

Chinese Government Infrastructure Spending: An Aid in China's Development or the Source of New Problems

University of Minnesota, Twin Cities
Economics Department
Jonggoo Kang

China's infrastructure spending has increased substantially over the past few decades. As China strives to urbanize society and increase economic growth the government has increased its spending and focused on the construction of new cities. The government has four main reasons for doing this: to increase China's GDP through expenditure, to develop industries and companies, to increase the rural-urban migration, and the incentive for local government officials to increase infrastructure spending has also developed due to the corruption in China.

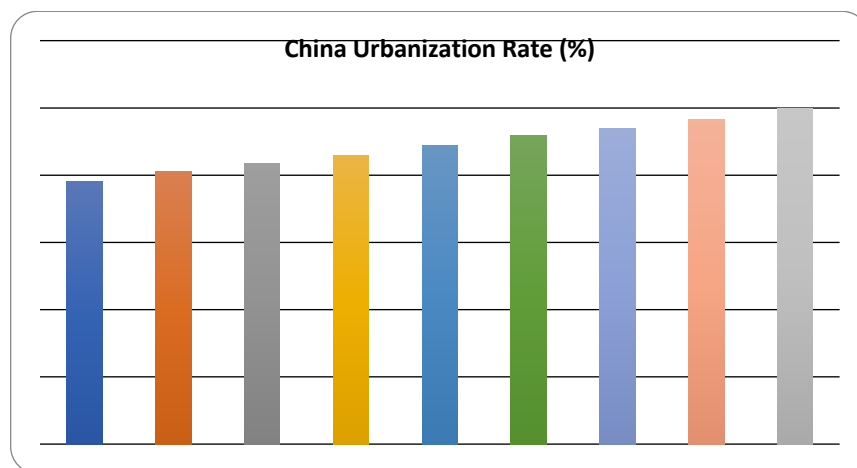
As the Chinese government continues to increase the supply of large expensive infrastructure in areas where there is little demand for it, what negative outcomes are created in China's social structure and economic system and why does the government continue with these consequential actions despite the future risk? Through extensive research we have found that social issues such as, the development of ghost towns, the increasing income gap, and advance in social unrest, has far to great of risk to society's future social wellbeing. Not only this, but there are economic issues pertaining to the housing bubble, the formation of the ghost towns and the local government financial risk that pose future problems as well. Through the explanation of these negative effects our group will show that the increased spending on infrastructure has created more problems

to China's society and economy. We will show that the goals that China is trying to meet with this policy is not worth the tremendous risk.

China has a fast growing economy and spending on infrastructure has helped China to achieve such high growth. The evidence of this high spending and growth rate is most evident in the increased urbanization, construction investment, transportation expenditure, and total construction expenditure.

China's goal of urbanizing the nation is clear in China's numerous (10th and 11th) Five-Year Plans, which support the growth of these urban areas. China's Five-Year Plans are China's government's plans for economic development over a period of five years (Collins.) Under the 10th (2001-2005) and the 11th Five-Year Plan (2006-2010), China's urbanization rate has clearly increased, as the graph below shows. Urbanization is the physical growth of towns and cities, which often support rural to urban migration; the degree of urbanization is thus, the percent of China that is characteristic of cities.

Figure 1. Degree of Urbanization from 2002 to 2010



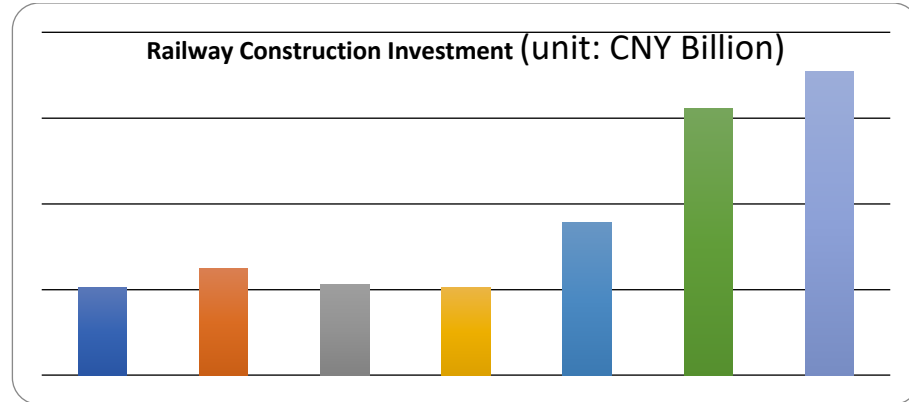
Resource: National Bureau of Statistics of China.

