



BRUSHING THE HEAVENS: CONSEQUENCES AND IMPLICATIONS OF CHINA'S SKYSCRAPER BOOM

John A. Ferguson

Abstract

Skyscraper construction is one metric that offers clues about China's political economy. This paper takes an interdisciplinary approach at the intersection between politics, economics, and sociology to argue that China's skyscraper boom is the result of a combination of diverse phenomena. The paper will first provide a historical background and context of skyscraper building in China, then turn to a macro spatial analysis of current skyscraper construction in China through data visualization, and lastly transition to three cases to illustrate themes and discuss observations. Finally, this paper will conclude with overarching conclusions, predictions, and suggestions for future research. This paper will help stakeholders like investors, government officials, and policymakers better understand the nuances of China's political economy through the phenomenon of skyscrapers, a unique lens not typically explored.

Introduction

China is the undisputed world leader in skyscrapers, and no other country even comes close—the Middle Kingdom has set record after record in an unprecedented and obsessive skyscraper boom. In 2018, China set a new world record for annual skyscraper construction in a single country, seven times more than the US, which finished a distant second.¹ 2019 was the fifth year in a row in which the tallest building to be completed was in China.² And Shenzhen alone as a single city has beat out every other country in the world recently. While there's no doubt these skyscrapers are a symbol of economic power, there have been fears that the boom isn't sustainable and could be an inflationary bubble waiting to burst, fuelled by runaway GDP growth targets, cheap excess credit, and debt. Sure enough—China completed almost 40% fewer skyscrapers in 2019 amidst a slowing and transitioning economy, “ghost cities” have proliferated around the country, 18 high-profile supertall structures have stalled, and vacancy rates are

¹ Oscar Holland, “China built more skyscrapers in 2018 than ever before,” *CNN*, December 13, 2018, <https://www.cnn.com/style/article/skyscraper-china-ctbuh-2018/index.html>.

² “CTBUH Year in Review—Tall Buildings in 2019: Another Record Year for Supertall Completions” *Council on Tall Buildings and Urban Habitat*, 2019, December 12, 2019, <http://www.skyscrapercenter.com/year-in-review/2019>.

reaching 50% in some cities.^{3 4} Even the general manager of China's tallest building (Shanghai Tower) remarked that "the biggest challenge facing China is how to build fewer skyscrapers."⁵ Skyscrapers are very visible and symbolic sources of prestige when completed but hard to hide if they become white elephants sitting naked for the whole city to see—a double-edged sword.

Methodology

The paper will provide the context of skyscraper building in China, then present a macro spatial analysis of current skyscraper construction, then transition to three case studies. This paper's specific research question is: *what can skyscrapers reveal about China?* To begin to answer this question, this paper analyzes data from the Global Tall Building Database (www.skyscrapercenter.com), maintained by the Council on Tall Buildings and Urban Habitat (CTBUH). This building data was first geographically and spatially plotted across China for different height criteria. This revealed multiple statistical outliers and cases that varied from expectations. Focusing on three of these cases, various research methods were used to investigate the factors behind their outstanding case—tying each city or region's politics, economics, and history together to search for a reason why. A note regarding the data: although there are varying definitions for the height of a skyscraper, the standard definition is typically a structure that exceeds 150m. With the Skyscraper Center database, the dataset is filterable by height. Throughout the paper, different heights are used to illustrate different points, but it is noted with each example. There are also multiple categories referring to the construction status in which five definitions are used: completed, under construction, on hold, never completed, and proposed. "Architecturally topped out" and "structurally topped out" are consolidated with "under construction." A more detailed explanation can be found at ctbuh.org/resource/height. Typically residential buildings in China are around the 100-150m

³ Pearl Liu, "China's skyscraper developers have to pay for their vanity as the frenzy to scale new heights lead to record-breaking vacancies," *South China Morning Post*, December 10, 2019,

<https://www.scmp.com/business/article/3041474/chinas-skyscraper-developers-have-pay-their-vanity-frenzy-scale-new>.

⁴ Oscar Holland, "China completed almost 40% fewer skyscrapers in 2019, report says," *CNN*, December 13, 2019,

<https://www.cnn.com/style/article/ctbuh-2019-skyscrapers-china/index.html>.

⁵ Esther Fung, "China Needs Fewer Skyscrapers, Says Manager of Country's Tallest Building," *The Wall Street Journal*, May 18, 2016, <https://blogs.wsj.com/chinarealtime/2016/05/18/china-needs-fewer-skyscrapers-says-manager-of-countrys-tallest-building/>.

range, buildings 200-300m are far fewer, while buildings above 300m are considered “supertall.”

Supertalls carry particular significance with prestige and image, and are the defining buildings in a city’s skyline. The typical build time respectively is 2 years, 3-4 years, and 4-5 years.

Background

China’s major construction boom began and went on overdrive starting in the 1990s.

Skyscrapers, however, have actually been a rather recent phenomenon in China. It was Hong Kong where skyscrapers first appeared during this period and spread to Taiwan, Shanghai, and a few other coastal cities. Many were contracted in the 2000s and the first wave of skyscrapers began appearing around the country at the start of 2010. This video shows a timelapse of the evolution over time and across space of the Chinese skyscraper boom from 1990 until 2022 (projected completion date):

johnandrewferguson.com/china_patterns/skyscraper_time_lapse.mp4. For a macro spatial analysis of current skyscrapers refer to Figure 1. It’s clear that Shenzhen is the center of skyscraper construction in China. Nanning is a curious case given its relatively low prominence for its under construction and proposed skyscrapers. Tianjin and the Northeast Region stand out for high numbers of “on hold” skyscrapers, in contrast to the booming southern Pearl River Delta Region. The remaining section will examine Nanning, Tianjin, and China’s Northeast region for three case studies.

