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Seeing ghosts: parsing China's "ghost city" controversy

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ABSTRACT

Controversy has arisen in recent years over the creation of so-called "ghost cities" across China. The ghost city term tends to describe large-scale urban areas, sometimes planned as new towns, featuring an abundance of new built space and appearing to also have extremely low tenancy. This article examines key questions related to the ghost city phenomenon, such as: what is a ghost city? Are ghost cities driven by a tendency toward over-supply in housing? How are local-level political incentives aligned to foster the production of ghost cities? Are ghost cities temporary anomalies or structural features of China's urban-led economic growth model? We discuss recent scholarly research into ghost cities and present original findings to show how an excess of urban space may plague certain Chinese cities.

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1. Introduction

In recent years, considerable controversy has arisen over the existence of so-called "ghost cities" in China. Driving the controversy is a proliferation of monumentally scaled urban developments, even entire new cities featuring skyscrapers and enormous public spaces, all built at breakneck pace but with scant population (see Shepard, 2015; Sorace Hurst, 2016). Widely circulating photographic exposés of these ghost cities have generated troubling impressions of severely imbalanced and unsustainable urban development.¹ And yet, while evocative, the term ghost city is shrouded in ambiguity over what counts under this appellation. More specifically, questions linger over whether ghost cities refer to specific places or types of places, or whether the term merely describes an extreme expression of a more general trend toward a surfeit of built urban space and especially over-supply in housing and other forms of real property in China.

The purpose of this entry in "Urban Pulse" is to assess conceptual issues and data-collection challenges surrounding the ghost city controversy, review some of the emerging research touching upon this phenomenon, and hopefully provide some clarity to help guide research efforts in this area of China's urbanization. Our intent is not to lay down a strict definition of ghost city, nor is it to dismiss the concept as merely a journalistic cliché. Indeed, much excellent reporting on the topic has supplied important and timely insights (see especially Shepard, 2015), and, moreover, sufficient data

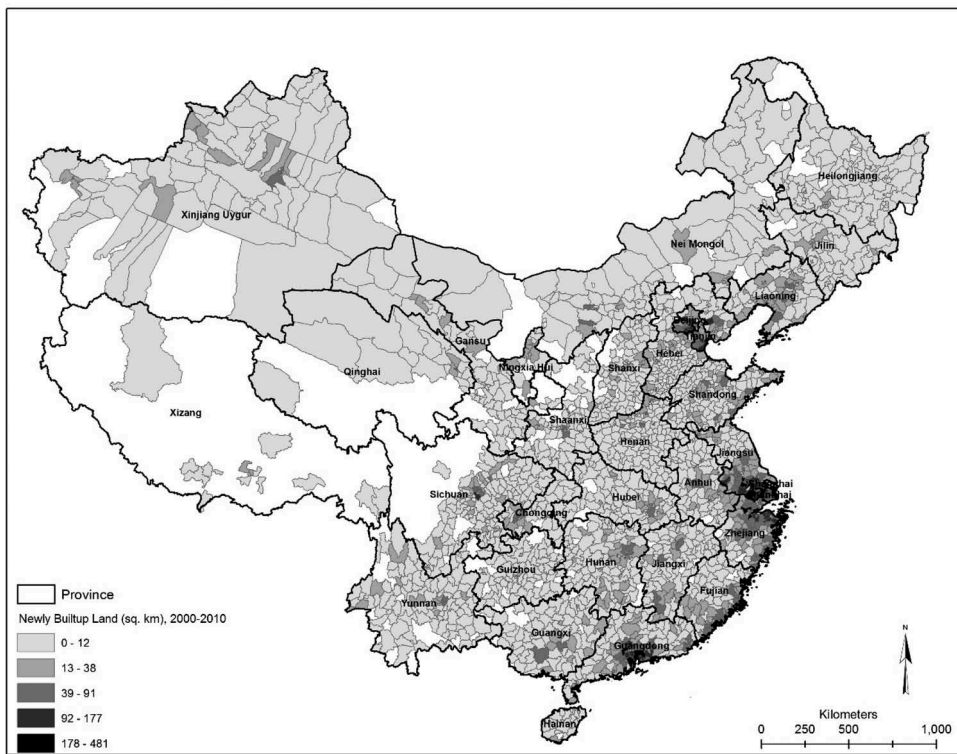


Figure 1. Newly built-up land, 2000–2010. Source: World Bank's *East Asia's changing urban landscape* 2015 using MODIS and other satellite imagery. Source: World Bank, *East Asia's changing urban landscape* 2015.