The degree of urbanization is clearly increasing in China, and so it can be concluded that China must also be increasing its amount of infrastructure because this

infrastructure refers to anything that goes into the construction of a city; for example, transportation, communications, power supplies, and buildings (*Collins*).

There is also evidence that suggests increases in transportation that reflects China's increased infrastructure expenditure.

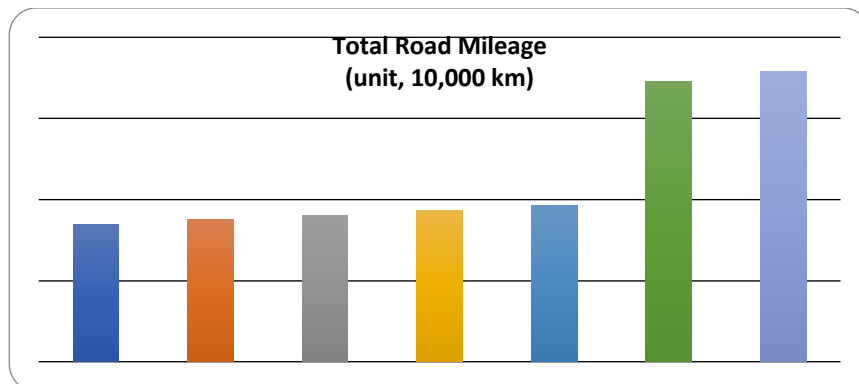
Figure 2. Railway Construction Investment in China, 2000-2007



Source: China Ministry of Railways, Researchinchina.

The government increased expenditure on the railway infrastructure between 2005 and 2007. Along with increased spending on railways, there has also been an increase in China's road expenditures, which can be seen from the growth in road mileage in China.

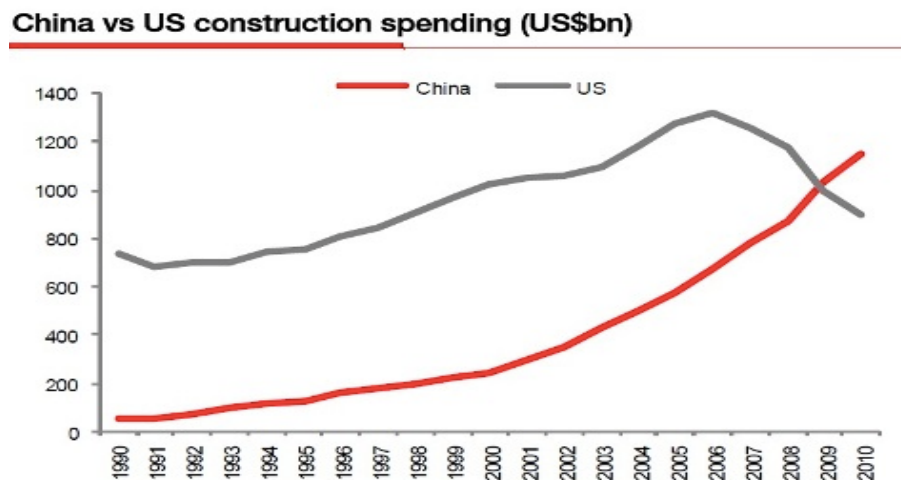
Figure 3. Total Road Mileage in China, 2001-2007



Source: China Ministry of Transport, Researchinchina

Although the graph above does not show the amount spent on road development we can infer increased spending from the increased mileage of road. In 2001, the total road mileage in China was 1.698 million kilometers and by 2007 the total road mileage increased to 3.5837 million kilometers, which concludes spending on road construction must have increased.

There is also evidence indicating that China spending more on infrastructure compared to other countries, but specifically we will compare China's infrastructure spending to that of the United States. According to Canadian Imperial Bank of Commerce, China annually spends about 9% of its G.D.P on infrastructure, where as, the United States spends only 2.4% of their G.D.P on infrastructure. The graph below shows the dollar amount of construction spending of both the US and China, and we can see that China's construction spending has been increasing at a much higher rate.