Nanning's outstanding case is puzzling even for those familiar with urban planning in China. Figures 2 and 3 show how Nanning boasted 77 buildings under construction and 46 proposed—both the highest of any city in China in their respective categories. Bubble size represents number of skyscrapers. It's surprising because Nanning is a small, tier-2 city not well-known outside of China. It only has a population of about 7 million people and in 2017, it ranked 45th in China for prefecture-level cities by GDP.⁶ That same year it ranked second after Shenzhen among world cities for completed 200m.⁷

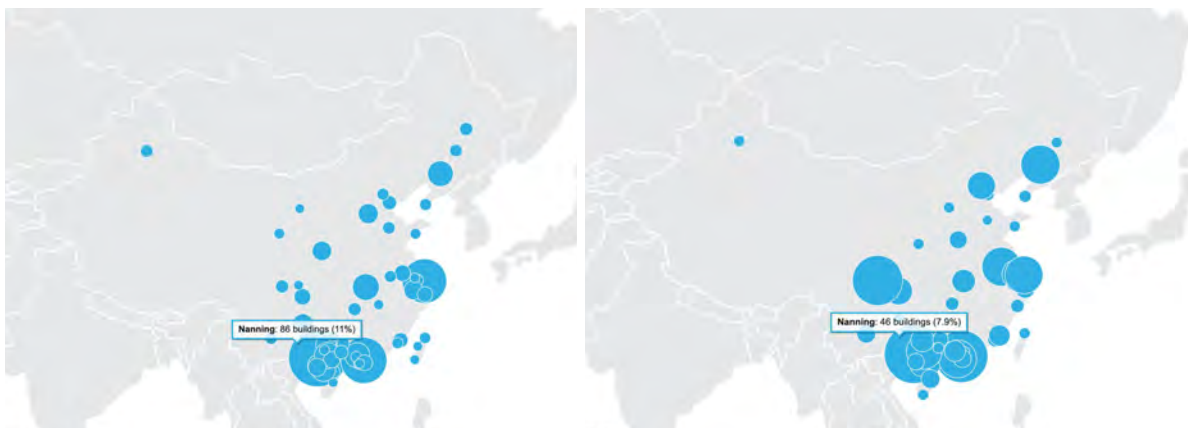


Figure 2: Skyscrapers “under construction” (all heights) Figure 3: Skyscrapers “proposed” (all heights)

The majority of Nanning's buildings under construction and proposed in the future are near the 100m to 150m mark reflecting an oversized proportion of largely residential buildings, but there is still an unusually significant number of buildings in the 200m and 300m range for a city of this status. Nanning's unusual situation is a case study in the political economy behind skyscrapers—how corruption, shady land finance, and one man helped to fuel an excessive building boom in an insignificant city on the Vietnamese border. On May 22, 2015, Wang Qishan, Xi Jinping's anti-corruption czar at the head of the Central Commission for Discipline Inspection announced the capture of the 100th “tiger”—referring to an

⁶ “List of Chinese prefecture-level cities by GDP,” *Wikipedia*, last modified September 11, 2019, https://en.wikipedia.org/wiki/List_of_Chinese_prefecture-level_cities_by_GDP.

⁷ Qiang Li and Linlin Wang, “Is the Skyscraper Boom excessive?,” (2018). https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3106608.

official of the rank of vice minister or above caught for corruption.⁸ The official in question was Yu Yuanhui (余远辉), perhaps one of the most promising politicians in Southwest China at the time. He was the youngest member of the Guangxi Party Standing Committee, the secretary-general of the provincial party committee, but perhaps most importantly, the party chief of its capital city Nanning from May 2013 to May 2015.⁹ He was seen as a political star, having made it on as an alternate member of the 17th Central Committee in 2007 at just 43.¹⁰ But just two years into his post as the head of Nanning, he was found guilty of “taking advantage of his posts in the region to seek benefits for others in obtaining land, construction projects, and deductions or exemptions on land transfer fees from 2006 to 2015.”¹¹ He was subsequently expelled from the CCP and sentenced to 11 years in prison.¹² Investigations later found that he was personally responsible for “massive land confiscations in Guangxi that resulted in the deaths and serious injuries of local people; he organized police raids at villagers and covered up bloody conflicts when these cases were exposed in the media or investigated by Beijing.”¹³ He also accepted bribes in money and property amounting to \$1.31m (USD).¹⁴

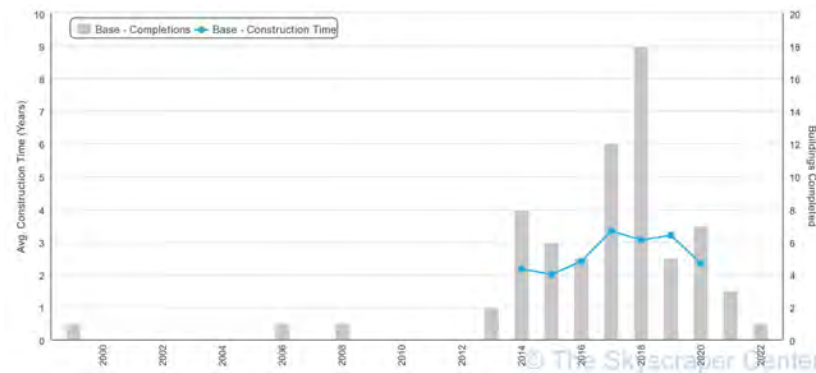


Figure 4: Skyscraper completions in Nanning over time (all heights)

⁸ Bo Zhiyue, *China's Political Dynamics under Xi Jinping* (Singapore: World Scientific Publishing Co., 2016), 32.

