 1994. *Cities with Invisible Walls*. Hong Kong: Oxford University Press.

Chan, K. 2014. "China's Urbanization 2020: A New Blueprint and Direction." *Eurasian Geography and Economics* 55 (1): 1–9.

Chan, K., V. Henderson, and K. Tsui. 2003. "Spatial Dimensions of Chinese Economic Development." In *China's Great Economic Transformation*, edited by L. Brandt and T. Rawski, 776–828. Cambridge: Cambridge University Press.

Chan, K., and L. Zhang. 1999. "The Hukou System and Rural-Urban Migration in China: Processes and Changes." *The China Quarterly* 160: 818–855.

Chauvin, J., E. Glaeser, Y. Ma, and K. Tobio. 2017. "What is Different about Urbanization in Rich and Poor Countries? Cities in Brazil, China, India and the United States." *Journal of Urban Economics* 98: 17–49.

Chen, N., P. Valente, and H. Zlotnik. 1998. "What Do We Know About Recent Trends in Urbanization?" In *Migration, Urbanization and Development: New Directions and Issues*, edited by R. Bilsborrow, 59–88. New York: United Nations Fund for Population Activities.

China Data Center. 2017. "University of Michigan: China Data Center." Accessed November 2, 2017. chinadataonline.org.

Chow, C. 2002. "People's Republic of China at Fifty, Opportunities and Challenges: Introduction." *Asian Geographer* 21 (1): 1–7.

Coale, A., and R. Freedman. 1993. "Similarities in Fertility Transition in China and Three Other East Asian Populations." In *The Revolution in Asian Fertility: Dimensions, Causes and Implications*, edited by R. Leete and I. Alam, 208–238. Oxford: Oxford University Press.

Cohen, B. 2004. "Urban Growth in Developing Countries: A Review of Current Trends and a Caution Regarding Existing Forecasts." *World Development* 32 (1): 23–51.

Davis, K. 1965. "The Urbanization of the Human Population." *Scientific American* 213 (3): 40–53.

The Diplomat. 2017. "China's Hukou Reforms and the Urbanization Challenge." Accessed April 30, 2017. https://thediplomat.com/2017/02/chinas-hukou-reforms-and-the-urbanization-challenge/.

Dyson, T. 2011. "The Role of the Demographic Transition in the Process of Urbanization." *Population and Development Review* 37: 34–54.

Fan, C. 1999. "The Vertical and Horizontal Expansions of China's City System." *Urban Geography* 20 (6): 493–515.

Fang, L., Li, P. & Song, S. 2016. China's Development Policies and City Size Distribution: An Analysis Based on Zipf's Law. *Urban Studies*, 1–17.

Farrell, K. 2017. "The Rapid Urban Growth Triad: A New Conceptual Framework for Examining the Urban Transition in Developing Countries." *Sustainability* 9 (8): 1–19.

Feng, W. 2011. "The Future of a Demographic Overachiever: Long-term Implications of the Demographic Transition in China." *Population and Development Review* 37: 173–190.

Fox, S., and T. Goodfellow. 2016. *Cities and Development: Second Edition*. New York: Routledge.

Friedmann, J. 2005. *China's Urban Transition*. Minneapolis: University of Minnesota Press.

Gao, L. (2010). "Achievements and Challenges: 30 Years of Housing Reforms in the People's Republic of China." Asian Development Bank Economic Working Paper Series 198. Manila: Asian Development Bank.

Glaeser, E., W. Huang, Y. Ma, and A. Shleifer. 2017. "A Real Estate Boom with Chinese Characteristics." *Journal of Economic Perspectives* 31 (1): 93–116.

Goldstein, S. 1990. "Urbanization in China, 1982-87: Effects of Migration and Reclassification." *Population and Development Review* 16 (4): 673–701.

Gu, B., and F. Wang. 2009. *An Experiment with Eight Million People: Reports from Areas with Two-Child Policy*. Beijing: China Social Sciences Academic Press.

The Guardian. 2017. "China's Birth Rate Rises but Falls Short of Government Estimates." Accessed November 18, 2017. https://www.theguardian.com/world/2017/jan/23/chinas-birth-rate-soars-after-relaxation-of-one-child-policy.

Hsu, M. 1994. "The Expansion of the Chinese Urban System, 1953-1990." *Urban Geography* 15: 514–536.