Resource: O.E.C.D. Stat Extracts

We can conclude that, in the last decade, China has increased its expenditure on infrastructure by observing the increasing urbanization rate and the increased spending

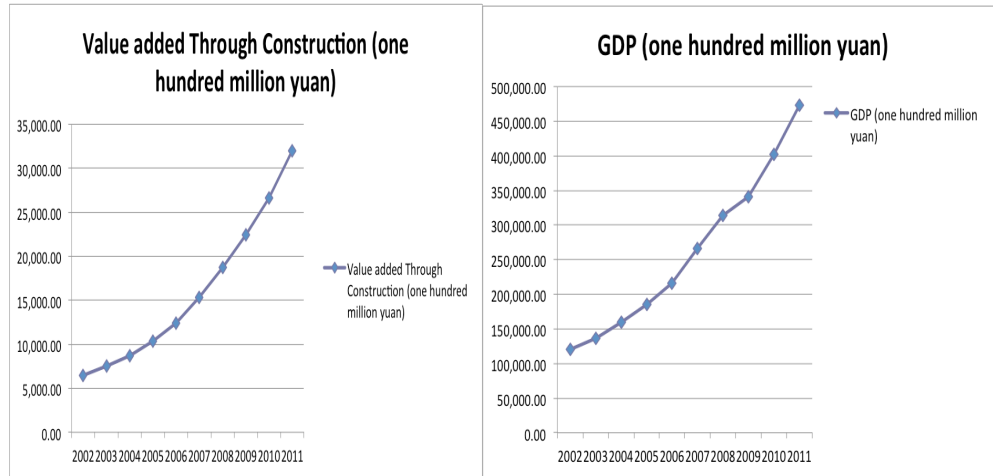
transport infrastructure, and also by comparing China's construction spending to the construction spending of other countries'.

It is clear that government has been increasing government expenditure, but how? Where is the government revenue coming from? The central government finances much of its infrastructure spending through taxes. China has 19 tax categories: value added tax, consumption tax, business tax, enterprise income tax, individual income tax, resource tax, urban and township land use tax, house property tax, city maintenance and construction tax, tax on the use of arable land, land appreciation tax, vehicle purchase tax, vehicle and vessel tax, stamp tax, deed tax, tobacco leaf tax, customs duty, tonnage dues, and fixed assets investment orientation regulatory tax. (*China's Tax System*) Local governments receive its revenue from China's central government which finances local governments to invest in local construction companies in order to keep up the high rate of urbanization. (Esther Fung, WSJ)

Now that the evidence of China's massive amount of infrastructure spending is clear the question now is, why is the Chinese government choosing to spend so much on the construction of cities. There are three main reasons: to increase GDP, to increase industry and company development, and to increase rural-urban migration. There is also the issue of corrupt incentive of local government officials due to the construction investment process.

First of all, we know government expenditure is a huge determinant in the calculation of GDP. In recent years, China's investment in infrastructure is well above some developed countries, like the US, as discussed previously. The graphs below show

the positive correlation between the increased amount of construction and the increasing GDP in China.



National Bureau of Statistics of China

Increased infrastructure also indicates industry and company development. Industries have increased their supply of construction materials because of the heavy demand of building infrastructure. By 2015, China plans to spend more investment to build about 70 airports, 43,000 kilometers of highways, 22,000 kilometers of railroads and other major expansion of port facilities (Songwanich). The plan is really ambitious, and needs massive budget supports. In fact, today five of the top 10 global construction and engineering companies belong to Chinese (Songwanich). Increased infrastructure positively provided an opportunity of developing engineering technology in China.

Another extremely influential determinant of China's spending policies is China's rural-urban migration goals, as well as, China's plan to increase in the employment rate and decrease the poverty that is evident in many rural areas. The graph below shows the employment rate of construction workers from 2003 to 2011, and the number is rapidly increased over years (National Bureau of Statistics of China).



National Bureau of Statistics of China

Infrastructure is an important physical resource for a country. We see the trend of increasing construction jobs, which we would expect as government increases construction projects. According to the National Bureau of Statistics, China has a large amount of real estate space that can provide 120 million people for housing (Mao Jing, but, Chinese government has an ambitious goal is to move 250 million people to urban area within 15 years. Hence, according to China's plan, the Chinese government has to build infrastructure and buildings for at least 130 million people to stay (Gabriel Grand). China's focus on the rural-urban migration has played a huge role in the large amount of infrastructure expenditure.

