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Abstract This paper presents new estimates of the development of the urban population and the urbanization ratio for the period spanning the Song and late Qing dynasties. Urbanization is viewed, as in much of the economic historical literature on the topic, as an indirect indicator of economic development and structural change. The development of the urban system can therefore tell us a lot about long-term trends in the Chinese economy between 1100 and 1900. During the Song, the level of urbanization was high, also by international standards—the capital cities of the Song were probably the largest cities in the world. This remained so until the late Ming, but during the Qing there was a downward trend in the level of urbanization from 11%–12% to 7% in the late 18th century, a level at which it remained until the early 1900s. In our paper we analyse the role that socio–political and economic causes played in this decline, such as the changing character of the Chinese state, the limited impact of overseas trade on the urban system, and the apparent absence of the dynamic economic effects that were characteristic for the European urban system.

Keywords China, urbanization, Song dynasty, Ming dynasty, Qing dynasty, cities, commercialization

JEL Classification N15, N95, O18

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1 Introduction

The urban structure and growth of a country is an important source of information about its economic development, in particular when other sources of information are scarce. Data on the size of cities and estimates of urbanization ratios can tell us a lot about the growth of non-agricultural activities and, indirectly, also about the evolution of agricultural productivity (proxied by the number of non-agricultural mouths fed by the primary sector). Divergent paths of long-term economic development usually result in divergent urban systems, as, for example, the contrasting experiences of Western Europe and the Arab world between 800 and 1800 demonstrate (see Bosker, Buringh and Van Zanden, 2013). Our paper contributes from this perspective to the debate about the nature of the evolution of the Chinese economy in the 800 years spanning the Song and the late Qing dynasties.

Briefly, this debate is dominated by two “extreme” interpretations. The first argues that the Chinese economy peaked during the Song (960–1279) followed by long-term decline, reaching its nadir some time during the late Qing. The second suggests that there were important phases of economic expansion after the Song, such as the commercial revolution of the Ming and early Qing dynasties, and that in particular growth in the economic center of the country, the Yangtze Delta, continued until the late 18th and perhaps even the early 19th century. The former interpretation, stressing the Song peak, was until recently the orthodox position, associated with the work by Elvin (1973) and Jones (1988). This view was, however, not always shared by others (e.g., Twitchett, 1962) and, more recently, has come under attack in publications by Li (2000, 2010) and others who have replaced the orthodox view with a more optimistic interpretation of long-term growth, often based on research focused on the Yangtze Delta.¹ This has also helped to underpin the positive interpretation of 18th century

¹ According to Li (2003)’s definition, as an economic integrated region, the lower Yangtze Delta roughly covered 7 *fus* (prefectures) in Song dynasty, i.e., *Lin’an fu* (临安府), *Jiaying fu* (嘉兴府), *Pingjiang fu* (平江府), *Zhenjiang fu* (镇江府), *Anji zhou* (安集州), *Changzhou fu* (常州府) and *Jiankang fu* (建康府), 7 *lus* (prefectures) in Yuan dynasty, i.e., *Hangzhou lu* (杭州路), *Jiaying lu* (嘉兴路), *Huzhou lu* (湖州路), *Pingjiang lu* (平江路), *Changzhou lu* (常州路), *Zhenjiang lu* (镇江路) and *Jiqing lu* (集庆路) and 9 prefectures in Ming and Qing dynasties, i.e., *Suzhou fu* (苏州府), *Songjiang fu* (松江府), *Changzhou fu* (常州府), *Zhenjiang fu* (镇江府), *Jiangning fu* (江宁府), *Taicang zhou* (太仓州), *Hangzhou fu* (杭州府), *Jiaying fu* (嘉兴府) and *Huzhou fu* (湖州府).

development as expressed by Pomeranz (2000) and Rosenthal and Wong (2011) in their contributions to the “Great Divergence” debate. Nevertheless, the “song-as-peak” interpretation is not dead, as is clear from a number of recent publications that arrive at conclusions consistent with this hypothesis (e.g., Liu, 2005; Xu et al., 2017).

It is surprising that in the recent revival of economic historical research into the long-term development of the Chinese economy, the level of urbanization has not played a major role. Whereas urbanization is often referred to in the literature as a proxy for economic development in European contexts, a similar approach is absent in the “Great Divergence” debate. It is not discussed in Pomeranz (2000)’s book on the topic, which does not even include entries in its index on “cities” or “urbanization,” nor has it been extensively researched and discussed by other participants in the debate. From the European perspective this seems strange: Urbanization has been used in this case as a proxy of economic growth for two reasons. Firstly, it requires that agricultural productivity increases to supply the needs of the growing share of the population living in cities, and secondly, it reflects the growth and spatial concentration of high value-added activities in industry and services, which are often seen as the engines of productivity growth in an early modern economy. In the European case, the correlation between urbanization and economic growth is therefore quite strong, but, of course, this may be different in other cases—depending very much on the question as to whether city growth was based on “extractive” or “inclusive” institutions (or, to use Weber’s typology, whether cities were consumer cities or producer cities) (Acemoglu and Robinson, 2012). In the Middle East, for example, the high level of urbanization achieved in the 8th/9th centuries did not guarantee long-term economic growth (Bosker et al., 2014).

This issue has also been raised in some recent works that specifically look at urbanization in China and Europe. For example, Broadberry and Gupta (2006, p. 21) show that urbanization in northwestern Europe was substantially higher than in both China as a whole and the Yangtze Delta. Likewise, Rosenthal and Wong (2011) attach value to the existence of cities for economic development, suggesting that Europe was in a much better position than China. However, neither study goes deeply into the long-run developments of urbanization, nor do they consider that the relation between urbanization and economic growth may be different in China from that in Europe. One researcher who does discuss this

point is Skinner (1977)'s claiming that city sizes declined during the Ming dynasty because more small markets emerged that reduced transportation costs. We will return to the theme of the "rise of small market towns" later in this paper.

Our study adds to this body of literature by presenting detailed estimates of the development of the urbanization ratio based on state-of-the-art data of the sizes of cities and of the population of various provinces and regions for a number of benchmark years, the choice of which is largely dictated by the availability of sources, although coincidentally they nicely cover the dynasties involved. Another benchmark around 1500 would have been valuable to study the effects of the early Ming and the commercial revolution that followed in the 16th century, but the data are lacking for this. Based on the available data, we choose two benchmarks during the Song (1102, 1205), one during the Yuan (1290), two during the Ming (1391 and 1630), and four during the Qing (1644, 1776, 1851, and 1894) and one for early Republic China (1918). The data for these benchmark years allow us to analyse the dynamics of urbanization process in more detail and make systematic comparisons with Western Europe.

In our paper we begin in Section 2 by presenting the data underlying our estimates of the growth of the urban system. We find that, in particular during the Qing, the rate of urbanization fell, a result that is not entirely new. In fact, most alternative estimates point in the same direction. Chao's book entitled *Man and Land in Chinese History* probably presents the best overview, concluding that urbanization ratio declined from 21% in 1220 to 6.9% in 1820 (Chao, 1986, p. 60). The classic study by Skinner (1977) on urbanization in the 19th century did not contain estimates for earlier periods, but he did chart its long-term development: After the medieval Urban Revolution (pp. 23–26) followed "devolution" caused "by declining stimulus to city development provided by foreign trade and by technological advance" (p. 29), a view consistent with our findings. However, Rozman (1973)'s study of the structure of the urban system in Japan and China has estimates, which suggest stability of the rate of urbanization, which he sets at 4%–5% during the Tang dynasty, 5% during the Song, and 6%–7% in the Ming and early Qing. But the basis for his estimates remains rather unclear. Our estimates are followed, in Section 3, by an analysis of the factors contributing to the long-run decline in urbanization we find over the Song–Qing period.

2 Chinese Urbanization from 1100–1900: Data and Sources

2.1 Introduction

Before entering into a discussion on sources and data, we must first define what we are actually measuring when, in the case of China, we talk about cities. First, in contrast to Europe, where cities were clearly defined in both legal and geographical terms, in China this was not the case. Sometimes Chinese cities had city walls, often established before the Song dynasty, but from the Song onward many of these cities expanded well beyond their walls. Hence, it is often unclear what part of the population inhabiting the land surrounding a city's walls has to be added to the urban population, especially from the Yuan dynasty onwards. Moreover, in China, unlike Europe, no legal designation of the city as a separate entity existed. Originally, in China cities were built for, and served as administrative and military centers. Consequently, Chinese cities are classified by their role in the government administration. First there was the core city during a dynasty: the dynasty's capital city. During the Northern Song, Kaifeng city was the capital. This changed to Hangzhou during the Southern Song, with Beijing being the capital of the contemporary and competing the Jin dynasty, later to be replaced by Kaifeng when the Yuan dynasty captured Beijing; eventually the whole of China was ruled by the Yuan dynasty.

Provincial cities, serving the provincial administration, formed the second level in the urban hierarchy. The third level of urban concentration was linked to the administrative unit of the prefecture, while the fourth and final level belonged to centers responsible for county administration. With the expansion of the territory of imperial China, this urban structure with its clear administrative function spread to the newly incorporated areas. In addition to these mainly administrative cities, market towns arose during the Song dynasty; and often markets were located in the administrative cities, but sometimes also in rural towns. These mostly relatively small towns were considered to be urban without, however, having the administrative or defensive functions of the administrative cities.

The second issue to be resolved in research on urbanization is how big the concentration of people within a city should be before it qualifies as urban. In most studies by Chinese authors, a level of 2,000 inhabitants is used as the lower

limit, which was first used in the 1953 Chinese census to characterize a residential area as a city.² This threshold is much lower than the 5,000 or 10,000 used in European studies on the topic. In our study, we address this divergence by estimating Chinese urbanization both for cities with more than 2,000 inhabitants and for cities with more than 10,000 inhabitants, thus allowing comparisons with existing European studies.

The third issue to be resolved is that the territory of the Chinese state changed considerably between the 12th and the 20th centuries. The Northern Song covered most of what is now eastern China, while the Southern Song was limited to a part of south-eastern China. In addition, for most periods up to the Qing dynasty, the regions of Xinjiang and northeast are not effectively governed in China, as are, obviously, Tibet and Taiwan. Hence, any research into Chinese urbanization has to deal with territorial fluctuations. Since the total and urban populations of these new territories were rather low, we deal with this issue by focusing on 17 “core” provinces (Hebei, Shandong, Henan, Shanxi, Shaanxi, Gansu, Jiangsu, Zhejiang, Anhui, Jiangxi, Huguang,³ Sichuan, Guangdong, Guangxi, Yunnan and Guizhou), which during the Qing dynasty were referred to as Inner China. Nevertheless, in addition we also present estimates for the new territories outside this region.

The estimation of historical populations and levels of urbanization in China involves solving these three issues. The other side of the coin, however, is that China was probably the first to start counting its inhabitants in a systematic way, and in doing so has produced a wealth of population censuses unmatched by any other state. The Zhou dynasty was the first to start a country-wide population investigation. Unfortunately, the results of this census, which spanned the period from ca. 828 to 782 BC, no longer exist. The oldest existing census data are those from the Han dynasty, which were recorded in *Hanshu* and written by the famous historian Ban Gu. For the period under review in our study we have detailed census data for the total population in each dynasty. Population surveys were generally conducted every three years during the Song dynasty and every ten years from the Ming dynasty onwards. The results were reported in government archives, official histories, and, for local areas, in gazetteers. In these surveys,

² Gilbert Rozman (1973) is in this case an exception: He used 3,000 inhabitants as the lower limit.