exists to draw some reliable conclusions about trends in urban growth that support concerns connected with the ghost city controversy. We also highlight some of the theoretical challenges that this phenomenon presents for the study of Chinese urbanization and for global urbanism more broadly. In this latter sense, the discussion here responds to Parnell and Robinson's (2012) call in this journal for scholars to focus theory-building efforts on experiences in the Global South, with particular emphasis on better understanding the nature of the state and governance at the city scale, where much of the action in development is occurring today around the world. China's ghost city phenomenon points in particular toward the importance – as well as the potential pitfalls – of entrepreneurial urban strategies engaged by empowered local-state authorities. Moreover, as increasing numbers of urban projects around the world are being labeled ghost cities, including most notably Masdar Eco City in the United Arab Emirates and Songdo in South Korea, China's experience potentially holds wide relevance.

2. Background

It deserves mention at the outset that the current ghost city terminology is a media invention. Its origins in China are traceable to two news reports, one by Al-Jazeera² and

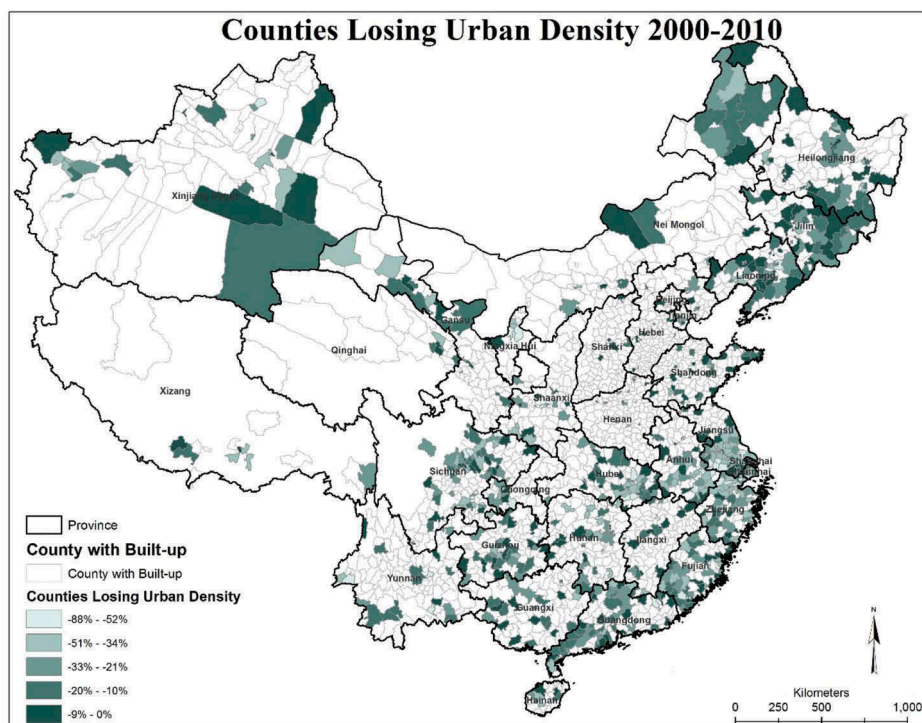


Figure 2. Counties losing urban density, 2000–2010. Urban density calculated using 2000 and 2010 urban population census data. Source: World Bank, *East Asia's changing urban landscape* 2015.