Lastly, there is evidence of incentive to spend on infrastructure for local Chinese governments. The incentive is created by the benefits local governments receive from the central government for their spending on construction. The central Chinese government sets a goal for each state governments to increase their own state GDP; the state government then pass this mission to local government, and thus increasing infrastructure expenditure can help promote an official to obtain a government job. Because it is the most efficient method of increasing spending and GDP, a higher GDP is the measure of

political achievement in China. Many Chinese government officials only focus on promotion opportunity, but ignore the negative effects of such high spending. The state-owned policy gives state government too much power in controlling construction projects, and the promotion reward system makes it so that Chinese government officials are given a position that is not based on their political ability. Jay Hoenig, who is a current former Chair of the American Chamber of commerce in Shanghai and COO, stated that 94% of company has reported at least one asset-protection fraud in the past three years in China, and of all these cases, 41% of China's bribery cases related to construction and infrastructure. Over 91% of companies suffered amount of money losses from corruption or fraud in the past three years (Cleo Paskal). More specifically, over building infrastructure in China would bring certain amount of benefits to those corrupt Chinese government officials who have authorities to approve land using. The bribery may cost 1 million yuan if one project has an estimated cost of 20 million yuan (Wang Guanqun). Bribery occurs in those related infrastructure projects because the huge benefits are undeniable. The more infrastructure is established, the more benefits those corrupt government officials will be given. A total of 15,109 Chinese officials were punished for construction related corruption in December 2011 (Cleo Paskal), and this number was under-estimated. Thus, the increased infrastructure spending is, in part, due to the corruption in investment of construction by local governments.

Over years, increased infrastructure did bring high GDP growth in China, as well as increased employment rate in the construction industry. The Chinese government wants to increase urbanization through this high infrastructure spending, but the issues

pertaining to the high amount of spending must now be analyzed to confirm whether this high spending is justified.

The evidence of high government spending on infrastructure is evident and it is now clear what the government reasoning is behind such spending, but the question now is, what problems are created as a result of the high expenditures in Chinese society? With new cities springing into existence many social issues are created: the number of ghost towns are growing, there is an increasing gap between the rich and the poor, and a social unrest among residents has developed. These issues are evident in Chinese society and they threaten China's future.

The first and most evident issue is the growth of ghost towns of China. Today, there are 64 million uninhabited apartments in China, and yet more are continuing to be built. (Gabriel Grand, PolicyMic) The issue is that towns are built slightly outside of large urban areas, like Beijing and Shanghai, so they do not attract people to live there. One of the most famous ghost towns in China is Ordos, located in Inner Mongolia remains almost completely empty, and according to BBC News, it is the largest ghost town in China today. There are huge and imposing buildings, but the one thing missing is people.

With in the City of Chenggong, in the Yunnan Province, a similar problem is arising. In Chenggong there are more than one hundred thousand new apartments with no occupants; this means that there are no cars in the streets, no workers in the buildings and shops, and no children playing in the parks.

Another city that today is almost completely deserted is the resort of Tianducheng located in the city of Hangzhou, of the Zhejiang Province. Tianducheng,

built in 2007, was created to imitate Paris and bring people in from all over China, but the issue is it's unattractive location. It was meant to house 10,000 people but today less than 1,000 actually live there. (Lisa Miller, The Huffington Post) The city is essentially built in the middle of nowhere and completely surrounded by farmland; because it is far away from all other industry many people visit it to see all the cool Parisian attractions, but very few stay there to live and work.