³ Although Huguang province was divided into Hunan and Hubei provinces during the Qing dynasty, we consider Huguang as one single province.

actual households (and sometimes population) were registered by city, suburban and rural areas separately. From the Song dynasty onwards, the administrative cities (i.e. capital, provincial, prefectural, and county cities) were formally classified as cities, but market towns were classified as being suburban. Hence, both the suburban and the urban categories qualify as urban settlements in the modern sense of the word.

In general, the quality of these censuses is much better at the beginning of a dynasty when the state's power is relatively strong; their quality often deteriorated in the late phases of a dynasty. Even though, as argued by Deng (2004), once corrected for inconsistencies, these census data are quite trustworthy, still the estimated population sizes from especially the Song and Yuan dynasties may differ by authors. Therefore, the key issue in Chinese population history research is how to correct population datasets in different historical periods. In 1959, Ho made a great contribution to the issue in an English-language publication in which he summarized the various issues that occurred in the process of population registration. In addition, he laid out a method to correct population datasets in both the Ming and Qing dynasties.

Combining his method with a great variety of original sources at that time, Ho made a tentative reconstruction of countrywide population in the Qing dynasty. By applying Ho's method to the regional population across China, a group of Chinese scholars at Fudan University developed a detailed correction method and collected many systematic sources at both prefecture and province levels. Based on their regional population estimates, the consistent overview of the development of the Chinese population achieved by Fudan scholars is much more reliable than that in Ho's publication. Their work can be found in Ge (2002)'s study on the population history from pre-Qin dynasties to the Northern and Southern dynasties (i.e., 2100 BC–589 AD), Dong (2002)'s research on the Five dynasties from Sui to Tang (i.e., 589–960); Wu (2000)'s study dealing with the period from the Northern Song dynasty to the Yuan dynasty (i.e., 960–1368), Cao (2000, 2001)'s books focusing on the Ming and Qing dynasties (i.e., 1368–1911), and Hou (2001)'s volume on the Republic of China (i.e., 1912–1949). The estimates presented below are mainly based on these current "state-of-the-art" works by these authors, which contain the most reliable estimates available to date.

2.2 Total Population, 1102–1918

To start our exploration, we looked at the presumably less controversial issue of total population (see Table 1). These data were drawn from the series of books on Chinese population history mentioned above. The territories covered in these sources has changed over time. However, as we have pointed out in the previous section, we will focus on the 17 provinces of Inner China.

For the Yuan dynasty and later, when China was more or less unified, getting an estimate of the population of Inner China boils down to subtracting the peripheral provinces from the total. For the Republican period in 1918, this means that we should subtract from Hou's population estimate for China as a whole a number of 27.8 million people living in Mongolia, northeast, Qinghai and Tibet (Hou, 2001). For 1776, 1854, and 1893 we can simply subtract the populations for these same regions including, for those years, the population of Taiwan, which was part of the territory at that time, taken from Cao (2001). For the Ming dynasty in 1630 and 1644, we have to subtract 7 million people living in Mongolia, northeast, Tibet and Taiwan (Cao, 2001). For the Yuan dynasty in 1290 we should subtract 2.4 million people living in Mongolia, northeast and Tibet from Wu's estimate of 75 million in order to arrive at an estimate for Inner China (Wu, 2001), and for 1391 we should subtract 4 million people living in Mongolia, northeast, Tibet and Taiwan from Cao's estimate of 72.72 million (Cao, 2001).

The calculation of the population in Inner China during the Song dynasty is more complicated since several competing dynasties were simultaneously in existence on its territory. In 1102, China was split into 4 dynasties: the Northern Song, Liao, Xixia and Dali dynasties. At that time Inner China was roughly equal in territory to the Northern Song, with parts of Hebei and Shanxi province occupied by the Liao dynasty, Gansu province and part of Shaanxi province were occupied by the Xixia dynasty, and Yunnan province was occupied by the Dali dynasty. The Northern Song reached a population of 98.9 million around 1102. To this number we thus have to add ca. 5.4 million people living in parts of Hebei and Shanxi province in the Liao dynasty (Wu, 2000) and about 1.5 million people in Gansu province and part of Shaanxi province in Xixia dynasty. This leaves the population of Yunnan. Based on an annual population growth rate of 0.4% and a population of 5 million in 1300 (Wu, 2000) we arrive at a population

Table 1 Population in China 1102–1918 (in million)

	1102	1205	1290	1391	1630	1644	1776	1851	1893	1918
Hebei (including Rehe, Beijing, Tianjin and Baoding)				2.94	10.95	7.30	17.80	27.06	33.96	
Shaanxi				2.97	10.00	6.20	7.97	13.27	8.06	
Shanxi				4.24	9.50	7.40	12.26	15.84	10.04	
Shandong				6.11	14.82	13.08	27.90	35.59	41.00	
Henan				3.16	16.73	8.20	23.15	30.77	28.23	
Jiangsu (including Shanghai)				12.49	31.00	27.12	32.44	44.72	31.00	
Zhejiang				11.14	23.60	19.90	22.37	30.28	17.05	
Fujian (excluding Taiwan)				3.97	8.80	8.80	12.88	16.21	11.90	
Jiangxi				8.12	19.30	19.30	18.78	24.29	14.00	
Huguang (including Hunan and Hubei)				4.83	15.00	13.20	31.43	44.00	44.35	
Guangdong				3.85	7.80	7.80	18.45	23.86	27.71	
Sichuan				1.47	7.35	0.50	16.81	29.47	40.18	
Anhui							25.86	37.39	22.97	
Guangxi				1.57	3.50	3.50	7.66	10.96	13.40	
Guizhou					2.50	2.50	5.67	8.79	11.00	

(To be continued)

(Continued)

	1102	1205	1290	1391	1630	1644	1776	1851	1893	1918
Yunnan					2.40	2.40	7.88	12.68	12.40	
Gansu							15.80	18.99	5.81	
Inner China	108.62	138.72	72.60	68.72	183.38	144.59	305.10	424.14	373.06	395.20
Yangtze Delta		9.13	8.30	8.70	19.58	16.84	24.83	36.00	15.67	
Xinjiang and Qinghai	1.50	1.50					1.14	1.68	2.18	
Mongolia and northeast	3.60	3.60	1.84	2.90	5.60	5.60	3.19	6.85	18.47	
Tibet			0.56	1.00	1.30	1.30	1.14	1.23	1.14	
Taiwan				0.10	0.10	0.10	0.90	2.20	2.82	
China in Qing territory	113.72	143.82	75.00	72.72	190.38	151.59	310.57	436.09	397.66	

Source: Wu (2000, volume 3), Cao (2000, volume 4; 2001, volume 5), Hou (2001, volume 6).

estimate of 2.8 million in Yunnan in 1102 implying a total population of Inner China of ca. 108 million people.

A similar calculation can be made for 1205. The Southern Song reached a population of ca. 80.6 million in 1205 while the Jin dynasty, excluding ca. 3 million people living in northeast, had a population of 53 million (Wu, 2000). Due to lack of census data, we have to assume Gansu province and part of Shaanxi province in the Xixia dynasty in 1205 had the same population as in 1102. This assumption is reasonable since the war among the Xia, Jin and Northern Song dynasties in the late 12th century affected the population growth in Xia territories. Similarly, due to lack of census data, we lack data for Yunnan. Yet, assuming a 0.4% annual population growth as well as a total population of Yunnan in 1300 of 5 million (Wu, 2000), we can arrive at a population estimate of 3.62 million for Yunnan in 1205. These estimates combined lead to a population of Inner China in 1205 of ca. 139 million people.

The resulting population totals for the various benchmark years are reported in Table 1. We witness population growth in Inner China from about 100 million in 1100 to 400 million at about 1900. The share of the Lower Yangtze Delta of Inner China increased from 6.5% in 1205 to 12.6% in 1391, just after the Yuan dynasty. In the early Ming, it remained constant, but its share started to decline in the Qing dynasty, especially after the Taiping rebellion. This was followed by a fast increase in share of Yangtze in Inner China between 1894 and 1918 along with the rise of the big metropolis Shanghai.

The quadrupling of the population of China was probably less than population growth in the rest of the world, which, if we rely on Maddison (2003)'s estimates, increased from about 250 million to almost 1.2 billion. Part of the explanation as to why China saw its share in global population declined is that China underwent a number of large and sometimes violent changes. During the Song dynasty there was strong growth of the population from 100 million in 1100 to 125 million in 1200, followed by a very dramatic decline to about half that level—probably due to the collapse of the Song dynasty and conquest by the Mongols. During the Yuan and early Ming dynasties no recovery had yet taken place (total population in 1391 was similar to that of 1290). By the end of the Ming, in 1630, the population had, however, increased spectacularly to almost three times the 1290 level. However, the Ming–Qing transition, a period of violent conquest, led once more to a sudden decline—in 1644 the Chinese population was only about

80% of its 1630 level. During the Qing dynasty growth resumed and the two centuries after 1644 saw the total population almost triple, only to be followed by modest decline in the second half of the 19th century (mainly due to the Taiping rebellion of the middle decades of that century). When compared this with the population record of Western Europe (defined as the region west of the famous Hajnal-line, from Trieste to Petersburg), we see a much more gradual growth, only once interrupted between 1300 and 1400 by the Black Death (see data in Bosker et al., 2013). Steep declines in Chinese population levels are linked to transitions from one dynasty to another, and/or to large-scale social-political unrest, in particular the Taiping rebellion occurring in mid-19th century. Comparable declines in European populations did occur—during the Thirty Years war (1618–1648), for example, large parts of Germany and Poland were depopulated—but on a much more limited scale, due to the smaller size of European political entities. And the decline of German population also resulted (via migration flows) in increased growth in neighboring regions, compensating for the decline in Germany. In Europe the risks of warfare were spread, although warfare was almost continuous. By contrast, in China warfare was highly concentrated, linked to changes in dynasties, but it seems to have had much larger consequences for the demographic development of the region.

2.3 Urban Population: 1776–1918

The population estimates given in the previous Section, difficult as they may be to construct, are still easier to obtain than estimates of urbanization. For this reason, we start in this section with the most recent estimates, for which the margins of error are probably rather small, and work backwards to our earliest benchmark years, for the Song.

In 1918 the National Christian Council of China conducted a country-wide survey of the urban population in China. The survey covered 338 cities with populations of more than 25,000 inhabitants and for which the urban population accounted for at least 8% of the total population (see Table 2 and Appendix 1). Given that in other years the urban population in cities larger than 25,000 inhabitants accounted for approximately 60% of the total urban population,⁴

⁴ Our assumption is derived from both Cao's (2000) estimate for 1893 and Buck's (1933) investigation for 1933.

total urbanization for the whole country can be estimated at about 13%.

Table 2 Urban Population by City Size in 1918

Cities	Number of cities	Urban population
≥ 500,000 inhabitants	10	8,275,000
110,000–480,000 inhabitants	40	8,591,537
50,000–100,000 inhabitants	121	8,494,000
25,000–45,000 inhabitants	167	5,486,100
Total urban population	338	30,846,637
Total population of Inner China		395,200,000

Source: National Christian Council of China edited (2007), Appendix 7.

To estimate the size of the urban population in the Qing dynasty, both Skinner and Cao set up a relatively complete dataset for the whole country within its historical borders (Skinner, 1977; Cao, 2000). Skinner's dataset contains estimates of national and regional urban populations in 1843 and 1893, as well as providing estimates for a large number of individual cities for the same years. Cao's dataset includes estimates of China's urbanization for 1776 and 1893, as well as for separate provinces and a limited number of estimates for individual cities. Yet, ultimately the differences between the estimates of these two authors are small: Skinner estimates urbanization at about 6% while Cao puts it at around 7%.