⁹ “Yu Yuanhui,” Wikipedia, last modified January 26, 2019, https://en.wikipedia.org/wiki/Yu_Yuanhui.

¹⁰ Ibid.

¹¹ “Former senior Guangxi official stands trial for graft,” *Xinhua*, March 21, 2017, http://www.chinadaily.com.cn/china/2017-03/21/content_28630797.htm.

¹² Ibid.

¹³ Zhiyue, *China's Political Dynamics under Xi Jinping*, 31.

¹⁴ *Former senior Guangxi official stands trial for graft*.

The skyscraper data does indeed affirm this theory about the corrupt elite politics behind Nanning. Nanning only had 14 skyscrapers (all heights) start construction in 2012, but in 2013 (the year of Yu's appointment as secretary), the number *tripled* to 41. It increased again in 2014 to 55, before dropping to 45 in 2015 (the year of Yu's sacking). Of the current 27 buildings taller than 200m in Nanning, 78% (21) were proposed and/or began construction during Yu's small window as Nanning Party Secretary. Of the *proposed* 200m category containing 7 skyscrapers, *all* were proposed under Yu's leadership but *none* have been completed yet (they have not been moved from "proposed" to "on hold"). There is only one officially "on hold" building (China South City Tower 1) which was also proposed under his leadership. Finally, Nanning China Resources Center, the city's tallest skyscraper (402.7m) and the crown jewel of Nanning originally began construction in 2014, but stopped for a mysterious "redesign" soon after. The data suggests that while taller skyscrapers were disrupted more by Yu's sudden sacking, most shorter buildings proceeded unaffected. This might indicate that corrupt financing mostly only dealt with buildings of significant height and prestige. The failure to have buildings be moved from "proposed" to "on hold" might also suggest a reluctance from developers to disclose any information about their projects and may be an attempt to "save face" from being involved after Yu's sudden fall from grace. The primary area of these skyscrapers are within the Wuxiang New District (五象新区) that contains the China-ASEAN Financial City (中国东盟金融城). According to news reports, there are significant government incentives for relocation into this area including land concessions, purchases, and transfer evaluation prices reduced by as much as 50-60%.¹⁵ What was originally planned to be a 117 high-rise building area has since been capped at 88.¹⁶

¹⁵ "中国—东盟金融城落户南宁," 上海证券网·中国证券网, June 20, 2019, <http://news.cnstock.com/news/bwxx-201906-4390498.htm>.

¹⁶ Ibid.

Yu Yuanhui and Nanning's case is a dramatic example, although not the only example of how structural incentives behind the mechanisms of party promotion can lead to an overbuilding of skyscrapers and overly ambitious officials trying to game the system. One paper argues that this tie with how China promotes officials is actually the *primary* reason.¹⁷ “Under the current governance system, the main indicator of growth is local GDP and the construction of new towns can easily drive economic growth which require large-scale infrastructure investment support. As the main decision-maker in the city, the average term of the party secretary is 3.98 years. In this way, during the limited term and under the pressure of performance assessment, the main incumbent officials of city governments have the motivation to achieve their GDP growth requirements. Newly appointed officials represented by the Municipal Party Committee Secretary often do not improve the quality and efficiency of the city, but develop new towns and new districts to achieve a ‘double harvest’ of economic and land fiscal revenue growth in the short term.”¹⁸ Given that the average term of city party secretaries is about 4 years, it makes sense that most of Yu's buildings were to be completed by 2017 and 2018 right when he would be poised for promotion. Yu's young age and impressive background also might have been a motivating factor: “We found that the behavior of newly appointed officials initiating new achievements was significantly positively correlated to their age. Young officials with good career prospects often actively seek out obvious political achievements with ‘eyeball effects.’ The establishment of a new city or district has become the most direct way to show their political achievements, and this effect became even more significant after the economic downturn of 2008. Before 2008, relatively young officials did not show a clear impulse to start a new city, but from 2009 to 2014, the goal of steady growth coupled with the strong impulse of young officials led to the construction of large-scale new towns. Young officials are more motivated to pursue promotion but their experience in urban governance and development is relatively inadequate.” Further, Nanning's lower level of prominence as a tier-2 city might have also played a role:

¹⁷ 陆铭与彭冲, “【大国大城】新城建设: 成因、后果及亟待汲取的教训。” *澎湃新闻*, September 9, 2019, http://www.sohu.com/a/339763662_712024.

¹⁸ *Ibid.*

“local officials from small and medium-sized cities after 2008 built more and faster than large cities.”¹⁹ This might be because corruption can go unnoticed more easily in small cities by the central government. Jason Barr and Jingshu Luo also find that career promotion especially in small cities tend to lead to the overbuilding of skyscrapers.²⁰ It’s also about image building—tall landmark skyscrapers are a visible sign of economic vitality. “Rising skyscrapers serve as ‘achievement projects’ for local officials in performance evaluations, pressed by fiscal urgency and motivated by political ambition.”²¹ Recognizing all of these things to be a serious problem, for the first time in December of 2015, the Central City Working Conference made it necessary to prevent the change of leadership from “bringing randomness to planning.”²² The “Opinions on Further Strengthening the Management of Urban Planning and Construction” document issued by the Central Committee and the State Council in February 2016 further emphasized “forward-looking, mandatory, and continuous planning and curb the phenomenon that leading cadres can modify urban planning at will.”²³ It might not be a coincidence that these changes came just two months after Yu was expelled from the CCP.

To more specifically examine what more complex illegal interactions under Yu might have looked like beyond just simple bribes and cheap land, it’s helpful to understand how corruption enters the institutions of the Chinese real estate industry. According to State Council rankings, commercial bribery (商业贿赂) was most prevalent in land transfer and construction, with most of the corruption primarily concentrated in local governments.²⁴ This is because although “the central government owns state land *de jure*, local governments hold the *de facto* right of local land disposal—making important decisions concerning land supply, transaction modes, zoning, prices, and the requisition of land at the local level.”²⁵

¹⁹ Ibid.