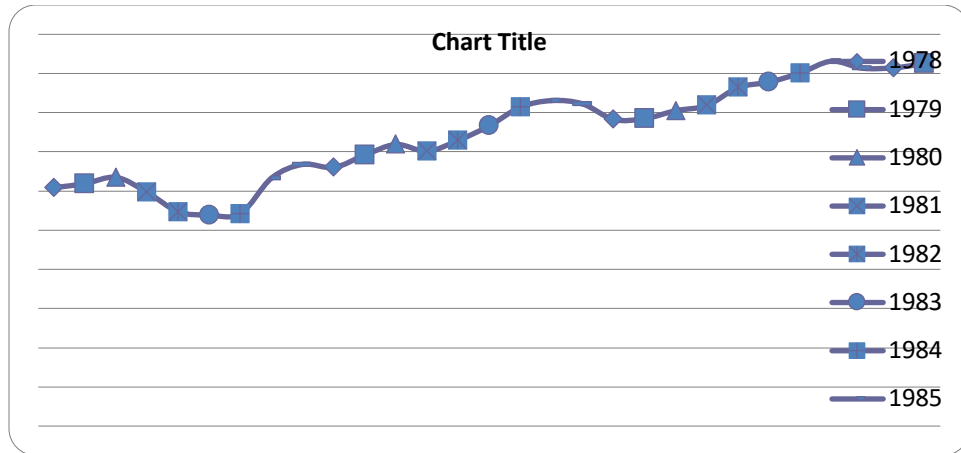
The issue of ghost towns brings risk for the future of Chinese society. Today, government controls have left developers in debt and with unsold inventory and there is a huge excess supply of residential property; if developers stopped building there would still be enough supply to meet 5 years worth of demand. (WSJ) The question is, what will happen when the migration of rural to urban migrants ceases? China is so determined to get ahead in the housing industry and moving people from rural to urban areas that they neglect the risks and keep building at an extremely fast rate.

The urban growth policies that government have implemented over the years strive to increase China's urbanization and bring many of Chinese residents out from the hardships of poverty. A huge issue that has evolved from the high infrastructure spending is the increasing income gap. This gap is the result of fast growing cities, like Beijing, and rising prices; China has created an environment where the rich prosper and the poor suffer.

It is clear that government is supplying too much housing in areas where there is not enough demand for it. In many new towns in China the demand of housing is far below the supply as stated previously, but in cities like Beijing and Shanghai demand of housing is less than supply, which increases the real estate prices. Housing for middle

income to lower income families becomes very difficult to find and results in very poor living conditions for much of the population. Many rural dwellers are unable to afford the high prices and are forced to live in poor living conditions outside of these thriving cities. In 2009, an average-priced apartment would now cost 16 years of average income; down from a high of 21 years in 2007. (Esther Fung, WSJ) The fast pace urbanization not only increases prices, but also it helps a select few grow along with the economy.

One term I would like to discuss is the Gini coefficient. According to the OECD, the Gini coefficient measures the extent to which the distribution of income among individuals within an economy deviates from a perfectly equal distribution. The Gini coefficient measures the area between the Lorenz curve (a graph which plots the percent of total income in a country against the percent of the population in a country) and the hypothetical line of absolute equality, expressed as a percentage of the maximum area under the line. (OECD) A Gini coefficient equal to 0 represents perfect equality, where as a Gini coefficient equal to 1 represents perfect inequality. In the late 1970's, before China's economic reform and growth policies, the Gini coefficient was around 0.3. According to Forbes, the Gini coefficient hit a high 0.474 in 2012, which puts it just above the warning value of 0.4 (as set by the United nations), which indicates an unstable level of inequality. This growth is evident by the graph below.



Source: National Bureau of Statistics of China (1987-2007). *China Statistic Yearbook*. Beijing: China Statistics Press.

To put this data in perspective, according to The World Fact book, China ranks 29th in Gini coefficient value out of 136 countries, meaning that out of these countries, China is the 29th most unequal in terms of income. This inequality poses threat to the social stability of China today, and in the future.

The high amount of government infrastructure spending clearly has come at a cost to the social and income equality in China. If government spending was focused on welfare rather than the high supply of housing, this social issue could possibly be resolved. Today, government infrastructure spending is outrageous while the amount of welfare spending is inadequate, amounting to about half of the welfare spending in comparable middle-income countries. (WSJ). For China to meet its goal of closing the rural urban welfare gap, policy makers must reconsider what areas they should be targeting with spending and what outcome the spending will have toward the future of the residents of China.

As development and infrastructure spending increases, so do the inequalities between the poor and the rich; these inequalities are the first reasons why social unrest

and uprisings are occurring in China. As inequalities increase, the people of China are becoming more and more upset about the growing gap between the urban elite and the millions of poor rural residents, and as incomes of urban areas grow to more than 3 times that of rural areas (Equal Times), rural residents question why the government is not investing more in the future of the poor citizens in China and the welfare of the nation.