Nevertheless, we consider the recent work by Cao to be more reliable than Skinner's older dataset. Cao (2000) extensively discussed his sources, which are often actual censuses. Skinner (1977) claimed his estimates were based on 2,500 cards of data he collected during his studies, but he did not reveal the sources. As he explained, he often used indirect methods (e.g. length of city walls), whereas Cao (2000) had access to much more historical data. Despite this we had to make a few modifications to Cao's estimates for 1893 and 1776. First, we modified Cao's estimate of 500,000 inhabitants for Suzhou by applying the more recent estimates of 1 million inhabitants from Wang (1999) and Li (2003). Second, Liu (1987) and Fan (1990) supplied more estimates for market towns in the Yangtze Delta. Based on Cao, Liu, Fan and Li, we built up the Qing part of our dataset both for cities (including market towns) exceeding 2,000 inhabitants and for cities with more than 10,000 people in the Yangtze Delta and in the Inner

China.

Since Skinner’s estimate for 1843 is difficult to rely on and Cao does not provide a benchmark for that year, we still need to supplement the estimates for the mid-19th century. Due to data limitations, we were only able to obtain estimates for Shandong, Hebei, Shaanxi, and Guizhou provinces in 1850 using an eclectic approach based on gazetteers supplemented with other sources. Indeed, the gazetteers are an immensely important, and at the same time difficult, source. What makes it so difficult is the at times inconsistent way of recording information. Hence, besides using non-gazetteer sources, we followed the literature and used the following approach to derive “reliable” data from the gazetteers: (1) if there were two or more data for urban population in a certain gazetteer, the more complete and reliable one should be selected; (2) if there was only one data point for urban population in a certain gazetteer, the population data derived from other gazetteers in the same city level as the former could be used to cross check; and (3) if there was only one implausible (or none at all) data point for the urban population in a certain gazetteer, one has to assign it a real data for urban population by other useful sources. This might be notebook, comparable cities with data, etc.

Hence, we combined data from gazetteers for these four provinces with other existing research of the mid-19th century. In this way we derived the average urban population for each type of city (the typology was taken from Cao (2000)’s subdivision for 1776). Combining the average urban population in each type of city with the number of cities, we calculated the total urban population in each of these four provinces (see Table 3). Combined with an urbanization estimate of 20% for the Lower Yangtze Delta from Li (2000), these data allow us, by weighting by population size, to put the level of urbanization around 1850 at 6.5% (5.5% for China outside the Lower Yangtze Delta).

Table 3 Urbanization in Shandong, Hebei, Shaanxi, and Guizhou in 1850

	Shandong		Hebei		Shaanxi		Guizhou	
	No. of cities	Population	No. of cities	Population	No. of cities	Population	No. of cities	Population
Provincial capital city	1	62,500	1	1,063,000	1	65,000	1	60,000
Large prefecture city and large market town	8	691,500	11	527,000	4	120,000	1	50,000

(To be continued)

(Continued)

	Shandong		Hebei		Shaanxi		Guizhou	
	No. of cities	Population	No. of cities	Population	No. of cities	Population	No. of cities	Population
Normal prefecture city and large county city	11	165,000	6	90,000			4	48,000
Normal county city and normal market town	98	588,000	114	684,000	9	135,000	33	148,500
Small market town	96	288,000	87	261,000	80	480,000	3	9,000
All cities and population	214	1,795,000	219	2,625,000	94	800,000	42	315,500
Total population		35,585,000		27,055,000		13,269,000		8,794,000
Urbanization ratio		5.0%		9.7%		6.0%		3.6%

Source: (1) Shandong estimate: Xu (1998), Cao (2000), Chandler, Tertius and Fox (1974) and 3 local gazetteers, such as *Daoguang Donge xianzhi* (道光《东阿县志》), *Daoguang Shanghe xianzhi* (道光《商河县志》), *Daoguang Jiaozhouzhi* (道光《胶州志》). (2) Hebei estimate: Han (1996), Cao (2001), and 2 local gazetteers, such as *Mingguo Qingyuan xianzhi* (民国《清苑县志》), *Daoguang Jimen Baojia Tushuo* (道光《津门保甲图说》). (3) Shaanxi estimate: Cao (2001), and 4 local gazetteers, such as *Daoguang Qinjiang Zhilue* (道光《秦疆治略》), *Guangxu lantian Xianzhi* (光绪《蓝田县志》), *Daoguang Anding Xianzhi* (道光《安定县志》), *Daoguang Shiquan Xianzhi* (道光《石泉县志》). (4) Guizhou estimate: Cao (2001), and 3 local gazetteers, such as *Daoguang Guiyang Fuzhi* (道光《贵阳府志》), *Daoguang Zunyi Fuzhi* (道光《遵义府志》), *Daoguang Dading Fuzhi* (道光《大定府志》) and Chandler and Fox (1974).

Levels of urbanization for the Qing and Republican China are reported in Table 4, which shows stability between 1776 and 1893 for Inner China but some decline in the two most urbanized regions, Hebei and the Yangtze Delta.

Table 4 Urbanization by Province 1776–1918 (%)

	1776	1851	1893	1918
Hebei (including Rehe, Beijing, Tianjin and Baoding)	13		8	
Shaanxi	5		7	
Shanxi	10	10	9	
Shandong	5	5	3	
Henan	5	4	5	

(To be continued)

(Continued)

	1776	1851	1893	1918
Jiangsu (including Shanghai)	14		14	
Zhejiang	10		14	
Fujian	6		7	
Jiangxi	8		7	
Huguang (including Hunan and Hubei)	6		6	
Guangdong	8		8	
Sichuan	7		7	
Anhui	5		5	
Gansu	3		5	
Guangxi	5		5	
Guizhou	5	4	5	
Yunan	4		4	
Inner China	7	7*	7	13
Yangtze Delta	19	20	17	15
Xinjiang	7		8	

Note: * based on four provinces.

2.4 Urban Population: 1391–1630

In order to calculate the urban population in the Ming dynasty, we again used the work of Cao (2001), who has supplied a complete dataset for individual cities and provinces, as well as an estimate for China as a whole. Cao's dataset contains the following estimates: (1) national estimates of the urban population in 1391 and 1630; (2) 13 provincial estimates for 1391 and 1630; and (3) 488 individual city estimates for 1391, 529 estimates for 1630, and 16 estimates for the remaining benchmarks of the Ming dynasty. Consequently, not all cities were available for all benchmarks.

To begin with, we took Cao's estimates for 1391 and 1630, albeit that these estimates had to be modified in a few cases. Because new evidence, based on original materials, has surfaced since Cao published his study (2001), we corrected his estimates for two large cities in 1630. For Nanjing, recent research points to a much greater population than the 450,000 inhabitants estimated by Cao; memoirs of local officials and gentry report about one million people in

Nanjing in the late Ming.⁵ We made a similar correction for Suzhou based on the estimated 50,000–60,000 workers in silk textile industry,⁶ which accounted for half of the total urban population.⁷ Besides these changes, we added three individual city estimates taken from Chandler’s dataset and one based on original material in our Ming dataset. By combining total rice storage with rice consumption per person we estimated that the urban population of Hangzhou was about 1,000,000 in 1630.⁸

We had to make a few more corrections to Cao’s estimates because for some provinces he used a low threshold of 1,000 inhabitants to define a city (instead of the standard of 2,000 people) and, also, he did not include the military population, which was often quite large in border regions (e.g. Gansu, Yunnan and Guizhou). We made additional, but relatively small, corrections to take this into account. In this way we arrived at our estimates of urbanization for 1391 and 1630. It is also possible to make estimates for another benchmark year, 1644, at the end of the Ming dynasty, by combining our estimate of the urban population in 1630 with ratios of population loss between 1630 and 1644 provided by Cao (2001); these ratios are based on a large number of observations in individual cities and villages during the late Ming.

2.5 Urban Population: 1102–1290

Not entirely unexpectedly, data for the Song and Yuan dynasties are the least reliable. Due to data limitations, few scholars have supplied complete sets of urbanization data for the Yuan or Song. The estimates we present here are therefore tentative.

For the Yuan dynasty, some important studies should be introduced here. The early monumental work of Chandler and Fox (1974), which gave various estimates of individual cities suffer in certain cases from over-estimation and in other cases from underestimation. The reason is that they sometimes estimated

⁵ Economic research center in Nanjing government edited (1990).

⁶ See Du (2012).

⁷ See Zhu (1628–1644), vol. 44. Besides these changes, we add three individual city estimates from Chandler’s dataset and one based on the original material in our Ming dataset.

⁸ *Wanli Hangzhou fuzhi* (万历《杭州府志》) provides us with the total rice storage in Hangzhou in the late Ming dynasty. *Anwu sizhong* (《安吴四种》) written by Bao Sichen records the rice consumption per person in the lower Yangtze Delta in Ming–Qing times.

urban population based solely on census data for a county or a prefecture instead of the actual urban area. Likewise, sometimes they simply assumed that the urban population was a half or 1/3 of the total population of a county or prefecture. On the contrary, following more recent scholarship provides more reliable estimates of individual cities. For example, Han (1996) provides estimates for 8 cities, Liang (1997) added estimates for Suzhou city, and Wu (2000) added estimates for another 5 cities. As a result, for the Lower Yangtze region only, based on Han, Liang and Wu, we obtained estimates for 7 cities around 1290 that can be compared to 1205 in Table 5 (the sources for the latter benchmark will be introduced below). The data suggests that in 1291, during the Yuan dynasty, cities in the Lower Yangtze Delta were much smaller than during the Song. On average the decline was 36%, which gives (assuming that these 7 cities are representative for the Yangtze Delta as a whole) an urbanization ratio for the Yangtze Delta in 1291 of 18%. The population sizes of another set of cities (outside the Yangtze Delta) supplied by Han (1996), and Wu (2000) witnessed the urban populations were on average slightly greater than 60% of their numbers during the Song dynasty. Yet, given that population dropped by no less than 50% (see Table 1), this implies a rise in urbanization. However, due to population loss during the warfare that preceded the Yuan dynasty, 24 cities that had populations greater than 10,000 persons in the Song dynasty saw their populations falling below 10,000 inhabitants (i.e. 24% of the total number of cities of more than 10,000 people in the Song). Hence, it seems fair to assume that urbanization during the Yuan period was roughly equal to that of the Song (see below), i.e. approximately 12% (the result of an equally severe drop in both population and city sizes).

Table 5 Comparison between Numbers of Inhabitants of Seven Cities in the Lower Yangtze Delta in 1205 and 1290

City	Year 1205	Year 1290
Hangzhou	1,100,000	575,000
Suzhou	500,000	500,000
Zhengjiang	79,500	65,767
Jiaxin	50,000	32,900
Changzhou	50,000	27,040
Nanjing	300,000	94,992
Songjiang	—	35,300

Source: Han (1996), Liang (1997), Wu (2000) and Long (2003).

Finally, we have to deal with the Song dynasty. However, before we discuss the estimates for the 1102 and 1205 benchmarks, we should put these years into context. The year 1102 belongs to the period when the Song dynasty was at its peak; its capital at that time was Kaifeng. In 1125 the dynasty was defeated by a northern nomadic clan and as a result it lost its territories in northern China. Ultimately it was forced to move its capital south to Hangzhou (in 1131). Thereafter it was known as the Southern Song dynasty. In the meantime, the nomadic clan that had defeated the Northern Song established a new dynasty, the Jin, by combining its original territory with the territories it had captured from the Northern Song. Hence, in 1205 the Southern Song and Jin dynasties in combination occupied the territories that in 1100 had belonged to the Northern Song.