²⁰ Jason Barr and Jingshu Luo, “Growing Skylines: The Economic Determinants of Skyscrapers in China,” (2018).
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3293430.

²¹ 陆铭与彭冲,【大国大城】新城建设:成因、后果及亟待汲取的教训。

²² Ibid.

²³ Ibid.

²⁴ Jiangnan Zhu, “The Shadow of the Skyscrapers: Real Estate Corruption in China,” *Journal of Contemporary China* 21, no. 74 (2012): 243-260.
https://www.researchgate.net/publication/232967936_The_Shadow_of_the_Skyscrapers_Real_Estate_Corruption_in_China.

²⁵ Ibid.

One tactic local governments have used is merging several smaller land parcels into a large one, so that the land has to be sold at a high price enough that only the wealthiest firms can afford it. “This kind of manipulation is usually limited to small cities [like Nanning] having few large companies. This trick does not play well in large cities, where direct government intervention in open land markets is much harder.”²⁶ Another tactic concerns the control and release of information—“theoretically speaking, if land is sold on the market, information such as the benchmark price, the location, and the final transaction price should all be publicly announced regardless of which transaction mode is in use. Nevertheless, transparency merely existed on paper as information remained accessible to selected individuals.”²⁷

In sum, skyscrapers can be “a carrier of GDP and performance” and under a meritocratic promotion structure that emphasizes growth over efficiency and quantity over quality, it’s no surprise that the changing of local officials can trigger construction booms, highlighting the inefficient use of resources in the context of short-term economic growth targets. Some overambitious officials with bright political futures like Yu have tried to take advantage of this structure, but to disastrous consequences. Taking a step back from the situation, Nanning truly is an unusual case indeed. By the sheer scale and prominence of the skyscrapers he brought to his small city, Nanning’s example is an excessive case of how skyscrapers can be pet projects to boost a city’s image through symbolic prestige, especially in lower-tier cities where there is excessive competition for recognition and party promotion.

²⁶ Ibid.

²⁷ Ibid.



Figure 5: Yu Yuanhui stands trial in Hunan²⁸

Case Study 2: Tianjin: ghost cities, supertalls, and how China’s state capitalist model produces empty skyscrapers

China’s hybrid system of state-managed capitalism has resulted in a clash of incentives producing significant inefficiencies and oversupply. Meanwhile, state-directed efforts to reverse market forces in large-scale urban planning have largely been a failure so far with economic culture and population decline also playing a role.

Tianjin is interesting because it’s a case that should be successful. It’s well situated (only 30 minutes outside Beijing by high-speed train). It’s a skilled manufacturing hub, a busy port, and been able to attract international firms like Airbus and Motorola in the past.²⁹ Tianjin, at points over the past decade, was the fastest-growing of China’s 31 provincial-level regions at 13.5%.³⁰ The primary reason is the special attention that Xi’s predecessor Hu Jintao gave to it. During Hu’s time, a flood of “development areas” were started—Xiangluowan (响螺湾), Yujiapu (于家堡), Sino-Singapore Tianjin Eco-City (中新天津生态城), and Binhai New Area (滨海新区). They were core to a strategic component of the 11th Five-Year Plan (2006-2010) to have China’s Bohai Bay Economic Rim rival the Pearl and Yangtze River

²⁸ “广西南宁市委原书记余远辉受贿案一审开庭,” *新华：抓蝇打虎*, March 21, 2017,

<https://archive.shine.cn/nation/flies-and-tigers/Former-senior-Guangxi-official-stands-trial-for-graft/shdaily.shtml>.

²⁹ “How Tianjin, once China’s fastest-growing region, became its slowest,” *The Economist*, August 2, 2018,

<https://www.economist.com/china/2018/08/02/how-tianjin-once-chinas-fastest-growing-region-became-its-slowest>.

³⁰ *Ibid.*

Deltas—with Tianjin as the centerpiece. The Binhai New Area, launched in 2009, in particular had been billed as the equivalent of Shanghai’s Pudong New Area and Shenzhen’s Special Economic Zone. Binhai actually maintained an annual growth rate of 17% under the Hu-Wen administration and its GDP even outpaced Pudong at one point in 2010.³¹ Wen Jiabao, a Tianjin native, had extensive financial interests and ties to Tianjin, and this no doubt played a role in the selection of Tianjin.^{32 33} But this special attention didn’t start with Hu. The Tianjin Economic-Technological Development Area (TEDA) was actually formed in late 1984 along with Shenzhen and Pudong, far earlier than any of the recent developments under Hu Jintao.

Despite Tianjin’s advantages, it has failed miserably to keep up with Pudong and Shenzhen. Since 2017, Tianjin’s annual GDP growth has averaged just 3.5%, the slowest rate of growth across China.³⁴ Recent reports for the third quarter of 2019 indicate that Tianjin recorded the highest office vacancy rate of any city in China at close to 50%, double the national average.³⁵ In July of 2018, Tianjin officials, after unveiling grim economic data proclaimed “We must summon the courage that it takes to roll a rock up a mountain.”³⁶ Indeed, the skyscraper data reflects a grim situation. Tianjin significantly exceeded every other city in China for “on hold” 200m and 300m buildings. Tianjin had a remarkable 12 buildings 200m or above “on hold” (16% nationally) and of those, 3 are supertalls. If you expand the criteria to include all heights, Shenyang takes the lead, but just barely—Tianjin still finishes a close second. One tower in particular, Goldin Finance 117 is also peculiar given that despite topping out in 2015 (still categorized as “architecturally topped out”), it hasn’t progressed further since, making Tianjin’s case all the more glaring. It was supposed to be the second tallest building in China. “A major state bank prohibited its

³¹ Maurizio Marinelli, “Tianjin: China’s cities have made history, now it’s time to make them safer,” *The Conversation*, August 17, 2015, <https://theconversation.com/tianjin-chinas-cities-have-made-history-now-its-time-to-make-them-safer-46214>.