the other by *Time* magazine (Powell, 2010). Both reports focused on the Kangbashi New District, a new-town project undertaken by Ordos Municipality, a coal-mining boomtown in China's Inner Mongolia Autonomous Region. The municipality initiated the project in 2004 and by 2009 the town's basic infrastructure was completed along with municipal agency buildings, landmark civic institutions, and a significant amount of commercial property. The rapid pace of construction, driven by speculative investment amid a massive regional mining boom, led to extremely low residential density in the new town and produced jarring landscapes composed of huge new city spaces seemingly devoid of people (Woodworth, 2015). While overheating and low tenancy in the property market had been recurring features of China's urbanization since the 1990s, Kangbashi's barren cityscapes suggested the inflation of property bubbles on an altogether new scale and seemed to lend credence to arguments that the country faced potential crisis originating in the real estate sector. Kangbashi's location on the arid fringes of the Gobi desert also made for dramatic imagery that doubtless helped to inspire the "ghost city" theme.

In the wake of reports about Kangbashi, China's leading domestic media outlets and global news organizations filed a continuous stream of reports on the topic of "ghost cities."³ Quite suddenly, ghost cities were being found throughout the country. Projects such as the Chengong New District, Dongtan eco-city, Zhengdong New District, and the former 2010 World Expo site in Shanghai, are just some of the projects that have been reported under this heading.⁴ The sudden currency of the ghost town terminology

and its application to a diverse array of urban projects supplied a charged new metaphor through which to report on China's property sector and to understand the central function of urban land development in driving economic growth in the 2000s.

The cementing of the ghost town metaphor in popular discourse also coincided with mounting concerns among the political leadership over urban housing policy in the 2000s. A widely read policy memo produced in 2012 by the research branch of the State Council, for example, revealed high-level alarm over what the author called "urban sicknesses" (Ch. *chengshi bing*) to refer to an interwoven set of structural problems fueling "irrational" urban development (cited in Sorace & Hurst, 2016). In particular, the paper underscored the perverse incentives – short appointed terms in office, emphasis on GDP in assessing officials' performance, the constitutionally defined state monopoly over the primary land market – that lead urban officials to promote city growth without regard to functionality, cost, accessibility, or long-term sustainability (Development Research Center of the State Council [DRCSC], 2012). Prominent scholars and policymakers have voiced similar concerns with increasing urgency in recent years, and the central state has responded by issuing prohibitions against the construction of new city halls (2013), new towns without State Council approval (2014), and "weird" architecture (2016) all in attempts to temper the enthusiasm of city governments for monumental construction projects. The ghost city metaphor therefore has been taken up within broader urban policy debates and has become an emerging topic of scholarly research (see He, Mol, & Lu, 2016; Shih, Li, & Bo, 2014; Yu, 2014). The central government has also assimilated the ghost city terminology. Since 2014, the Ministry of Housing and Urban-Rural Development has instituted a measure by which ghost cities are to be defined. Specifically, any urban area with a population density below 5,000 residents per square kilometer can be thusly categorized. Such a definition, however, fails to differentiate between low density attributable to urban shrinkage, as in a city such as Yumen (Gansu Province), and cities where spatial growth outpaces demographic growth, as with new towns. Most reporting on ghost cities and the attendant controversies have focused on the latter type of city.

In the following sections, we approach the problem of China's ghost cities from three key perspectives: property market dynamics, new-town projects, and land-use change. Our discussion draws upon extant literatures in this field and brings original data from our own research.