Data for the size of the Northern and Southern Song dynasties capital cities (Kaifeng and Hangzhou, respectively) in 1109 and 1205 are available; they are based on the number of households in both cities and are relatively well accepted by academics. More problematic, however, is the determination of household size. For example, Long Denggao, who estimated average household size in Kaifeng and Hangzhou to be 4.5 persons,⁹ criticized Wu Songdi for assuming a household size of 7, which implied a total population close to twice that found by Long Denggao. Yet, as shown by Wu Songdi,¹⁰ household sizes could easily average as much as 6–7 persons.

In our study we have mainly followed Wu (2000) and Long (2003), albeit with some small modifications. First, we agree with Wu Songdi that households were probably larger, but we increased this estimate to only 5 persons for both Kaifeng and Hangzhou. In addition, Long Denggao relied mainly on the registered population numbers, meaning that his estimate excluded specific social groups such as the military, officials, Buddhist monks, and so on. After multiplying the number of households in Kaifeng and Hangzhou by 5 and adding estimates for specific social groups taken from Wu Songdi, we arrived at a total population for both cities of 1 million and 1.1 million, respectively (see Table 6).

⁹ Long (2003, p. 50) provides four reasons to support a common household size of less than 5 people.

¹⁰ Wu (2000, p. 581) cites two pieces of evidence from private notebooks from the Southern Song dynasty to support a common household size of 6–7 persons.

Table 6 Estimates of the Population Size of Kaifeng and Hangzhou during the Song Dynasty

	Wu Songdi's estimate	Long Denggao's estimate	Our estimate
Kaifeng	1.5 million		1 million
Huangzhou	1.2–1.3 million	0.7 million	1.1million

Source: Wu (2000, p. 574, p. 581), Long (2003, p. 54).

Due to limitations of data, for the Lower Yangtze Delta we have to focus on the benchmark year of 1205. For this region, Liang (1997) provides estimates for both Suzhou and Zhenjiang in around 1205, and one estimate for Nanjing in 1130, which are derived from direct population reports in private documents and local gazetteers. Besides following Liang's estimates for both Suzhou and Zhenjiang, Wu (2000) uses a new census from a local gazetteer to estimate urban population for Nanjing in 1205. Data for an additional three administrative cities (i.e., Changzhou, Jiaxin and Huzhou) are obtained from Chen (2001).¹¹ Supplementary to these estimates, Long (2000) tries to estimate the urban population for the remaining administrative cities in the Yangtze: He assumed 1,000 households for each of the remaining county cities.¹² Combining the estimates for all these cities with data on an additional 13 smaller administrative cities (i.e., county cities) from Long (2003), we calculate the total urban population in administrative cities in the Lower Yangtze.

However, this still excludes residents from market towns. These are derived from Chen (2001) who estimates the existence of 10 large market towns with populations greater than 10,000 and 30 smaller market towns with more than 2,000 inhabitants. Yet, although he claims there are 10,000 inhabitants in each of the large market towns of the Southern Song dynasty, Chen's argument is contradicted with Han (1996), who found that there were no large market towns of more than 10,000 inhabitants in the Lower Yangtze Delta on the eve of the reunification of China by the Mongols (i.e., in the first half of 13th century). Hence, a fair assumption seems to be that a large market town had at least 1,000

¹¹ He also claims that cities such as Zhenjiang, Weizhou and Taizhou, which witnessed the census of approximately 10,000 households in each city, should have had the same size as Changzhou, Jiaxin and Huzhou.

¹² Many scholars, for instance Yoshinobu Shiba (1986), Guo (1997) and Chen (2001), put the number of inhabitants in a county town during the Song period at about 1000–5000.

households (i.e. 5,000 inhabitants). For the smaller market towns, we use Chen's estimate. Table 7 shows our new estimates for the entire Yangtze Delta.

Table 7 Estimate of Urbanization for the Lower Yangtze Delta in 1205

City	Households	Inhabitants
Hangzhou	174,330	1,100,000 (including other social groups)
Suzhou	100,000	500,000
Zhenjiang	15,900	79,500
Nanjing	60,000	300,000
Changzhou	10,000	50,000
Jiaxin	10,000	50,000
Huzhou	10,000	50,000
13 county cities	13,000	65,000
10 large towns	10,000	50,000
30 smaller towns	15,000	75,000
Total urban population	418,230	2,319,500
Total population	1,800,000	9,133,503
Urbanization ratio		25%

Note: Our calculation of the number of inhabitants is based on the assumption of 5 people per household.

Source: Chen (2001).

To estimate the 1205 benchmark for China as a whole, we have to combine the Southern Song territories with estimates for the Jin dynasty. We started by estimating the number of large cities in the benchmark year. At the eve of the reunification of China by the Mongols (i.e. the first half of 13th century), 119 large cities of more than 10,000 inhabitants can be documented for Inner China, as Han (1996) proposed. For cities with fewer inhabitants we assumed the numbers to be identical to the estimates provided by Qi (1987) for the year 1102, since available evidence suggests that city sizes for the smaller cities remained the same, corrected for share population in Gansu, a part of Shaanxi and Yunnan. Moreover, from studies by Shiba (2012) and Long (2003) we know the length (in km) of the perimeters of Song cities (Table 8).

By comparing estimates of the geographical and population size of a subset of

35 cities across Inner China for both the Northern and Southern Song,¹³ for which we know both their area and population size, we estimated that the number of inhabitants per km² was about 13,600. This is close to the average population density of European cities in the Middle Ages and Roman times, estimated by De Ligt (2012, p. 201; 215) at 15,000 per km².

Table 8 Length of City Perimeters in Different Areas in the Song Dynasty (km)

Cities	Lower Yangtze delta	Middle Yangtze delta	Northern China	Southeastern and southern China	Average for Song China
Capital and provincial cities	35	10.3	12.1	10.05	12.55
Prefectural cities	13.1	5.1	2.3	4	5.75
County cities	0.95	2.45	2.05	0.75	1.8

Source: Shiba (2012) and Long (2003).

By combing the numbers of cities, their spatial size, and the number of inhabitants per square kilometer, we estimated the level of urbanization in 1205 to be 12% (Table 9). The question is whether we can cross-check this estimate. It matches very well with the findings of Wu (2000), who estimated an urbanization ratio of 12% for the Southern Song for the same year. However, it deviates considerably from the approximately 21% found by some other researchers (e.g., Shiba, 1997; Kang, 2006). Yet, most scholars now seem to favor the lower estimate since it more closely matches economic development during the Song period. Our estimate for 1205 is much the same as the estimate for 1102 by Qi (1987), who estimated an urbanization ratio of 12% for the Northern Song dynasty, although this excludes parts of Hebei and Shanxi, Gansu and parts of Shaanxi, and Yunnan. Together these territories make up roughly 9% of the total territory of Inner China. Hence, assuming that urbanization in these areas was on average slightly below that of the Northern Song, we estimated that total urbanization for Inner China in 1102 would not have been lower than

¹³ According to records, there were few differences in the length of city perimeters between the Northern and Southern Song. In this dataset, data on city perimeters are derived from Shiba's collection (2012), combined with another 3 local gazetteers, i.e., *Jiaqing Chongxiu Yangzhou Fuzhi* (嘉庆《重修扬州府志》), *Guangxu Hanyang Xianzhi* (光绪《汉阳县志》) and *Daoguang Fancang Xianzhi* (道光《繁昌县志》) and data on the urban population from our dataset for both Song periods.

approximately 11%.

Table 9 Urbanization in 1205

City type	No. of cities	People per km ²	City spatial area (km ²)	Urban population (million)
City > 10,000 inhabitants	119	13,600	2.631	4.26
Provincial/prefectural city	165	13,600	0.578	1.30
County city	883	13,600	0.578	6.95
Market town	1,103	13,600	0.361	5.42
Total				17.9
Total population				143.82
Urbanization ratio				12%

Source: For the number of cities, Qi (1987) and Han (1996); for city size, Shiba (2012) and 3 local gazetteers; for the urban population, see our estimates.

2.6 Overview 1102–1918

In sum, our dataset covers estimates of urban population at city, provincial, regional (i.e. Southern China, Northern China and the Lower Yangtze Delta) and national levels. By combining our data on Song, Ming and Qing China, we arrived at an overview—admittedly tentative—of urbanization in China for cities of more than 2,000 people (see Table 10). What we found is a constancy of urbanization in China as a whole: Urbanization peaked in the Song dynasty during 10th–12th centuries, remaining fairly constant until the late Ming, after which it declined until the late Qing before recovering to Song levels in the first decades of the 20th century. Most of the provinces seem to have mirrored this trend (see Table 10); Guangdong and Shanxi, which had higher levels of urbanization after the Yuan dynasty, being exceptions. Perhaps the most important exception, however, is the Lower Yangtze Delta, which started out with very high levels of urbanization, which, after a temporary decline during the Yuan dynasty followed by a minor recovery in the early Ming, slid into permanent decline until the first several years of the Republican period.

Table 10 Urbanization Ratios (%) by Region and Benchmark Year (cities with more than 2,000 inhabitants)

	1102	1205	1290	1391	1630	1644	1776	1851	1893	1918
Hebei (including Rehe, Beijing, Tianjin and Baoding)				10	18	16	13		8	
Shaanxi				8	9	7	5		7	
Shanxi				6	6	3	10	10	9	
Shandong				6	8	7	5	5	3	
Henan				7	7	6	5	4	5	
Jiangsu (including Shanghai)				14	18	16	14		14	
Zhejiang				14	18	16	10		14	
Fujian				14	10	10	6		7	
Jiangxi				6	8	8	8		7	
Huguang (including Hunan and Hubei)				9	12	10	6		6	
Guangdong				7	7	7	8		8	
Sichuan				10	10	4	7		7	
Anhui							5		5	
Gansu					9		3		5	
Guangxi				8	9	9	5		5	
Guizhou					9	9	5	4	5	
Yunan					9	9	4		4	
Inner China	11	12	12	10	12	11	7	7	7	13
Yangtze Delta		25	18	19	23	20	19	20	17	15
Xinjiang							7		8	

Besides the small adjustments we make to existing studies, our data may also be considered as a summary of the urbanization trend in China. An overview of the existing estimates of Chinese urbanization is provided in Table 11. For the latter years of the period, our estimates are very similar, if not identical, to those of other authors—often because we relied on their data; for the earlier years of the period our estimates tend to be more conservative.

Table 11 Comparison of Urbanization Ratio (%) in both the Lower Yangtze Delta (YD) and China (CH)

Scholars' estimates	1109		1205		1290		1391		1630		1644		1776		1851		1893		
	YD	CH	YD	CH	YD	CH	YD	CH	YD	CH	YD	CH	YD	CH	YD	CH	YD	CH	
Kang Cao		20		22												6.9			7.7
Shi Ba				21															
Qi Xia		12																	
Wu Songdi				12															
Long Denggao						15													
Skinner																5			6
Cao Shuji							19	10	10	10			16	7			17		7
Li Bozhong																	20		
Our estimates	11	25	12	12	18	12	19	10	10	23	12	20	11	19	7	20	7	17	7

3 Explaining Urban Development

Urban systems are determined by socio-political and economic forces. Here we examine these forces by focusing on four important trends in the urban structure: urban primacy (the share of the largest capital city in total population), the development of small market towns (often linked to the commercial revolution of the late Ming), the share of the port cities in total population (related to the links between the Chinese economy and overseas trade), and the shifting importance of highly urbanized versus under-urbanized regions within the China. Together these four forces explain to a large extent the decline in the urbanization ratios observed.