³² David Barboza, “Billions in Hidden Riches for Family of Chinese Leader,” *The New York Times*, October 25, 2012, <https://www.nytimes.com/2012/10/26/business/global/family-of-wen-jiabao-holds-a-hidden-fortune-in-china.html>.

³³ Guilbert Gates, “The Wen Family Empire,” *The New York Times*, October 25, 2012, https://archive.nytimes.com/www.nytimes.com/interactive/2012/10/25/business/the-wen-family-empire.html?_r=0.

³⁴ *How Tianjin, once China’s fastest-growing region, became its slowest*

³⁵ Liu, *China’s skyscraper developers have to pay for their vanity as the frenzy to scale new heights lead to record-breaking vacancies.*

³⁶ *How Tianjin, once China’s fastest-growing region, became its slowest.*

Tianjin branch from making new loans to the city and some lenders are refusing to lend to Tianjin companies” according to creditors, government sources, and internal documents.³⁷ Reports also indicate that “Tianjin has been hit particularly hard by Beijing’s efforts to close off shadow banking channels such as trusts among other measures.”³⁸



Figure 6: Skyscrapers “on hold” (200m+)



Figure 8: Goldin Finance 117 sits empty in Tianjin³⁹

So if Pudong, Shenzhen, and Binhai, all coastal port cities (Tianjin also having foreign concessions like Shanghai) that had their SEZs start around the same time, why has Tianjin failed to keep up with Shanghai and Shenzhen? I suspect there are multiple factors at play. The first has to do with the culture of the social economy: geographically the further you are from Beijing, the more economic vitality and market dynamism you might have and the less state control there might be. Shenzhen, the

³⁷ Yawen Chen, Shu Zhang, and Elias Glenn, “A northern Chinese powerhouse grapples with a slowdown as credit curbs hit,” *Reuters*, June 15, 2018,

<https://in.reuters.com/article/china-debt-tianjin/a-northern-chinese-powerhouse-grapples-with-a-slowdown-as-credit-curbs-hit-idINKBN1JB1C0>.

³⁸ *Ibid.*

³⁹ Thomas Jaehndel, “Goldin Finance 117,” *The Skyscraper Center*, <https://www.skyscrapercenter.com/building/goldin-finance-117/73>.

furthest from Beijing arguably has the most, Shanghai follows, and Tianjin is geographically closest. Case in point: “Shenzhen has always had the green light as an economic entity to go fast with stronger market justifications than other Chinese cities.”⁴⁰ Tianjin has always traditionally been dominated by the state sector while Shenzhen and Shanghai are dominated by the free market. Shenzhen has benefitted from its proximity to Hong Kong’s financing while Tianjin might have suffered as a result of its proximity to state financing next to Beijing. Another factor might be that Tianjin is one of four cities under the central government’s direct jurisdiction.

The second factor has to do with declining populations. In 2017, Tianjin was a “shrinking city” losing 52,000 residents.⁴¹ An MIT project on “ghost cities” show with big data compiled from social media like Dianping, Weibo, RenRen, and Baidu how the further amenities are such as restaurants, schools, malls, and banks were from a residential development area, the lower its amenity score and the more likely it will be a “ghost cell.” Looking at the satellite data, it’s notable that compared with downtown Tianjin, there are numerically far less total cells in the Binhai New Area but when there are cells, they cluster in small pockets of “ghost city cells.” Some vacancy rates specifically in Binhai have been as high as 70%.⁴² The project is found here: <http://ghostcities.mit.edu/>.

The third and perhaps most important factor is the dominance of the state. By adopting Tianjin as his pet “legacy” project during his tenure and giving it Beijing’s “blessing” thereby fighting the market, it may have turned out to be a curse instead. It’s clear that the previous rapid GDP growth was driven by this state-supported effort that came not from the market but directly from Beijing. The data shows that every skyscraper on hold in Tianjin above 200m was proposed and broke ground under Hu Jintao’s leadership. This is largely the result of a market vs. state conflict in which the state tried to artificially create demand by first building supply, but the demand just wasn’t there. Siqi Zheng, the founder and director of the MIT China Future City Lab when interviewed, believes this to be the *primary* cause behind

⁴⁰ Holland, *China completed almost 40% fewer skyscrapers in 2019, report says*.

⁴¹ *Ibid.*

⁴² *How Tianjin, once China’s fastest-growing region, became its slowest.*

most of China's empty skyscraper problems—market inefficiencies caused by Beijing's hybrid model. Initially I expected that because Tianjin has primarily been a state-led effort, most of the developers behind Tianjin's stalled skyscrapers might be state-owned enterprises (SOEs), but it's actually the opposite. Every halted skyscraper but one in Tianjin has a privately-owned commercial developer. This is because most skyscrapers being built in China are carried out by commercial developers and not SOEs anymore. Therefore, the overriding factor in whether a skyscraper is put on hold is state involvement, not the developer's ownership structure. Even *supertalls* which are for prestige and image rather than profits were all undertaken by commercial developers, who have adapted their per-unit-economic business models to compensate for their predicted losses. For example, Greenland Group builds lower-rise luxury residential apartments directly adjacent to multi-use mega buildings to hedge against losses from empty office space they know they will not make money from.⁴³ In addition, “the economics of 200m-plus are so daunting, that increasing the proportion of the ‘over 300m group’ makes an absurd kind of sense.”⁴⁴ These business model adaptations—building more and building taller—only contribute to the problem. In this way, combining state directives and profit-motivated developers creates an environment with even greater economic inefficiency. Tianjin has also been described by government officials as a “pilot experiment for how the government will resolve its debts” in a system of mixed model of development.⁴⁵ Many large commercial developers like Greenland were previously SOEs in the past and still retain state influence, and Beijing might be using Tianjin to experiment with more commercial-led construction. Another drawback of state planned urbanization is that progress “undulates with the attention that leaders devote to them—when the leader is distracted, mega projects languish.”⁴⁶