3. Three views upon ghost cities

3.1. Property market dynamics

The ghost city phenomenon is closely tied to the rapid pace of growth in China's property sector. China's real estate market has been a prime driver of economic growth in the 2000s. Averaging across China's provinces and municipalities, real estate development has grown to nearly 15% of GDP by 2014 since the turn of the millennium, when the country experienced a renewed phase of accelerating investment-driven growth in the wake of the 1997/98 Asian financial crisis.⁵ The construction sector's share of GDP has exceeded 5.4% every year since 2000 and was measured at a reform-era high in 2013 at 6.9%.⁶ Such levels are quite high whether one compares such data

with advanced economies or emerging ones and is higher than Japan's during its bubble years of the 1980s. The centrality of urban land and property development in the Chinese urban economy is made dramatically visible by the vertical and horizontal growth of cities in recent years. Indeed, the Council on Tall Buildings and Urban Habitat noted that by 2016 half the world's skyscrapers would be in China, while few such buildings existed at the outset of economic reforms in 1978 (Wood, 2014). Property sector growth on this scale raises important questions about the drivers of expansions and whether and how it might contribute to an oversupply of housing and other types of property.

It must be noted first that growth in the real estate sector has been driven by robust demand. By the end of the 1990s, the central government formally abandoned the system of employer-provided housing, which was in fact already much reduced in scope by that time. Households were encouraged to purchase their employer-provided homes, often at deep discounts, or to purchase in the open market. Response was enthusiastic, as evidenced by the rapid increase in urban homeownership rates; in Shanghai, for example, homeownership rose from 36% in 1997 to 82% by 2005 (Arora, 2005). Rapid urbanization of the population is also driving housing demand, as tens of millions of households cement their status as new urban residents through home purchases. In the context of such strong demand, home prices nationally have risen by an average of 10% per annum since 2004. Crucially, the steady rise in prices was not fed by supply pressure. In most cities, demand has been met through rapid increases in floor space and units. A study by Jing, Gyourko, and Deng (2015), for example, found that total completed floor space had increased by 50% within their study sample of major cities since 2009.

The specific geography of property market dynamics is essential to understanding the problem of oversupply and imbalances in the sector, as well as the emergence of urban spaces with ghost-town traits. In major cities, such as Beijing and Shanghai, rapid in-migration and rates of economic growth consistently above national averages have supported high levels of demand and rapid increases in the stock of property. Quite contrary to the "ghost city" trope, recent evidence points to a supply shortage in these largest markets. Yet the so-called "tier-one" cities account for only about 10% of total floor space sold across urban China. The rest is fairly evenly divided among the far larger subset of lower-tier cities (Chivakul, Lam, Liu, Maliszewski, & Schipke, 2015: 4). It is among these lower-tier cities where we find weaker growth in home prices and land price appreciation, despite central government support for the development of small and medium-sized cities (Wallace, 2014). Driving this trend toward weaker property markets in lower-tier cities have been comparatively rapid rates of growth in the amounts of completed property as well as rates of increase in housing supply that vastly outpace the growth in numbers of new households. In combination, these forces raise the prospect of oversupply with potential to last for many years to come.

Recent studies have shown remarkable heterogeneity in the expansion of supply and inventory among second-tier and lower cities since the implementation of a 4-trillion RMB stimulus program rolled out in 2009, which concentrated investment in real estate.⁷ For example, exceptionally large additions of floor space have been recorded in Xian, Chengdu, and Tianjin (Jing et al., 2015: 5). Using datasets from the National Bureau of Statistics and local housing bureaus, Chivakul et al. (2015)

have found a substantial increase in developers' inventory (the total of unsold completed properties) of residential real estate across second-tier and third-tier cities. Indeed, between 2010 and 2013, they calculate a nearly 200% increase in floor space inventory in second-tier and third-tier cities and note distinct regional patterns: regions they categorize as "less developed" and "industrial northeast" have registered the most pronounced rises in inventory (Chivakul et al., 2015: 8). The expansion of inventory translates into significant pressure on developers and, by extension, local economies, as excess supply may take years to absorb. For example, as of 2014, the calculated time required to clear existing supply was 6 years in Inner Mongolia and 5 years in Shanxi, Liaoning, Jilin, and Ningxia. Inventory on this scale—often clustered in new developments—represents the presence of massive amounts of unsold property, leaving visibly desolate landscapes readily characterized as "ghost cities."