3.1 Urban Primacy

The size of the largest city—the primate city—is a first index of the size and structure of urbanization. Bosker et al. (2013) demonstrate that this “primate city effect” is related to the political economy of states: In the Arab world, the urban system was dominated by a few large capital cities (Baghdad, Damascus, Cairo, Istanbul), which had the features of typical “consumer cities.” European cities were on average much smaller, and less dependent on the states they were part of—in particular during the Middle Ages, when “producer cities” dominated the urban landscape. This has also been demonstrated by recent research into historically contemporary urban systems. Ades and Glaeser (1995) and Davis and Henderson (2003) have shown that high levels of urban concentration are linked to a higher degree of political instability and lack of democracy: “Urban giants ultimately stem from the concentration of power in the hands of a small cadre of agents living in the capital. This power allows the leaders to extract wealth out of the hinterland and distribute it in the capital” (Ades and Glaeser, 1995, p. 224). When a few large cities dominate the urban landscape, this tends to be indicative of an urban system that is much more oriented towards serving the need of the political elites in these major cities (see, for example, the difference in urban landscape between northern and southern Italy documented in Bosker et al. (2013)).

Our dataset allows us to identify the largest cities in China. In 1100, Kaifeng, the capital of the Northern Song, was the largest city with probably about 1 million inhabitants; in 1200 this was Hangzhou, the capital of the Southern Song,

with an estimated population of 1.1 million. The largest city in Europe in 1100 was Cordoba (80,000 inhabitants), and in 1200 Paris (110,000), only a fraction of the Chinese capitals. But in the 19th century the largest city in China, Beijing, with about 1 million inhabitants, was probably smaller than Hangzhou in 1200, and in 1900 the commercial metropolis Shanghai counted only 900,000 people and had almost overtaken Beijing. In 1918 it was surpassed by another commercial metropolis, Guangzhou, with 1.6 million inhabitants. As Table 12 shows, the share of the primate city in the total population of China fluctuated throughout the period: It rose slightly from 1% in 1100 to 1.4% in 1400, only to be followed by a significant decline, before starting to recover early in the 20th century. Over the same period the tiny capital cities of Europe had grown considerably. Around 1800, London, which emerged as the largest city (surpassing Paris), was about the same size as Beijing, but after 1800 London underwent unparalleled growth. Around 1900 it had more than 6 million inhabitants, approximately 2.3% of the population of Western Europe. In the Arab world this percentage fluctuated around 1.5%, with a tendency to rise to more than 2% after the consolidation of the Ottoman Empire (the share of the population living in Istanbul increased from 1.8% in 1500 to 2.2% in 1800) (Bosker et al., 2013).

Table 12 Urban Primacy in China and Western Europe Compared, 1100–1900

	Primate city (in 1,000 inhabitants)		Primate city/Total population (in %)	
	China	Western Europe	China	Western Europe
1100	1,000	80	1.0	0.2
1200	1,100	110	0.8	0.2
1300	1,090	120	1.5	0.2
1400/1391*	950	100	1.4	0.2
1500		250		0.4
1600/30	1,240	300	0.7	0.4
1700/1644	650	575	0.4	0.6
1800	987	948	0.3	0.7
1850	1,063	2,236	0.3	1.1
1900	1,104	6,226	0.2	2.3
1918	1,600		0.4	

Note: *1400 = Europe and 1391 = China.

Source: See text.

During the Song, China had an urban system dominated by one large city, its capital. Actually, it had two capital cities, one during the Northern Song and one during the Southern Song, which together were responsible for around 2% of the total population. In terms of primacy, this was comparable to the Arab world, where similar huge cities were to be found. But this changed dramatically between 1100 and 1900. It can be argued that the size of a capital city in the first place reflects the capacity of the state to mobilize resources. From this perspective, the relative decline of the Chinese capital points to changes in the political economy of the country that have been discussed by others in much greater detail (e.g., Ma, 2011), ultimately leading to the declining capacity of the state to extract resources from the economy, maintain an efficient bureaucracy and supply public services. By contrast, Europe went through a process of state formation that greatly enhanced the capabilities of its states: In Western Europe the share of taxation in GDP rose to 8%–12% in the first half of the 19th century, whereas the estimates for 19th century China were as low as 2% of GDP (Ma, 2011).

The contrasting paths of formation of the Chinese and European states also help to explain contrasts in the urbanization process. The changing position of the primate city in the economy and in the urban structure was part of a much broader change in the structure of urbanization, to which we now turn. Both Skinner (1977) and Rozman (1973) have pointed out that the structure of Chinese urban system of the 19th century was rather unbalanced, with its “peak” being quite flat. Rozman compared this with Japan, where Edo with its million inhabitants was huge; there, more than 3% of the total population lived in the capital, testifying to the ability of the Japanese state to tax its population. China moved away from such an urban structure dominated by one (or a few) large consumer cities, which undermines the analysis put forward by Acemoglu and Robinson (2012) that “extractive institutions” put in place by the state hindered its economic development. Our data suggest that such extractive institutions (as measured by urban primacy) appear to be more effective for the period of economic prosperity during the Song than for the Qing.

3.2 Development of Market Towns

Between the Song and the Qing the upper layers of the urban pyramid grew weaker, but, it has been argued, at the same time its basis was strengthened.

During the (late) Ming and the Qing a commercial revolution occurred, resulting in what is often called “the rise of market towns,” a phenomenon which was particularly marked in the Yangtze Delta (for an overview see Deng (2000)). We have only been able to estimate the share of the small towns (with between 2,000 and 10,000 inhabitants) in total urban structure of the urban system in 1205 and 1776 for cities of more than 10,000 inhabitants, and for cities of between 2,000 and 10,000 inhabitants benchmark years 1205 and 1776 (see Table 13). The upper part of the table documents the decline of the share of large cities in the total population; the bottom part points to the growth of small towns that occurred at the same time, which to some extent compensated for the decline of the large cities of the Yangtze Delta. For Inner China as a whole this was not the case, however; by contrast, it is striking that the decline in the overall urbanization ratio between 1205 (12%) and 1776 (7%) is largely explained by the falling share of the relatively small cities.

Table 13 Structure of the Urban System in 1205 and 1776 for Cities of more than 10,000 Inhabitants, and for Cities of between 2,000 and 10,000 Inhabitants

		1205	1776
Cities > 10,000 inhabitants			
Yangtze Delta	No. of cities	17	55
	Urban population	2,129,500	3,700,000
	Total population	9,133,503	24,825,000
	Share of large cities	23%	15%
Inner China	No. of cities	119	357
	Urban population	6,262,000	11,198,900
	Total population	138,720,000	305,100,000
	Share of large cities	5%	4%
Cities with 2,000–10,000 inhabitants			
Yangtze Delta	No. of cities	40	357
	Urban population	190,000	956,000
	Share of small cities	2%	4%
Inner China	No. of cities	2151	2874
	Urban population	10,044,000	10,158,100
	Share of small cities	7%	3%

The reason for this difference in development between the Yangtze Delta and Inner China as a whole is less easy to assess. Both regions witnessed a steep population increase over this period. Yet, in Inner China as a whole most of this “new” population lived in the countryside (hence decreasing urbanization levels) and in cities larger than 10,000 inhabitants, while in the Yangtze Delta these people lived in the countryside and cities of less than 10,000 inhabitants. The reason for this difference may be twofold. First, as we show in the following sections, the large coastal cities in the Yangtze Delta declined steeply over this period, when the economic focus shifted inland. This made large cities less attractive and accounted for much of their decline in the Yangtze Delta. Second, it has been argued that the commercialization of the countryside was greater in the Yangtze Delta than for Inner China as a whole (e.g., Li, 2000; 2003). Yet, since we found that the decline in large coastal cities was greater than the decline in all large cities (see below), this implies that large non-coastal cities in the Yangtze Delta actually grew at a pace similar to those for Inner China as a whole. This suggests that it is mainly the shift in economic core, rather than an increase in commercialization in the countryside, that drives the peculiar urbanization pattern in the Yangtze Delta.

3.3 Cities Linked to Overseas Trade

A third factor affecting urbanization concerns waterways. In Western Europe cities close to the sea profited most from the commercial expansion of the early modern period (Acemoglu et al., 2005). For Europe as a whole (excluding Russia), the proportion of urban populations living in cities bordering the sea increased from about 22% (in 1200 and 1500) to 32% in 1700. Later, by 1800, this proportion had declined slightly to 28%, due to industrialization inland (European data from Bosker et al., 2013). Does overseas trade have a similar effect on the Chinese urban system?

Our dataset for 1205 includes eight coastal cities of more than 10,000 inhabitants (i.e., Laizhou, Haizhou, Hangzhou, Wenzhou, Fuzhou, Quanzhou, Xinghua, and Guangzhou). By combing the findings of Han (1996), Liang (1997), Wu (2000) and Long (2003) with the *Historical Atlas of China* (Tan, 1996, Volumes 6 & 7), we are able to tentatively estimate the share of the population living in coastal cities of more than 10,000 inhabitants for the benchmark year

1205.¹⁴ For 1776 we arrived at the urban population in coastal cities above 10,000 inhabitants by combining Cao (2001) with the *Historical Atlas of China* (Tan, 1996, Volume 8).¹⁵

The results for both 1205 and 1776 are reported in Table 14. For Inner China as a whole, we found a decline in the share of coastal cities in the total population from 1% in 1205 to 0.6% in 1776. In terms of the share of total urban population, this meant that the share living in coastal cities greater than 10,000 inhabitants remained roughly constant at 8.5%, a share much lower than that for Europe. Nevertheless, there were major differences between regions. For example, in the Yangtze Delta, coastal cities had a much more important place in the urban landscape of 1205 than that of 1776. Indeed, a significant share of the overall decline in urbanization in this region was caused by the dramatic decline of its coastal cities: Their share in the total population fell from 12% in 1205 to 2% in 1776. Meanwhile, with the exception of Fujian, other provinces witnessed an increase in the share of large coastal cities in the total population, suggesting that the economic core slowly shifted away from the Lower Yangtze region.

It is clear that coastal cities played a much smaller role in China than they did in Europe. In 1776, most cities are more or less equally spread over the country, without a clear tendency to be concentrated near the sea, much like Huff and Angeles (2011) found for Southeast Asia in the second half of the 19th century.

¹⁴ The works of Han (1996), Liang (1997), Wu (2000) and Long (2003) provided us with estimates of the urban populations for the following cities: Hangzhou had 1,100,000 inhabitants, and Wenzhou and Quanzhou had approximately 50,000 inhabitants each. Fuzhou had approximately 10,000 inhabitants and Guangzhou 60,000. We estimated the urban population of the three remaining cities by using population densities. Since population densities in Xinghua prefectures were similar to those of the prefectures of such cities as Wenzhou and Quanzhou, we assumed that Xinghua had 50,000 inhabitants. Likewise, since the population densities of the prefectures of Laizhou and Haizhou were one-third lower than those of the other prefectures of coastal cities greater than 10,000 inhabitants, we assumed that both Laizhou and Haizhou had populations of 10,000 inhabitants each.

¹⁵ Zhili had only one coastal city over 10,000 inhabitants (i.e., Tianjin). Shandong had 4 coastal cities larger than 10,000 inhabitants (i.e., Dengzhou, Laizhou, Huangxian and Jiaozhou). Jiangsu had 3 coastal cities over 10,000 inhabitants (i.e., Baosan, GanYu and Huangjing). These totaled roughly 0.8% of the urban population in this province. Zhejiang had 4 coastal cities over 10,000 inhabitants (i.e., Hangzhou, Wenzhou, Ganpu and Zhapu). For both Fujian and Guangdong provinces there is little direct information available. Since the population density in coastal prefectures, along with the provincial urbanization as a whole, was similar in Shandong and Fujian provinces, we assumed the share of urban people living in coastal cities to be the same in both provinces. Likewise, since the population density in coastal prefectures was almost identical in both Zhili and Guangdong provinces, we assumed the share of people living in coastal cities in the total urban population to be the same in Guangdong.