⁴³ Sun Yu, “China's skyscraper boom comes down to earth,” *Financial Times*, November 21, 2019, <https://www.ft.com/content/5dee61e8-0c2b-11ea-bb52-34c8d9dc6d84>.

⁴⁴ Holland, *China completed almost 40% fewer skyscrapers in 2019, report says*.

⁴⁵ *How Tianjin, once China's fastest-growing region, became its slowest*.

⁴⁶ Shi Jiangtao and Jun Mai, “Xi Jinping visits Xiongan New Area in show of impatience at lack of progress on ‘future city’ plan,” *South China Morning Post*, January 27, 2019, <https://www.scmp.com/news/china/article/2183804/xi-jinping-visits-xiongan-new-area-show-impatience-lack-progress-future>.

Given this unsuccessful experience with Tianjin, it isn't surprising that there has been criticism and controversy surrounding Xi Jinping's ambitious vision to press forward with his plan to turn the region into a megacity cluster known as Beijing-Tianjin-Hebei (JingJinJi / 京津冀) which includes Xiong'an New Area, (雄安新区) as his pet project all led by the state, not the market. Unlike the other SEZ areas Shenzhen and Pudong, Xiong'an's development is taking place under the direct oversight of the Central Committee and the State Council to steer it, more closely resembling old-fashioned central planning than unfettered market-oriented development. "Xi has a more convincing view of the necessity of a very large, direct state role in the economy than Deng ever did. Xi is not only providing leadership but also the blueprint, the map, and the instructional pamphlet for building a city. That's really fundamentally different than Shenzhen."⁴⁷ When it comes to the entire development of a city like Tianjin, Xiong'an, and now the megalopolis of JingJinJi, leadership transition and projects stretching across administrations can pose a serious challenge. Considering that it took Shenzhen 40 years under Deng Xiaoping to get where it is today, it's difficult to assess whether the market can handle 40 years of unprofitability to make something happen that ordinarily wouldn't under normal market circumstances. Market-oriented development of skyscraper projects might have the ability to be consistent across administrations but state-planned skyscrapers do not. Notably, Xiong'an's plan does not have any skyscrapers instead "focusing more on livability and aesthetics at the expense of economic utility."⁴⁸ My analysis here is that Xi is trying a different urbanization model after his predecessor's failure to develop Tianjin.

It seems that Tianjin's case, for now, has proven the drawbacks of state-planned construction. When developers are guided completely or partially by Beijing's "implicit guarantee," there are grim results. But it still may be too early to make conclusions. While Tianjin's phenomenon is certainly

⁴⁷ Jessica Meyers, "China wants to build an innovation capital by fiat. Can it?," *Los Angeles Times*, January 2, 2018, <https://www.latimes.com/world/la-fg-china-xiongan-20180102-story.html>.

⁴⁸ Cheng Li and Gary Xie, "A brave new world: Xi's Xiong'an," *Brookings*, April 20, 2018, <https://www.brookings.edu/opinions/a-brave-new-world-xis-xiongan/>.

representative of a larger debate about the dynamics of skyscraper construction under the market and under the state, it's entirely possible that Beijing's hybrid blend of state capitalism may just naturally develop along a different timetable than a pure market approach. Tianjin has only seen 15 years of development and considering that we still have not observed the full outcome of the skyscraper boom, it might be too premature to label Tianjin and the broader area as failure. As one ghost city expert Wade Shepard put it, "The local government flips a switch and the institutions that the state owns—like banks and universities—move in. That gets the ball rolling. It never really happens gradually, it's almost immediate. There's a tipping point that is very obvious."⁴⁹ ⁵⁰ Tianjin actually featured prominently on the cover of this year's CTBUH's annual report with an image of Tianjin Chow Tai Fook (CTF) Binhai Center, the tallest building to be completed worldwide in 2019. Xi Jinping just recently opened Beijing's new Daxing International Airport in September 2019, strategically positioned to serve as the air transport hub for the future Beijing-Tianjin-Hebei region. It's the largest single-structure airport terminal in the world, and it opened ahead of schedule. Regardless, it will be interesting to watch how the megacity region unfolds in the next 30 years and whether a state-dominant model can produce as efficient and effective of an urban planning result as the pure market.

Case Study 3: Regional disparity, unbalanced growth, and the case of China's rustbelt Northeast
Skyscraper construction data suggests that China's economic development has and continues to be extraordinarily imbalanced between regions, but that this asymmetry, caused by national growth taking priority over regional growth, may be largely left ignored or even encouraged to achieve faster and more dynamic economic growth.

China's Northeast Region consisting of the three provinces of Liaoning, Jilin, and Heilongjiang collectively accounted for 31.3% of skyscrapers put on hold or never completed—the highest of any

⁴⁹ Holland, *Is Tianjin's Manhattan 'Ghost' City Coming to Life?*

⁵⁰ Wade Shepard, *Ghost Cities of China: The Story of Cities Without People in the World's Most Populated Country* (London: Zed Books, 2015).

region in China. Shenyang in particular is the epicenter with the highest number of skyscrapers put on hold around the country.