Kasarda, J. D, and E. M. Crenshaw. 1991. "Third World Urbanization: Dimensions, Theories and Determinants." *Annual Review of Sociology* 17: 467–501.

Kirkby, R. 1985. *Urbanization in China*. New York: Columbia University Press.

Kwok, R. Y. W. 1987. "Recent Urban Policy and Development in China: a Reversal of 'Anti-Urbanism'." *Town Planning Review* 58 (4): 383–399.

Kwok, R. Y. W. 2002. "Chinese Urbanization in the Last Half Century: A Hesitant Shift from Restraint to Inevitability." *Asian Geographer* 21 (1): 101–123.

Lewis, A. 1954. "Economic Development with Unlimited Supplies of Labour." *The Manchester School* 22: 139–191.

Lin, G. 2002. "The Growth and Structural Change of Chinese Cities: A Contextual and Geographic Analysis." *Cities (London, England)* 19 (5): 299–316.

Liu, S., X. Li, and M. Zhang. 2003. *Scenario Analysis on Urbanization and Rural-Urban Migration in China. IR-03-036.* Luxenberg: International Institute for Applied Systems Analysis.

Ma, L. 2002. "Urban Transformation in China, 1949 – 2000: A Review and Research Agenda." *Environment and Planning A* 34: 1545–1569.

Ma, L. 2005. "Urban Administrative Restructuring, Changing Scale Relations and Local Economic Development in China." *Political Geography* 24: 477–497.

Ma, L. J. C., and G. Cui. 1987. "Administrative Changes and Urban Population in China." *Annals of the Association of American Geographers* 77 (3): 373–395.

Montgomery, M., R. Stren, B. Cohen, and H. Reed. 2004. *Cities Transformed: Demographic Change and Its Implications in the Developing World by the Panel on Urban Population Dynamics*, 75–107. London: Earthscan.

National Bureau of Statistics. 2015. *National Data: China Yearly Macro-Economic Statistics*. Beijing: National Bureau of Statistics.

National Bureau of Statistics. 2017. *National Data: Number of Officially Designated Cities 1980-2010*. Beijing: National Bureau of Statistics.

Naughton, B. 1995. *Growing Out of the Plan: Chinese Economic Reform 1978-1993*. New York: Cambridge University Press.

Northam, R. 1975. *Urban Geography*. Toronto: John Wiley.

Ofer, G. 1976. "Industrial Structure, Urbanization and the Growth Strategy of Socialist Countries." *The Quarterly Journal of Economics* 90 (2): 219–244.

Pannell, C. 2002. "China's Continuing Urban Transition." *Environment and Planning A* 34: 1571–1589.

Pannell, C. 2003. "China's Demographic and Urban Trends for the 21st Century." *Eurasian Geography and Economics* 44 (7): 479–496.

Qin, B., and Y. Zhang. 2014. "Note on Urbanization in China: Urban Definitions and Census Data." *China Economic Review* 30: 495–502.

Rahman, M. 2013. "Estimation of Internal Migration by the National Growth Rate Method: An Alternative Approach." *Bangladesh Development Studies* 36 (3): 79–87.

Ren, X. 2013. *Urban China*. Cambridge: Polity Press.

Riley, N. 2004. "China's Population: New Trends and Challenges." *Population Bulletin* 59 (2): 1–36.

Rogers, A. 1982. "Sources of Urban Population Growth and Urbanization, 1950-2000: A Demographic Accounting." *Economic Development and Cultural Change* 30 (3): 483–506.

Rogers, A., and J. G. Williamson. 1982. "Migration, Urbanization, and Third World Development: An Overview." *Economic Development and Cultural Change* 30 (3): 463–482.

Shabad, T. 1959. "The Population of China's Cities." *Geographical Review* 49 (1): 32–42.

Shryock, H., J. Siegel, and E. Larmon. 1971. *The Methods and Materials of Demography*. Vol. 2. Washington, DC: Bureau of the Census.

Siegel, J., and D. Swanson. 2004. *The Methods and Materials of Demography*, 493–522. 2nd ed. London: Elsevier Academic Press.

Solinger, D. 1999. "Demolishing Partitions: Back to Beginnings in the Cities?" *The China Quarterly* 159: 629–639.

Song, S., and K. H. Zhang. 2002. "Urbanisation and City Size Distribution in China." *Urban Studies* 39 (12): 2317–2327.