Table 14 Share (%) of Coastal Cities of more than 10,000 Inhabitants in the Total Population of the Yangtze and of Inner China Respectively by Region in the Benchmark Years 1205 and 1776

Region	1205	1776
Urban population in Yangtze/ population in the Yangtze		
Lower Yangtze Delta (i.e. southern Jiangsu and northern Zhejiang)	12%	2%
Urban population/population in Inner China		
Hebei		0.05%
Shandong	0.01%	0.02%
Northern Jiangsu	0.01%	0.01%
Southern Zhejiang	0.01%	0.19%
Fujian	0.14%	0.07%
Guangdong	0.04%	0.07%
Total Inner China	1.00%	0.60%

3.4 Regional Spread of Urbanization

A fourth major factor in the development of the urban system is changes in the regional distribution of the population. Two trends are visible: During the Song, the share of the south, and in particular the share of the Yangtze Delta. In the total population increased. In the south it climbed from 67% in 1205 to 81% in 1391, an increase partly driven by the rise from 6% to 13% of the two provinces that made up part of the Yangtze Delta. Thereafter the trend reversed, and the share of Jiangsu and Zhejiang in the total population declined to 8% in 1776 and 4% in 1893. Since this was, from the Song period onwards, the most urbanized region—its urbanization ratio was about twice the national average—this relative decline of the Yangtze Delta in the total population contributed to the overall decline of the urbanization ratio. But it raises a more important issue: Why did this happen? Why did the most advanced parts of China see their share in population fall so dramatically while in Europe the comparable North Sea area gained in population share (Van Zanden, 2000)?

In the case of Europe three factors played a role: (1) Income growth resulted in disproportionate growth in demand for manufactured products and services, which were (mainly) produced in cities. (2) Technological change in the secondary and tertiary sectors was more rapid than in agriculture, resulting in the

long-term decline of the prices of manufactured goods (and certain services, such as transport). Consumers responded by buying more books, textiles and kitchen utensils, and imported colonial goods such as coffee, tea and sugar, and by spending less on foodstuffs (for example, the per capita consumption of meat declined in absolute terms). The combination of rapid technological change and a “consumer revolution” boosted the share of manufacturing and services in employment, and led to a rise in the urbanization ratio. (3) These trends were to some extent counterbalanced by the ongoing reallocation of production processes between town and countryside; in particular the rise of proto-industry (which occurred in waves) led to the reallocation of manufacturing from cities to the countryside, where wages were lower. But the rapid growth of proto-industrial areas in due course resulted in the formation of new urban agglomerations. The key to the urbanization process was that the concentration of secondary and tertiary activities in urban nodes resulted in economies of scale, technological spillovers and positive externalities that resulted in productivity gains; slow but persistent before the Industrial Revolution, accelerating during the 18th and 19th centuries. This increase in productivity made it possible to remunerate factors of production—in particular labor—to compensate for the “disamenities” of urban life (such as the high cost of foodstuffs).

These factors are probably best illustrated by the structure of wages in the European economy. In the 17th and 18th centuries nominal wages (expressed as grams of silver) in the urban core of Western Europe (the Low Countries, England) were about three times the levels found in the “periphery” (in Poland) (Van Zanden, 1999). At the same time, international trade between the Baltic region and Western Europe was substantial—Western Europe imported grains, timber and other primary commodities, in return for which it supplied international services and manufactured goods. This implies that on balance labor productivity in the North Sea area was such that it compensated for the much higher wages that had to be paid there. In real terms, the gap in wage levels was much smaller, but nevertheless persistent.

This was different in China. Based on qualitative information from gazetteers regarding population, consumption, land use, industrial structure, trade and taxation, Gao (1999) divided 18th century China in different geo-economic areas ranging from “most advanced” to “less developed.” Combined with research by

Allen et al. (2011)¹⁶ on the spatial structure of Chinese nominal wages in the 18th century, we find that in China wages were lowest in the most advanced provinces and highest in the less developed periphery. Until early 20th century, this pattern did not change much (see Table 15).¹⁷ Apparently, the concentration of economic activities in the Yangtze Delta did not give rise to the scale and agglomeration economies that made possible higher levels of nominal and real incomes there. The highest nominal wages were earned in the poorest areas of the country—almost empty regions, which attracted large numbers of migrants and grew much more rapidly than the Yangtze Delta. Indeed, Lee (2012) showed that the immigrants in general lived better in the peripheral areas than in the core areas, from which they originated. The main reason for this was that they were able to rent the more fertilized lands from local landlords and to monopolize both industry and the service sectors in these regions.

Table 15 Nominal Wages in Tael per Day in Construction in Core and Peripheral Regions, 1769 and 1918

Area	Province	1769		1918	
		Unskilled workers	Skilled workers	Unskilled workers	Skilled workers
Most advanced	Zhejiang	0.04	0.06	0.14	0.29
	Jiangsu (including Shanghai)**	0.04	0.05	0.12	0.25
	Unweighted average	0.04	0.06	0.13	0.27
Advanced	Guangdong (including Canton)	0.04	0.05		
	Sichuan	0.05	0.06		

(To be continued)

¹⁶ Allen et al. took the best survey of nominal wage level in the construction industry, *the Wuliao jiazhi zeli of 1769* (《乾隆物料价值则例》), which is a very detailed and systematic government report on the nominal wages paid at construction projects in different regions across China. On this basis, Allen et al. constructed the regional pattern of nominal wage level in 24 districts covering provinces and big cities. By calculating the unweighted average of the wage norms for labourers in all districts, we combined 24 districts into 19 provinces.

¹⁷ As Allen et al. did in their paper, we also took the complete census of nominal wage levels in the construction industry in 1918 from *The Seventh Statistics of Agriculture and Commerce in Republican China* (《中华民国第7次农商统计》), which reported the nominal wages paid at construction projects in different regions across China at the same level of detail as *the Wuliao jiazhi zeli of 1769*. On this basis, we constructed the regional pattern of nominal wage level in 14 provinces across China in 1918.

(Continued)

Area	Province	1769		1918	
		Unskilled workers	Skilled workers	Unskilled workers	Skilled workers
	Fujian	0.03	0.05	0.21	0.32
	Henan	0.04	0.04	0.16	0.22
	Hebei(including Beijing)	0.05	0.08	0.12	0.28
	Rehe	0.07	0.12	0.19	0.35
	Shandong	0.05	0.06	0.12	0.18
	Unweighted average	0.04	0.06	0.16	0.27
Less developed	Hunan	0.04	0.05		
	Hubei			0.11	0.22
	Shanxi	0.05	0.07	0.11	0.2
	Shaanxi	0.04	0.05		
	Heilongjiang	0.10	0.19	0.56	0.76
	Jilin	0.10	0.16	0.33	0.53
	Liaoning	0.06	0.10	0.28	0.43
	Xinjiang	0.10		0.63	0.81
	Gansu	0.04	0.05	0.18	0.26
	Yunnan	0.05	0.07		
	Taiwan	0.03	0.05		
	Unweighted average	0.06	0.09	0.31	0.46

Source: Subdivision of macro regions according to their level of development, from Gao (1999); nominal wage in 1769 from Allen et al. (2011); and nominal wage in 1918 from *The Seventh Statistics of Agriculture and Commerce in Republican China* (《中华民国第7次农商统计》).

These fundamental differences also show up in what we know about migration patterns in the Western Europe and China (Lucassen and Lucassen, 2014). In Western Europe, large migration streams were focused on urban cores: The Netherlands drew migrants from Germany and Scandinavia, in particular during its Golden Age in the 17th century. Similarly, England attracted large numbers of migrants from Ireland. So the dominant flow of migrants was from periphery to core, feeding urban agglomerations, and thus core regions such as the Low Countries and the UK grew more rapidly than the periphery. The share

of the North Sea region in the total population of Western Europe grew from 11% in 1500 to 20% in 1820 (and to 23% in 1900) (Van Zanden, 2000), whereas, as we have already seen, in the same period the Chinese core (the Yangtze Delta) shrank in relative size. Indeed, in China migration was focused on the periphery. Taiwan was peopled with migrants from Fujian, the population of Sichuan received migrants from the middle Yangtze area, and the West and North were probably the most popular destinations. These “peripheral” areas with a relatively low rate of urbanization saw their share in the Chinese population explosion: Sichuan’s share, for example, increased from 2.2% in 1393 to 3.9% in 1630 and further to 10.6% in 1893; Yunnan, another province with a relatively high wage level, saw its share increase from 1.3% in 1630 to 3.3% in 1893.

The decline in the rate of urbanization during the Qing was therefore part of a much wider process of structural change. In Western Europe cities were engines of technological and economic change, in post-Song China they apparently did not play such a role (see also the discussion in Rosenthal and Wong (2011) and Li and Van Zanden (2012)).

4 Conclusion

We present in our paper a set of coherent estimates of the size of the urban sector in China between the Song and the late Qing. The pattern we find is one of high levels of urbanization during the Song, stability until the late Ming, followed by a drop during the Qing dynasty, before recovering to Song levels in the early years during the early Republic. These developments are almost diametrically opposed to those of Europe, which in the same period underwent a long-term rise of urbanization and the emergence of very large cities. We suggest four explanations for these trends. First, in China the size of the capital city shrinks in relative terms over time, suggesting a weakening hold of central government on the economy and society and a declining capacity to collect taxes. The relative decline of the largest (capital) cities weakens the upper layers of the urban system (a feature already noticed by Skinner and Rozman). Second, port cities are much less important in China than in Europe, and they continue to be rather marginal, pointing to the possible “inward looking” nature of the economy. In particular the Yangtze Delta sees a large decline in the share of port cities in the total population between 1205 and 1776.

This second point is also related to a third one, namely the role of market towns. It has been argued that the commercial revolution of the mid-Ming era results in the growth of relatively small market towns, in particular in the Yangtze Delta, strengthening the lower strata of the urban system. The effect of this commercial revolution on the urban structure of China as a whole is limited, however—the share of small towns (2,000–10,000 inhabitants) in the total population falls between the Song and Qing. Likewise, in the Yangtze Delta, if the coastal area is excluded (which witnessed a decline of its coastal cities due to a shift of its economic focus), we also find a relative rise of big cities, thus casting some doubt on the market town hypothesis. Finally, fourth, during the Qing factors of production—in particular labor—moved away from the more urbanized core to “underdeveloped” areas that had been recently conquered or stabilized by the central government. This contributes to the decline of the urbanization ratio, although “underdeveloped” areas witness the growth of the share of large cities between the Song and Qing dynasties, this latter change probably being related to a different direction of technological change in the Chinese economy compared to Europe.