Figure 9: skyscrapers “on hold” (all heights)



Figure 10: China's Northeast

Understanding the history of the region offers a simple explanation for why this region has seen skyscraper construction put on hold. It was the industrial base for Maoist China (inherited from the Soviet Union) supplying the rest of the country with raw natural resources like steel, cement, oil, coal, and iron ore also armed with infrastructure ready to process them. After reforms in 1978, attention shifted to richer coastal regions like Shanghai and Shenzhen, but the region was still important especially under Jiang Zemin's nationalization of the Shanghai model which brought debt-fuelled, energy-intensive, construction to the entire country in the 1990s, picking up in the 2000s. The Northeast predominantly supplied the materials for this skyscraper and infrastructure building boom. But since the recent slowing of the Chinese economy and a third economic transition underway in a shift towards services and consumption, these raw resources are in less demand. In addition, the region has always been dominated by SOEs and not the private sector. This heavy dependence on the state, which provides more than half the jobs in some Northeast provinces, has made it difficult to keep up with the flexibility of the private sector despite

recent SOE reform.⁵¹ This deep-rooted planned economic mindset has strongly influenced the regional culture and attitude, which inherently lacks a tradition of enterprising spirit and a history of innovation. As a result, some of the highest rates of corruption in the country have been recorded here as a result of the ties between officials and state-run companies that have emerged due to having the most centrally planned regional economy in China.⁵² Its reputation for graft deters private investment, only further strengthening a reliance on the state. Among other factors, China is making a turn away from polluting industries to address its environmental issues, the region shares three international borders with Mongolia, Russian Siberia, and North Korea—all ailing economies with little trade, and the region stands to gain little from the Belt and Road Initiative (BRI).⁵³

Population flow supports the thesis about a “rustbelt” Northeast. The region accounted for a staggering 73% of the shrinking cities across the country in the past 3 years and 2 million people have left the area between 2000 and 2010.⁵⁴ Among the youth population, the migration patterns are even more disheartening: only 3% of alumni at the Harbin Institute of Technology decide to stay. Shenyang even proposed a zero down payment scheme on property purchases to entice college graduates to stay.⁵⁵ Looking at “proposed” skyscraper data might seem contradictory. Shenyang had the most number of proposed 150m+ skyscrapers in the entire country even topping Shenzhen. But upon closer inspection, all were proposed in the late 2000s and early 2010s and very few had listed completion dates which suggests that the government might have expected the building boom to continue longer than it has and they now sit in an awkward quasi-stalled state. As a proxy for projected growth, proposed buildings give a rough idea of both state and market expectations, and in this case, it raises the possibility that China’s model is

⁵¹ “Lessons from China’s rust belt,” *The Economist*, February 22, 2018,

<https://www.economist.com/china/2018/02/22/lessons-from-chinas-rust-belt>.

⁵² Tom Hancock, “China’s shrinking cities: ‘Most of my classmates have left,’” *Financial Times*, April 26, 2019,

<https://www.ft.com/content/bd1e1bf2-661f-11e9-a79d-04f350474d62>.

⁵³ Ankur Shah and Vivek Pisharody, “BRI Draws Skepticism in China’s Northeast,” *Reconnecting Asia*, November 8, 2019,

<https://reconnectingasia.csis.org/analysis/entries/bri-draws-skepticism-china-northeast/>.

⁵⁴ “China’s shrinking cities to adopt new urbanization strategies,” *Global Times*, April 10, 2019,

<http://www.globaltimes.cn/content/1145352.shtml>.

⁵⁵ Mandy Zuo, “China’s rust-belt city Shenyang may let young homebuyers dip into parents’ housing funds,” *South China Morning Post*, March 24, 2016,

<https://www.scmp.com/news/china/policies-politics/article/1929905/chinas-rust-belt-city-shenyang-may-let-young-homebuyers>.

inherently inferior to the market for predicting population flows and the eventual outcomes of its urbanization efforts. Part of this may be due to the sheer speed and scale of China's economic development, but there is definitely an imbalance when developers are guided by different signs by both the market and the state in inaccurately anticipating demand. Government intervention and sudden policy changes via the *hukou* system to influence what would ordinarily be a freely flowing population might be to blame for misinforming developers about population projections 10-15 years in the future.

“Proposed” skyscraper statistics also show that no new skyscrapers 150m+ with the exception of two have been proposed in the entire Northeast region since 2013. You might expect the government to attempt to override market forces and actively try to resuscitate the Northeast given Beijing's unique levers that it can pull to do so and the socialist imperative to spread the wealth. But Beijing is not intervening. It's not trying to boost GDP or stimulate the declining economy through more building projects as it did before. Although there's been talk of a great plan to “rejuvenate the old Dongbei Industry Base” circulating in party propaganda since at least the 2000s, there have been no significant changes. This leads to an interesting point. My hypothesis is twofold: a) the Chinese government is aligning more and more with the market to guide skyscraper projects and thus economic development, and b) the central government is OK with regional economic disparity. In fact, unbalanced growth might even be *desired* as a part of Beijing's larger growth strategy. Deng Xiaoping's economic reforms with designated SEZs saw that the beginning 1970s-era economic development of Greater China was *purposefully* highly unbalanced.⁵⁶ Limited migration policies were specifically designed to allow workers to move but not settle in these few high growth areas to help drive growth. And restrictions were put into place to limit competition from other areas. It might be the case that Beijing deliberately enacted these policies through state tools to create small ultra hyper market-driven growth areas rather than spreading that success. It decided it could manage these imbalances later when high growth has been achieved.