South China Morning Post. 2017. "An Inconvenient Truth: China Omits Key Figures that May Have Highlighted its Demographic Time Bomb from Official Statistics." Accessed October 31,

2017. http://www.scmp.com/news/china/economy/article/2117167/inconvenient-truth-china-omits-key-figures-may-have-highlighted.

State Council. 2014. *National Plan on New Urbanization 2014-2020*. Beijing: People's Republic of China.

Swerts, E. 2017. "A Data Base on Chinese Urbanization: ChinaCities." *Cybergeo: European Journal of Geography* 830: 1–16.

Thompson, W. 1929. "Population." *American Journal of Sociology* 34 (6): 959–975.

United Nations. 1974. *Manual VIII. Methods for Projections of Urban and Rural Populations*. ST/ESA/SER.A/55. Department of Economic and Social Affairs. New York: United Nations.

United Nations. 1980. *Patterns of Urban and Rural Population Growth*. ST/ESA/SER.A.68. New York: Department of International Economic and Social Affairs.

United Nations. 2001. *The Components of Urban Growth in Developing Countries*. ESA/P/WP.169. New York: Population Division Department of Economic and Social Affairs.

United Nations. 2013. *World Population Policies*. ST/ESA/SER.A/341. New York: Department of Economic and Social Affairs.

United Nations. 2014. *World Urbanization Prospects*. ST/ESA/SER.A/366. New York: Department of Economic and Social Affairs.

Wang, D., and F. Cai. 2007. *Migration and Poverty Alleviation in China*. Migration Research Series 27, Geneva: International Organization for Migration.

Wang, T., A. Maruyama, and M. Kikuchi. 2000. "Rural-Urban Migration and Labor Markets in China: A Case Study in a Northeastern Province." *The Developing Economies* 38 (1): 80–104.

Wei, D., and C. Fang. 2003. "Urban Expansion and Land Use Restructuring in Hangzhou, China." *Asian Geographer* 22 (1): 61–75.

Wong, C. 1991. "Central-local Relations in an Era of Fiscal Decline: The Paradox of Fiscal Decentralization in Post-Mao China." *The China Quarterly* 128: 691–715.

World Bank. 2017. *World Development Indicators. World Bank Open Data*. Washington, DC: World Bank. Accessed October 1, 2017. http://data.worldbank.org/.

Yang, D. 1996. *Calamity and Reform in China: State, Rural Society and Institutional Change since the Great Leap Famine*. Stanford: Stanford University Press.

Yeh, A., J. Xu, and K. Liu. 2011. "China's Post-Reform Urbanization: Retrospect, Policies and Trends." Urbanization and Emerging Population Issues 5. London: International Institute for Environment and Development.

Yixing, Z., and L. J. C. Ma. 2003. "China's Urbanization Levels: Reconstructing a Baseline from the Fifth Population Census." *The China Quarterly* 173: 176–196.

Zhang, L. 2010. "The Transition of China's Urbanization since Opening Reform: Process and Trends." *PhD Thesis*, Tongji University(in Chinese).

Zhang, L., R. LeGates, and M. Zhao. 2016. *Understanding China's Urbanization: The Great Demographic, Spatial, Economic and Social Transformation*. Cheltenham: Edward Elgar.

Zhang, K., and S. Song. 2003. "Rural–Urban Migration and Urbanization in China: Evidence from Time-Series and Cross-Section Analyses." *China Economic Review* 14: 386–400.

Zhao, Z. 2005. "Migration, Labour Market Flexibility and Wage Determination in China: A Review." *The Developing Economies* 43 (2): 285–312.

Zhao, Z., W. Chen, and Y. Jin. 2016. "Recent Mortality Trends in China." In *Contemporary Demographic Transformations in China, India and Indonesia*, edited by C. Guilmoto and G. Jones, 37–53. London: Springer.

Zheng, Z., Y. Cai, F. Wang, and B. Gu. 2009. "Below Replacement Fertility and Childbearing Intention in Jiangsu, China." *Asian Population Studies* 5 (3): 329–347.

Zhou, Y., and L. J. C. Ma. 2000. "Economic Restructuring and Suburbanization in China." *Urban Geography* 21: 205–236.

Zhu, J. 1999. "Local Growth Coalition: The Context and Implications of China's Gradualist Urban Land Reforms." *International Journal of Urban and Regional Research* 23 (3): 534–548.

Zhu, Y. 2014. *In Situ Urbanization in China: Processes, Contributing Factors, and Policy Implications*. World Migration Report 2015. Geneva: International Organization for Migration.