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References

Primary sources:

Anwu sizhong (《安吴四种》)

Chinese Christian Survey in 1901–1920 (《中国基督教调查资料：1901–1920》). Beijing, China (中国北京): Chinese Social Science Press (中国社会科学出版社)

Daoguang Anding Xianzhi (道光《安定县志》)

Daoguang Dading Fuzhi (道光《大定府志》)

Daoguang Dong’e xianzhi (道光《东阿县志》)

Daoguang Fanchang Xianzhi (道光《繁昌县志》)

Daoguang Guiyang Fuzhi (道光《贵阳府志》)

Daoguang Jiaozhouzhi (道光《胶州志》)

Daoguang Jinmen Baojia Tushuo (道光《津门保甲图说》)

Daoguang Qinjiang Zhilue (道光《秦疆治略》)

Daoguang Shanghe Xianzhi (道光《商河县志》)

- Daoguang Zunyi Fuzhi (道光《遵义府志》)
- Guangxu Hanyang Xianzhi (光绪《汉阳县志》)
- Guangxu Lantian Xianzhi (光绪《蓝田县志》)
- Hangzhou Fuzhi (万历《杭州府志》, Hangzhou Prefecture Annals).
- He S J (何士晋). Instruction of Workshop and Warehouse in Ministry of Public works (《工部厂库须知》), block printed in Wanli period
- Investigation Committee in China Continuation Committee of the National Missionary Conference (中华续行委办会调查特委会) (eds.) (2007)
- Jiaqing Chongxiu Yangzhou Fuzhi (嘉庆《重修扬州府志》)
- Minguo Qingyuan Xianzhi (民国《清苑县志》)
- Peng Z Y (彭泽益) (1957). Materials for early modern Chinese craft history, 1840–1949 (《中国近代手工业史资料; 1840–1949》). Beijing, China (中国北京): SDX Joint Publishing Company (生活·读书·新知三联书店)
- Shen B (沈榜) (1980). Wanshu Zaji (《宛署杂记》). Beijing, China (中国北京): Beijing Ancient Books Publishing House (北京古籍出版社)
- Statistical Department of Office of General Services in Ministry of Agriculture and Commerce (农商部总务厅统计科) (1922)
- The Seventh Statistics of Agriculture and Commerce in Republican China (《中华民国第7次农商统计》). Beijing, China (中国北京): Ministry of Agriculture and Commerce in Republican China (中华民国农商部)
- Zhu G (1628–1644). Memorabilia in Ming dynasty (《皇明天事记》), volume 44, Huzhou: Xunxi Zhufu Publisher

Secondary publications:

- Acemoglu D, Robinson J (2012). Why Nations Fail: Origins of Power, Poverty and Prosperity. New York, NY: Crown
- Acemoglu D, Johnson S, Robinson J (2005). The rise of Europe: Atlantic trade, institutional change and growth. *American Economic Review*, 95(3): 546–579
- Ades A, Glaeser E (1995). Trade and circuses: Explaining urban giants. *Quarterly Journal of Economics*, 110(1): 195–227
- Allen R, Bassino J P, Ma D B, Moll-Murata C, Van Zanden J L (2011). Wages, prices, and living standards in China, 1738–1925: In comparison with Europe, Japan, and India. *Economic History Review*, 64(s1): 8–38
- Bosker M, Buringh E, Van Zanden J L (2013). From Baghdad to London, unraveling urban development in Europe, North Africa and the Middle East, 800–1800. *Review of Economics and Statistics*, 95(4): 1418–1437
- Broadberry S, Gupta B (2006). The early modern Great Divergence: Wages, prices and economic development in Europe and Asia, 1500–1800. *Economic History Review*, 59(1): 2–31
- Buck J L (1933). Chinese Farm Economy: A Study of 2866 Farms in Seventeen Localities, and Seven Provinces in China. Chicago, IL: Chicago University Press

- Cao S J (曹树基) (2000). *China's Population History (中国人口史)*, Vol. 4. Shanghai, China (中国上海): Fudan University Press (复旦大学出版社)
- Cao S J (曹树基) (2000). *China's Population History (中国人口史)*, Vol. 5. Shanghai, China (中国上海): Fudan University Press (复旦大学出版社)
- Chandler T, Fox G (1974). *3000 Years of Urban Growth*. New York, NY: Academic Press
- Chao K (赵冈) (1986). *Man and Land in Chinese History: An Economic Analysis*. Stanford, CA: Stanford University Press
- Chao K (赵冈) (2006). *Collected Works of Urban Development in China (中国城市发展史论集)*. Beijing, China (中国北京): New Star Press (新星出版社)
- Chen G C (陈国灿) (2001). Exploration of rural urbanization in Taihu lake basin during Song dynasties (宋代太湖流域农村城市化现象探析). *Historical Monthly Journal (史学月刊)*, (3): 132–137
- Cheng M S (程民生) (2008). *Price Research in Sung Dynasty (宋代物价研究)*. Beijing, China (中国北京): People's Publishing House (人民出版社)
- De Ligt L (2012). *Peasants, Citizens and Soldiers: Studies in the Demographic History of Roman Italy, 225 BC–AD 100*. Cambridge, UK: Cambridge University Press
- Davis J, Henderson V (2003). Evidence on the political economy of the urbanization process. *Journal of Urban Economics*, 53(1): 98–125
- Deng K (2000). A critical survey of recent research in Chinese economic history. *Economic History Review*, 53 (1): 1–28
- Deng K (2004). Unveiling China's true population statistics for the pre-modern era with official census data. *Population Review*, 43(2): 1–38
- Dong G (冻国栋) (2002). *China's Population History (中国人口史)*, Vol. 2. Shanghai, China (中国上海): Fudan University Press (复旦大学出版社)
- Du C B (杜车别) (2012). Primary exploration on amount of population slaughtered by Manchurian in late Ming and early Qing (明末清初满清屠杀人口总数之初步考察). Visited on 2011-05-20, http://blog.sina.com.cn/s/blog_571ca5930100relp.html
- Economic Research Center of Nanjing Government (南京市政府经济研究中心) (1990). *Paper Selection of Economic History in Nanjing (南京经济史论文选)*. Nanjing, China (中国南京): Nanjing Press (南京出版社)
- Elvin M (1973). *The Pattern of the Chinese Past*. Stanford, CA: Stanford University Press
- Fan S Z (樊树志) (1990). *The Exploration of Market Town in Ming and Qing times (明清江南市镇探微)*. Shanghai, China (中国上海): Fudan University Press (复旦大学出版社)
- Fan J M (范金明) (2012). The trade of Japanese Tribute Mission with Ming China during Jiajing period (明代嘉靖年间日本贡使的经营活动). *Research on Chinese Economic History (中国经济史研究)*, (4): 3–13
- Gao W L (高王凌) 1999. *Economic Growth and Regional Development: Development Sequence of China's Traditional Economy (经济发展与地区开发: 中国传统经济的发展序列)*. Beijing, China (中国北京): Ocean Press (海洋出版社)
- Ge J X, (葛剑雄) (2002). *China's Population History (中国人口史)*, Vol. 1. Shanghai, China (中国上海): Fudan University Press (复旦大学出版社)

- Guo Z Z (郭正忠) (1997). *A Brief Exploration of Commercial and Monetary Economy in Urban and Rural Areas During Both Song Dynasties* (两宋城乡商品货币经济考略). Beijing, China (中国北京): Economics and Management Press (经济管理出版社)
- Han G H (韩光辉) (1996). *Urban development in China between 12th and 14th century* (12至14世纪中国城市的发展). *Research on Chinese History* (中国史研究), (4): 3–15
- Han G H (韩光辉) (1996). *Historical Demographical Geography in Beijing* (北京历史人口地理). Beijing, China (中国北京): Peking University Press (北京大学出版社)
- Ho P T (1959). *Studies on the Population of China, 1368–1953*. Cambridge, MA: Harvard University Press
- Hou Y F (侯杨方) (2000). *China's Population History* (中国人口史), Vol. 6. Shanghai, China (中国上海): Fudan University Press (复旦大学出版社)
- Huff G, Angels L (2011). *Globalization, industrialization and urbanization in pre-World War II Southeast Asia*. *Explorations in Economic History*, 48(1): 20–36
- Jiang T (姜涛) (1993). *Population History in Modern China* (中国近代人口史). Hangzhou, China (中国杭州): Zhejiang People's Publishing House (浙江人民出版社)
- Jones E (1988). *Growth Recurring, Economic Change in World History*. Oxford, UK: Clarendon Press
- Lee J (Translated by Lin W X, Qin S C 林文勋, 秦树才) (2002). *Social and Economic Development in Southwestern Border of China, ca.1250–1850* (中国西南边疆的社会经济: 1250–1850). Beijing, China (中国北京): People's Publishing House (人民出版社)
- Li B Z (李伯重) (2000). *Early Industrialization in the Yangzi Delta, 1550–1850* (江南的早期工业化, 1550–1850). Beijing, China (中国北京): Chinese Social Science Press (中国社会科学出版社)
- Li B Z (李伯重) (2003). *Economic History of the Yangzi Delta in Multiple Perspectives, 960–1850* (多视角看历史: 南宋后期至清代中期的江南经济). Beijing, China (中国北京): SDX Joint Publishing Company (生活·读书·新知三联书店)
- Li B Z (李伯重) 2010. *China's Early Modern Economy: A Study of GDP of the Huating-Louxian Area in the 1820s* (中国的早期近代经济——1820年代华亭—娄县地区GDP研究). Beijing, China (中国北京): Zhonghua Book Company (中华书局)
- Li B Z, Van Zanden J L (2012). *Before the Great Divergence? Comparing the Yangzi delta and the Netherlands at the beginning of the nineteenth century*. *Journal of Economic History*, 72(04): 956–989
- Liang G Y (梁庚尧) (1997). *Collected works of social economic history in Song dynasty* (宋代社会经济史论集). Taipei, China (中国台北): Yunchen Culture Industrial Co. Ltd (允晨文化实业股份有限公司)
- Liu G L (刘光临) (2005). *Wrestling for power: The state and the economy in later imperial China, 1000–1770*. Doctoral Dissertation, Harvard University
- Liu S J (刘石吉) (1987). *Market Town in Lower Yangtze Delta in Ming-Qing Times* (明清时代江南市镇研究). Beijing, China (中国北京): Chinese Social Science Press (中国社会科学出版社)
- Long D G (龙登高) (2003). *Market Historical Evolution in Yangtze delta: 11th–19th Century*

- (江南市场史——十一至十九世纪的变迁) . Beijing, China (中国北京): Tsinghua University Press (清华大学出版社)
- Lucassen J, Lucassen L (2014). *Globalising Migration History*. Leiden, Netherlands: Brill
- Ma D B (2011). *Rock, Scissors, Paper: The problem of incentives and information in traditional Chinese state and the origin of Great Divergence*. LSE Working paper 152/11
- Maddison A (2007). *Contours of the World Economy, 1–2030 AD: Essays in Macro-Economic History*. Oxford, UK: Oxford University Press
- Pomeranz K (2000). *The Great Divergence: China, Europe, and the Making of the Modern World Economy*. Princeton, NJ: Princeton University Press
- Qi X (漆侠) (1987). *Economic History in Song Dynasty (宋代经济史)*. Shanghai, China (中国上海): Shanghai People's Publishing House (上海人民出版社)
- Rosenthal J L, Wong R B (2011). *Before and beyond Divergence: The Politics of Economic Change in China and Europe*. Cambridge, MA: Harvard University Press
- Rozman G (1973). *Urban Networks in Ching China and Tokugawa Japan*. Princeton, NJ: Princeton University Press
- Shiue C, Keller W G (2007). *Markets in China and Europe on the Eve of the Industrial Revolution*. *American Economic Review*, 97(4): 1189–1216
- Skinner W (1977). *The City in Late Imperial China*. Stanford, CA: Stanford University Press
- Sng T H (2014). *Size and dynastic decline: The principal-agent problem in late imperial China, 1700–1850*. *Explorations in Economic History*, 54(3): 107–127
- Twitchett D (1962). *Land tenure and the social order in Tang and Song China*. Inaugural lecture, 28 Nov. 1961, School of Oriental and African Studies, London
- Van Zanden J L (1999). *Wages and the standard of living in Europe, 1500–1800*. *European Review of Economic History*, 3(2): 175–198
- Van Zanden J L (2000). *Early modern economic growth: A survey of the European economy, 1500–1800*. In: M. Prak (ed.) *Early Modern Capitalism*, 69–87. London, UK: Taylor & Francis
- Wang W P (王卫平) (1999). *Research on Urban History in Lower Yangtze Delta between Ming and Qing Dynasties—A View of Suzhou City (明清时期江南城市史研究: 以苏州为中心)*. Beijing, China (中国北京): People's Publishing House (人民出版社)
- Wu S D (吴松弟) (2000). *China's Population History (中国人口史)*, Vol. 3. Shanghai, China (中国上海): Fudan University Press (复旦大学出版社)
- Xu Y, Shi Z H, Van Leeuwen B, Ni Y P, Zhang Z P, Ma Y (2017). *Chinese national income, ca. 1661–1933*. *Australian Economic History Review*, 57(3): 368–393
- Yoshinobu, S B (Translated by Zhuang J H 庄景辉) (1997). *Commercial History in Song Dynasty (宋代商业史研究)*. Taipei, China (中国台北): Daohe Press (稻禾出版社)
- Yoshinobu S B, (translated by Fang J, He Z L 方健 何仲礼) (2012). *Economic History in Lower Yangtze Delta in Song Dynasty (宋代江南经济史研究)*. Nanjing, China (中国南京): Jiangsu People's Publishing House (江苏人民出版社)
- You H S, Cao S J (游欢孙 曹树基) (2006). *Market town population in Lower Yangtze delta since middle Qing period—Taking an example of Wujiang county (清中叶以来的江南市*