Yet, even before the emergence of substantial inventory since 2009, the surge in real estate demand over the past decade or more was also driven by households' financial strategies, which were not necessarily connected to the use of purchased properties. As numerous studies have noted, real estate serves as an essential financial asset in an environment with immature capital markets, benchmark bank interest rates near zero, underdeveloped pension systems, and capital controls (Ong, 2014; Sorace & Hurst, 2016). Rapid price appreciation coupled with nearly as rapid increases in household income have tended to justify property purchases as a household financial strategy, even in spite onerous price-to-income ratios at the time of purchase. Assuming that income increases maintain recent trends, heavy financial burdens at signing stand to be significantly lightened over the amortization period of mortgages. These factors help to explain why even lower-income households have rushed to participate in the housing market. They also point to the significant risk posed by any sharp reduction in economic growth, as households face the risk of heavy financial burdens extending over far longer periods than anticipated. However, down payments of 30–40%, as well as the use of purchased homes as collateral, effectively shield banks from risk exposure and lower the likelihood of a financial crisis originating in the mortgage market.⁸

Robust demand for property as a financial asset is a key factor in the underutilization in property. It is widely known, for example, that households commonly own multiple homes as a reflection of family growth outlooks and investment portfolios. Units purchased for these purposes are often left empty since there is no property tax in China and therefore no holding cost on property. And yet, the amount of property sitting empty across China is unknown, as statistics on such indicators are not currently collected. The National Bureau of Statistics has only recently begun to produce regular statistical reports on the category of property labeled "awaiting sale" (Ch. *daishou*) but has no capacity to reliably assess properties that are uninhabited or unused. Additionally, using mortgage data to track second-home purchases likely understates the amount of such homes given the tendency of higher-income households to pay cash for properties (Koss, 2015). There exists, then, no official measure of actual vacancy; sporadic efforts to gauge vacancy in major cities using proxy measures have produced results ranging from nearly 20% to 7% (see Jing et al., 2015: 6). The current lack of reliable data measuring vacancy across Chinese cities underscores the challenges

in assessing the scope of the ghost city phenomenon if it is tied to over-supply and under-utilization of built space.

3.2. *New-town projects*

The ghost city controversy has also focused attention on the proliferation of new-town projects being built throughout China under the labels of new districts (Ch. *xinqu*), eco-cities (Ch. *xingtai cheng*), new towns (Ch. *xincheng*), and university towns (Ch. *daxue cheng*) (see Chien, 2013; Li, Li, & Wang, 2014; Wu, 2015). The recent trend in new-town development comes on the heels of China's "zone fever" of the 1980s and 1990s, which entailed the establishment of thousands of industrial parks throughout the country, many of which were commercial failures (Cartier, 2001). Like their industrial park predecessors, today's new towns have similarly struggled, and many are featured in reporting on "ghost cities."

Though the planning themes of recent new-town projects differ from one another, they share a number of important features that contribute to their characterization as "ghost cities." First, such projects are planned, city-scale mega-projects, with first-phase urban construction areas of 30 km² or more, and sometimes considerably larger. One of Nanjing's three planned university towns (Xianling), for example, has a planned area of 70 km² (Chien, 2013: 183). New district projects are often much larger still, reaching 461 km² in the case of Chenggong New District (Yunnan Province) and 806 km² in Lanzhou New District (Gansu Province). To accommodate such massive area, new-town projects are most often undertaken in peri-urban areas either adjoining the city or at some distance from the originating city. Second, given officials' short terms in office (on average about 3 years) and the bureaucratic assessment system focused on meeting various growth-oriented targets, city leaders are keen to commence construction on large-scale developments as quickly as possible. The rapid pace of construction is designed to maximize city leaders' immediate benefits from the economic growth generated by construction and the additional fiscal income obtainable by putting huge parcels of cheaply acquired peri-urban rural land onto primary urban land markets. Given the rapid tempo of project initiation and construction, however, the supply of built space tends to outpace in-migration, leaving much space under-utilized. Third, China's new-town projects are notable for featuring an abundance of monumental public infrastructures, such as museums, theaters, libraries, convention centers, city halls, and gigantic public plazas and parks. These occupy prime central spaces but see little day-to-day use. These three core features of new-town projects have meant that they achieve immense scale and visual extravagance from the outset but often take years to gain significant population. In the interim, such spaces lack the vitality of the downtown spaces in the adjacent old population centers. Jarring contrasts between the crowded and bustling streets of Zhengzhou and its capacious and less-crowded new-town project, Zhengdong, for example, make the latter town decidedly ghostly (Xue, Wang, & Tsai, 2013).