⁵⁶ Baofeng He, “The Status and Roles of Special Economic Zones in China's Unbalanced Development,” *Research Series on the Chinese Dream and China's Development Path* (2019). https://link.springer.com/chapter/10.1007/978-981-13-6675-8_6.

Many scholars including Yukon Huang agree.^{57 58} One McKinsey consultant put it this way: “Unbalanced growth is the natural order of things—it can be leveraged, exploited, even somewhat balanced but never resisted nor reversed.”⁵⁹ Beijing isn’t trying to reverse the inevitable fate of the Northeast by redirecting resources, investment, and attention away from the more successful parts of the Chinese economy—most notably the Pearl River Delta region which it sees as capable of leading the nation into the next stage of a more advanced economy. China isn’t trying to hold on to declining industries of the past, but fixates on regions of the future making its strengths even stronger. Perhaps China has given up on the original socialist mandate after observing it hasn’t worked and is returning to what made China’s capitalist opening so successful in the very beginning—unbalanced hypergrowth. While a *balanced* approach is more equal, it’s also slower. An *unbalanced* approach is less equal, and *far* faster. Both methods theoretically achieve the same final outcomes. The clash of incentives arise when local governments inevitably do what’s good for their city and region, but the central government in Beijing prioritizes what’s better for the country and opts to make sacrifices to maximize resources. The Northeast is one region that has been sacrificed for the betterment of the nation.

Limitations

The lack of transparency around development projects and timetables has skewed statistics and made it so that many skyscrapers are not in the correct category. For example, many skyscrapers are still officially labeled as “proposed” but have not begun construction for 10+ years, many skyscrapers listed as “architecturally or structurally topped out” are actually “on hold,” and many skyscrapers have never been moved to the “never completed category.” Equally important, many skyscrapers are never reported and

⁵⁷ Yukon Huang, *Cracking the China Conundrum: Why Conventional Economic Wisdom is Often Wrong* (Oxford, UK: Oxford University Press, 2017).

⁵⁸ Yukon Huang, “China’s unbalanced growth has served it well,” *Financial Times*, October 7, 2010, <https://www.ft.com/content/7dd52f82-d247-11df-8f8e-00144feabdc0>.

⁵⁹ Winston Mok, “China’s economic miracle has a secret ingredient hiding in plain sight: unbalanced growth,” *South China Morning Post*, October 9, 2019, <https://www.scmp.com/comment/opinion/article/3031886/chinas-economic-miracle-has-secret-ingredient-hiding-plain-sight>.

even if a skyscraper is reported, vacancy rates could show that a building remains completed on the exterior but completely empty from the interior.

Conclusions

The first case explains the link between skyscrapers and governance in China with the unusual case of Nanning, the second demonstrates how market and state-run economic models have produced divergent outcomes by looking at supertalls in Tianjin, and the third explores how skyscraper construction data reveals a regional economic disparity and what its implications are by focusing on Northeast China. Combined, they tell a more nuanced story that mirrors China's larger macroeconomic trends having just recently recorded the slowest rate of economic growth in nearly three decades⁶⁰. Because skyscrapers are expensive multi-year projects, in the next 10 years there should be a rising trend of developers under more financial pressure as China curbs lending. The speed and scale of China's growth is unprecedented in history and so watching how skyscraper construction statistics respond to this economic transition away from debt-fuelled GDP growth will be a larger indication about China's overall financial health. Skyscraper construction in the context of larger urban planning projects in the future might reveal whether a state capitalist model is a feasible alternative to the market and depending on the outcome, may nudge China to alter its model. The construction of these mega-sized urban areas that combine cities like the Pearl River Delta and the JingJinJi area (projected 130m people, bigger than Uganda) has just never been done before in history.⁶¹ The scale and speed over which urbanization is taking place in China is unprecedented and so observers should watch with great excitement at China's efforts to manage these shifts and whether Beijing's model of political economy is up to the task.

Predictions

⁶⁰ "China's growth is the slowest in nearly three decades: get used to it," *The Economist*, July 15, 2019, <https://www.economist.com/finance-and-economics/2019/07/15/chinas-growth-is-the-slowest-in-nearly-three-decades-get-used-to-it>.

⁶¹ Joe Myers, "You know China's cities were growing. But the real numbers are stunning," *World Economic Forum*, June 20, 2016, <https://www.weforum.org/agenda/2016/06/china-cities-growing-numbers-are-stunning>.

Through this analysis of Chinese skyscrapers, I have several predictions. First, regional inequality will continue to rise as China sustains its unbalanced growth model. Second, outdated SOEs will continue to undergo consolidation and reform as China moves closer to the market for construction, but state-led growth via investment will still dominate and continue to get more efficient (not to be replaced with consumer-led growth), a view consistent with former World Bank Chief Economist Justin Lin. Third, skyscraper construction will most likely slow to more normal rates (it already is), and the current boom will see most completions by 2025. Fourth, China will shift its skyscraper efforts to help other BRI countries (see Algeria⁶²) construct their landmark and skyline-defining towers now that China is saturated. China has valuable engineering and megaproject management expertise to put to use.

Future Directions

First, it would be interesting to first and foremost use quantitative statistical methods to prove or disprove the aforementioned predictions. Second, it might also be illuminating to analyze the records of large real estate companies and property developers like Evergrande, Greenland, or Vanke; I briefly touched on how business models have adapted to address market imbalances but Greenland would be a fascinating case study given it was founded as an SOE but then became private. A before and after comparison might yield insight about the distinctions between state-owned developers and commercial developers. And third, another future direction could focus on the intersection between skyscrapers and the BRI.

⁶² Abdi Latif Dahir, "Africa's largest mosque has been completed with thanks to China," *Quartz Africa*, April 28, 2019, <https://qz.com/africa/1606739/china-completes-africas-largest-mosque-in-algeria/>.