镇人口——以吴江县为例). *Research on Chinese Economic History* (中国经济史研究), (3): 124–134

Xu T (许檀) (1998). *Development of Commercial Economy in Shandong Province during Ming-Qing Times* (明清时期山东商品经济的发展). Beijing, China (中国北京): Chinese Social Science Press (中国社会科学出版社)

Appendix: Estimates of the Population of Individual Cities of More than 25,000 Inhabitants in 1918

Table A1 Estimates for the Population of Individual Cities of More Than 25,000 Inhabitants in 1918

Province	City	No. of inhabitants	Province	City	No. of inhabitants
Shandong	Jinan	300,000	Guangxi	Wuzhou	80,000
	Jining	200,000		Guilin	60,000
	Yantai	100,000		Liuzhou	60,000
	Yizhou	100,000		Nanning	50,000
	Tanxian	100,000		Yulin	50,000
	Qingdao	90,000		Longzhou	40,000
	Huangxian	80,000	Hubei	Hankou	350,000
	Laizhou	80,000		Wuchang	250,000
	Zhoucun	75,000		Hanyang	150,000
	Dengzhou	60,000		Shashi	87,000
	Jiaozhou	50,000		Xuncheng	65,000
	Linqing	50,000		Yichang	60,000
	Qingzhou	50,000		Jingzhou	60,000
	Wenshang	50,000		Wuxue	50,000
	Jiaxiang	40,000		Anlu	40,000
	Tai'An	40,000		Qianjiang	40,000
Dezhou	40,000	Xiangyang	35,000		
Tengxian	40,000	Zaoyang	25,000		
Yanzhou	38,000	Hunan	Changsha	229,537	
Zhucheng	35,000		Changde	180,000	
Tancheng	35,000		Xiangtan	180,000	
Dingtao	35,000		Hengzhou	100,000	
Caozhou	35,000		Baoqing	90,000	
Boshan	30,000		Yiyang	80,000	

(To be continued)

(Continued)

Province	City	No. of inhabitants	Province	City	No. of inhabitants
	Dongchang	30,000		Jinshi	58,000
	Dongping	30,000		Yuanzhou	50,000
	Feixian	30,000		Yuezhou	40,000
	Jinxiang	30,000		Hongjiang	35,000
	Pingdu	30,000		Chaling	30,000
	Shidao	30,000		Chenzhou	30,000
	Shouzhang	30,000		Chenzhou	30,000
	Chengwu	25,000		Ningxiang	30,000
	Yishui	25,000		Wugang	30,000
	Jimo	25,000		Xinhua	30,000
Hebei	Tianjin	900,000		Youxian	25,000
	Beijing	850,000	Guangdong	Guangzhou	1,600,000
	Baoding	100,000		Hongkong	525,000
	Chifeng	100,000		Foshan	450,000
	Tangshan	85,000		Chaozhou	250,000
	Zhangjiakou	72,000		Xinhui	200,000
	Shanhaiguan	70,000		Jiangmen	168,000
	Chaoyang	50,000		Xiaolan	140,000
	Pingquan	50,000		Shaozhou	120,000
	Chengde	45,000		Chaoyang	100,000
	Weizhou	40,000		Chixi	100,000
	Tazigou	40,000		Taileung	87,000
	Cangzhou	35,000		Jieyang	80,000
	Shunde	30,000		Lianzhou	80,000
	Tongzhou	30,000		Macau	80,000
	Yongqing	30,000		Shantou	80,000
	Wudan Town	30,000		Haikou	70,000
	Hejian	25,000		Huanggang	70,000
	Daming	25,000		Zhaogqing	56,000
	Linxi	25,000		Xingning	40,000
Shanxi	Taiyuan	80,000		Heshan	40,000
	Fenzhou	65,000		Nanxiong	40,000
	Lu'An	40,000		Shilong	35,000

(To be continued)

(Continued)

Province	City	No. of inhabitants	Province	City	No. of inhabitants
Henan	Qixian	30,000	Fujian	Qingyuan	32,000
	Quwo	30,000		Beihai	30,000
	Yuncheng	30,000		Lianzhou	30,000
	Xinzhou	28,000		Qiongzhou	30,000
	Taigu	25,000		Yingde	30,000
	Kaifeng	280,000		Shilongtou	28,000
	Zhoujiakou	200,000		Shatou	25,000
	Guangzhou	100,000		Fuzhou	625,000
	Laohekou	100,000		Quanzhou	130,000
	Zhangde	60,000		Xiamen	114,000
	Gushi	60,000		Jianning	60,000
	Guide	50,000		Ningde	60,000
	Nanyang	50,000		Zhangzhou	56,000
	Ruzhou	45,000		Hanjiang	40,000
	Weihui	45,000		Xinghua	40,000
	Xuzhou	40,000		Huangshi	40,000
	Huaiqing	40,000		Tong'An	40,000
	Qixian	40,000		Shanghang	35,000
	Qinghua Town	40,000		Tieling	30,000
Zhengzhou	35,000	Gutian	25,000		
Qixian	35,000	Longyan	25,000		
Qiaozhou	35,000	Tingzhou	25,000		
Luoyang	30,000	Sichuan	Chongqing	525,000	
Ru'Ning	30,000		Chengdu	500,000	
Suiping	30,000		Xuzhou	125,000	
Yongcheng	28,000		Shunqing	120,000	
Zhecheng	25,000		Wanxian	110,000	
Xiangcheng	25,000		Fuzhou	100,000	
Luyi	25,000		Hanzhong	100,000	
Dengzhou	25,000		Luzhou	80,000	
Shaanxi	Xi'An		250,000	Baoning	70,000
	Xing'An		80,000	Tongchuan	70,000
	Tongzhou	80,000	Suiding	70,000	
	Sanyuan	80,000	Jiading	60,000	

(To be continued)

(Continued)

Province	City	No. of inhabitants	Province	City	No. of inhabitants
Gansu	Weinan	50,000	Jiangsu	Suining	50,000
	Chenggu	40,000		Dazhu	50,000
	Fuping	40,000		Dingyuan	50,000
	Jingyang	40,000		Kuizhou	40,000
	Xixiang	40,000		Zizhou	40,000
	Lintong	30,000		Dajianlu	40,000
	Mianxian	30,000		Deyang	30,000
	Yangxian	30,000		Ningyuan	30,000
	Gaoling	25,000		Zhongba	30,000
	Lanzhou	110,000		Mianzhou	25,000
	Yinchuan	85,000		Liangshan	25,000
	Qinzhou	75,000		Shanghai	1,500,000
	Taozhou	62,000		Suzhou	600,000
	Pingliang	55,000		Yangzhou	300,000
	Huixian	40,000		Nanjing	300,000
	Liangzhou	40,000		Zhenjiang	260,000
	Zhejiang	Didao		40,000	Huaian
Hangzhou		650,000	Wuxi	150,000	
Ningbo		450,000	Qingjiangpu	130,000	
Shaoxing		400,000	Changzhou	125,000	
Wenzhou		140,000	Xuzhou	125,000	
Huzhou		100,000	Songjiang	100,000	
Jiaxing		100,000	Taizhou	100,000	
Quzhou		75,000	Yancheng	90,000	
Taizhou		60,000	Changshu	88,000	
Changshang		50,000	Xinghua	80,000	
Jinhua		50,000	Suqian	65,000	
Ruian		40,000	Nantong	65,000	
Yuyao		40,000	Rugao	50,000	
Dinghai		30,000	Jiangyin	50,000	
Shengxian		30,000	Jintan	50,000	
Tiantai		30,000	Danyang	50,000	
Chuzhou		25,000	Dongtai	50,000	
Huangyan	25,000	Funing	40,000		

(To be continued)

(Continued)

Province	City	No. of inhabitants	Province	City	No. of inhabitants	
Jiangxi	Shimen	25,000		Gaoyou	40,000	
	Nanchang	480,000		Jiading	40,000	
	Ganzhou	200,000		Muyang	40,000	
	Ji'An	120,000		Dangshan	40,000	
	Fuzhou	100,000		Andong	30,000	
	Jiujiang	85,000		Baoying	30,000	
	Ningdu	60,000		Haizhou	30,000	
	Xunzhou	60,000		Kunshan	30,000	
	Raozhou	50,000		Liuhe	30,000	
	Ruijin	50,000		Liyang	30,000	
	Jianchang	50,000	Northeast China (Fengtian, Heilongjiang and Jilin)	Shenyang	250,000	
	Nanfeng	50,000		Niuzhuang	80,000	
	Zhangshu	40,000		Andong	70,000	
	Yihuang	40,000		Liaoyuan	70,000	
	Leping	40,000		Jinzhou	60,000	
	Shicheng	40,000		Dalian	55,000	
	Chongren	40,000		Xinmin	50,000	
	Guangchang	30,000		Liaoyang	40,000	
	Hekou	30,000		Fuzhou	25,000	
	Le'An	30,000		Gaiping	25,000	
Guizhou	Jinxi	25,000		Ha'Erbin	200,000	
	Guiyang	80,000		Qiqihaer	50,000	
	Zunyi	70,000		Hulan	30,000	
	Tongren	32,000		Beituanlinzi	25,000	
	Anshun	30,000		Jilin	83,000	
	Zhenyuan	30,000		Changchun	70,000	
	Xingyi	30,000		Ashihe	30,000	
	Qianxi	25,000		Xincheng	30,000	
	Yunnan	Kunming	100,000	Xinjiang	Shufu	65,000
		Gejiu	50,000		Shache	60,000
Tengyue		44,400	Urumqi		60,000	

(To be continued)

(Continued)

Province	City	No. of inhabitants	Province	City	No. of inhabitants
	Qujing	30,000		Gucheng	45,000
	Dali	26,700		Ningyuan	45,000
	Zhaotong	25,000		Akesu	40,000
Anhui	Wuhu	175,000		Hetian	30,000
	Anqing	100,000		Suilai	26,000
	Bozhou	80,000	Mongolia	Ulan Bator	38,000
	Luzhou	70,000		Jingpeng	30,000
	Yingzhou	70,000			
	Lu'an	50,000			
	Ningguo	50,000			
	Tunxi	45,000			
	Datong	35,000			
	Wuweizhou	35,000			
	Suzhou	30,000			
	Yixian	30,000			
	Zhengyangguan	25,000			
	Quanjiao	25,000			
	Huaiyuan	25,000			
	Nanling	25,000			

Source: National Christian Council of China (edited in 2007), Appendix 7.