Recent research exploring the political-economic and territorial logics of China's project-led urban growth strategies provides additional insight into the causal factors driving new-town projects and suggests why many appear to struggle commercially and become ghost cities. At one level, the establishment of new towns represents a territorial

dynamic driven by various state actors' struggles for control over cities' key fiscal resource: land (for example, see Lin & Yi, 2011; Hsing, 2006; Chien, 2008; Hsing, 2010; Wu, 2015). Municipalities that successfully initiate mega-projects such as new towns gain control over vast areas, often doubling the size of the original city and greatly increasing the amount of developable land. As You-tien Hsing (2006) has argued, acquiring land and building on it is essential to the territorial strategies of municipal authorities, who rely on control of land for fiscal revenue and to cement their political legitimacy through effective and visually striking construction projects.

At another level, large-scale land development supplies cash-strapped city administrations with vital fiscal resources through leases and rents. Incentives to expand land development are strong, as income from land transactions is categorized as "extra-budgetary revenue" and, therefore, is exempt from tax sharing with the central government (see Song & Ding, 2007). Initiating land development is also a crucial mechanism to mobilize development capital wherever capital is scarce, as acquired land parcels can be used as collateral for bank loans applied toward various urban development projects (Lin & Yi, 2011). In this sense, the forces of demographic and industrial expansion propelling urban growth are given additional thrust by municipal-level politics, which have a profound impact on the pace and scale of city growth.

The rapid growth of city-scale new-town projects has thus made for striking images of barely inhabited cities. It is unclear, however, which of these will gradually gain population and become more city-like, and which will earn reputations as white elephants. As Shepard notes in *Ghost Cities of China*: "Rome wasn't built in a day; neither are new cities in China" (2015: Chapter 9). It may still be too early to judge the outcomes for these cities-in-waiting.

3.3. Land-use approaches

Another way to investigate the ghost city phenomenon is to consider land uses in order to discern patterns that reveal a surge in built space relative to population. At the national scale, the category of urban construction land, which refers to land that can be used for the range of urban functions, has expanded at nearly double the rate of demographic urbanization (Figures 1 & 2). In short, land is being urbanized at a faster rate than the population. Official statistics show built-up land area more than doubling from 22,439 km² in 2000 to 47,108 km² in 2013, while urban population increases only at half that rate, from 459,060,000 in 2000 to 731,000,000 in 2013.⁹ At this national scale, the data points toward massive sprawl of urban built-up areas into adjacent land and a remarkable increase in per-capita urban space.

Assessing this trend at more local scales reveals important differences suggestive of regional trends in the over-production of urban space since 2000. Using World Bank data for county-level administrative units, for example, we find considerable heterogeneity in changes in urban density (see World Bank, 2015). Urban areas in coastal regions have seen more population growth in absolute terms and have expanded urban construction land significantly through lateral sprawl. By contrast, similarly large physical expansions of urban construction land in the absence of comparable increases in population more easily code as empty in our findings. These results echo reporting on ghost cities that locate such sites in interior regions, where rapid urbanization of

land has preceded the presence of populations and produced spaces of remarkably low urban population density.

The lack of official data on urban tenancy and vacancy, however, makes it difficult to develop a more granular analysis of density and ghost town development. Some recent research efforts have attempted an end run around official data limitations, however, by taking advantage of Internet and wireless communication-based “big data” in a GIS environment. Using location data from cell phones accessing Baidu for internet searches in combination with mapped locations of buildings, Chi, Liu, Zhengwei, and Haishan (2015) identify locations consistent with ghostly emptiness. As their study acknowledges, however, the employed data-generation process contains a number of selection biases, most notably the equation of location-aware Baidu searches with tenancy and the exclusion from the study of populations with alternative Internet use patterns or lack of Internet access. Yet despite data shortcomings, their study’s results turn up a number of usual suspects in reporting on ghost cities, including Kangbashi and Tianjin’s Binhai New District. Results such as these provide further evidence of trends in city building that produce spaces widely referred to as ghost cities.

4. Prospects

There is currently no consensus on what constitutes a ghost city in China. At the heart of this definitional and conceptual quandary is confusion over the significance of emptiness and tenancy in urban spaces, a confusion based in no small part on an absence of data. But also, more conceptually, what level of tenancy qualifies as problematic? To what point is strong demand for real estate an effect of distortions caused by a remarkable accumulation of capital with insufficient productive outlets? These challenges make it difficult to assess where ghost cities exist, how large they may be, their originating causes and for how long they may lack population.

Nonetheless, recent research into property oversupply and ghost cities has stimulated useful debates about China’s urbanization. This work has brought to light problems at the heart of our empirical grasp of the country’s urban transformations as well as shortcomings in our conceptual language used to understand this process. Is a city a city if there are no people? What are the connections in China’s peculiar setting between industrialization, capital accumulation, and city growth? Given the strong role played by local states in pushing urban expansion, to what degree are demographic growth and industrialization the drivers of China’s urbanization? Relatedly, how are use and exchange values connected in China’s drive to urbanize? How might the relationships among these forces alter longstanding urban theory that has tended to see urbanization as a capital-driven process linked to industrialization?

The China case clearly demonstrates the vital interplay among city-level political forces, the urban land tenure regime, and national-level economic forces in shaping the country’s dramatic urbanization. Strong economic growth alone does not account for the production of urban spaces that have come to be referred to as “ghost cities.” Neither does the decantation of the countryside fully explain the particular spatial patterns of urban sprawl and housing over-supply. Indeed, a recent review by the cabinet-level National Development and Reform Commission found 3,500 urban projects currently on the books in China with potential to house 3.4 billion people (Xinhua,

2016). Such findings highlight anew the relevance of the ghost town terminology and hold alarming implications for the economic and social viability of cities. In short, they point to a gigantic absorption of capital in urban built space and reveal that a major output of China's economy in the 2000s has simply been cities.

Notes

1. For examples of photographic essays, see <http://content.time.com/time/photogallery/0,29307,1975397,00.html> (*Time* magazine), <http://www.thebohemianblog.com/2014/02/welcome-to-ordos-world-largest-ghost-city-china.html> (Bohemian blog), <http://www.rafaelolivier.com/china/architecture/photographer/ordos/failed-utopia/> (Rafael Olivier). All sites accessed 25 June 2016.
2. See <http://www.aljazeera.com/news/asia-pacific/2009/11/2009111061722672521.html>
3. To illustrate the volume of reporting on China's ghost cities, a search on Google news for "China 'ghost city'" returns 1,720 results as of June 2016.
4. We note that in the years since the emergence of China's ghost city controversy, other sites around the world, such as Masdar in Dubai and Songdo in South Korea, have also been labeled "ghost cities" in various reports. See Shapiro (2015) and (Goldenberg, 2016).
5. National Bureau of Statistics. www.stats.gov.cn and CEIC.
6. National Bureau of Statistics. www.stats.gov.cn
7. The four trillion RMB estimate comes from the fiscal side, yet harder to measure but likely even larger in size was financial stimulus in the form of loans from state-owned policy and commercial banks. See (Naughton, 2009).
8. Property-related debt on corporate balance sheets, on the other hand, are a major source of macro-economic concern. See, e.g. Kroeber (2016).
9. National Bureau of Statistics. www.stats.gov.cn

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