The second reason for this social unrest in China is the upset caused by land confiscation and environmental degradation caused by the urban construction projects. This issue is the lack of property rights in China. Many peasants have 30-year contracts with the government, giving them the right to land use, but not full ownership. (Thomas Lum, *Social Unrest in China*) This means when the government needs or wants to create construction projects in rural areas they have the right to the land, and the poor living there do not. Many protests have occurred depicting this unrest. In January 2006, hundreds or thousands of protesters clashed with police over inadequate compensation for farmland taken for industrial use in Panlong village, Sanjiao Township, Guangdong province. A teenage girl reportedly was killed. (Thomas Lum, *Social Unrest in China*) The protest, which is one of many, depict society's discontent with the government's policies and are yet another reason why government's high infrastructure spending has had detrimental effects on Chinese society.

Due to the increase in the Chinese government's investment in the construction of infrastructure many social issues have evolved. Ghost towns have developed from an excess supply of housing, the income gap between the rich and the poor and has slowly increased, putting China above the Gini coefficient warning value of 0.4, and a social unrest of the rural residents of China has been made evident through various uprisings

and protests. These issues are not things that the government should ignore, but rather warning signs that the government should use as rationale for decreasing the amount spent on infrastructure and consider increasing the amount spent on welfare.

As the government increases infrastructure expenditure, not only have social issues developed, but there have also been a number of economic issues that have developed. The first economic issue is the increased threat of a housing bubble with China's rapid urbanization policy. A housing bubble is a temporary condition caused by unjustified speculation in the housing market that leads to a rapid increase in real estate prices. (Business Dictionary) The Chinese government has planned to urbanize local cities, and has invested heavily in construction in those cities in recent years in order to achieve rapid economic growth in a short period of time. The issue is that this economic growth policy in China has created overheated real estate markets in China; what will happen when these real estate prices meet unsustainable levels and begin to decline?

A prime example of this is the situation that has developed in the city of Ordos located in the Kangbashi of Inner Mongolia. Ordos is one of the famous ghost towns in China and is a city that may be prone to a housing bubble due to the massive infrastructure investment policy of the government. The high demand for housing in highly developed and thriving cities, such as Beijing, has consequentially led to a housing bubble phenomenon and increased prices in newly developed cities like Ordos, and this situation has been the biggest obstacle in attracting other citizens to Kangbashi.

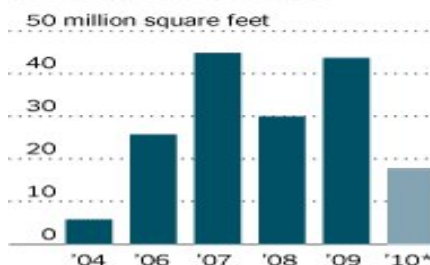
According to Jui-te Shih, a reporter for Want China Times, "Home prices in Ordos have climbed to over half the price in Beijing, one of China's most expensive property markets with an average of 22,914 yuan (US\$3,595) per square meter". Also, she reported,

"Kangbashi, the well-known ghost town of Ordos, represents the epitome of China's housing bubble. The new town, which cost 17 billion yuan (US\$2.667 billion) to build, was originally intended to become a city with a population of around one million, but the number of people actually living there is less than 20,000". Also, the following two data charts clearly show that Ordos has heavily undergone a housing bubble phenomenon in spite of decreased sales in real estate. From the two data charts we can easily see that even though the real estate sales in Ordos substantially decreased in 2008 and 2010, a housing bubble phenomenon has been increasingly accelerated in Ordos over time. For these reasons, China's excessive infrastructure investment policy targeting rapid urbanization is a risky economic development strategy.

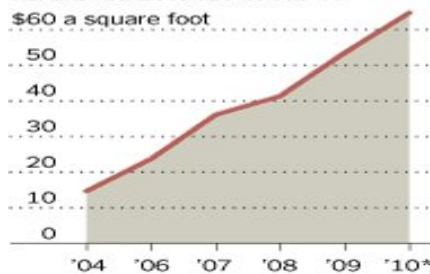
The second issue is that China is inefficiently using its resources; there is a large amount of construction, but little use of the infrastructure being built. Ghost towns, like

Building a City on the Steppe
Ordos, a city in northern China, has few residents, but it has undergone a real estate boom.

REAL ESTATE SALES IN ORDOS



REAL ESTATE PRICES IN ORDOS



Figures for commercial and residential real estate; 2005 data is unavailable.

*Through August.

Source: Ordos government

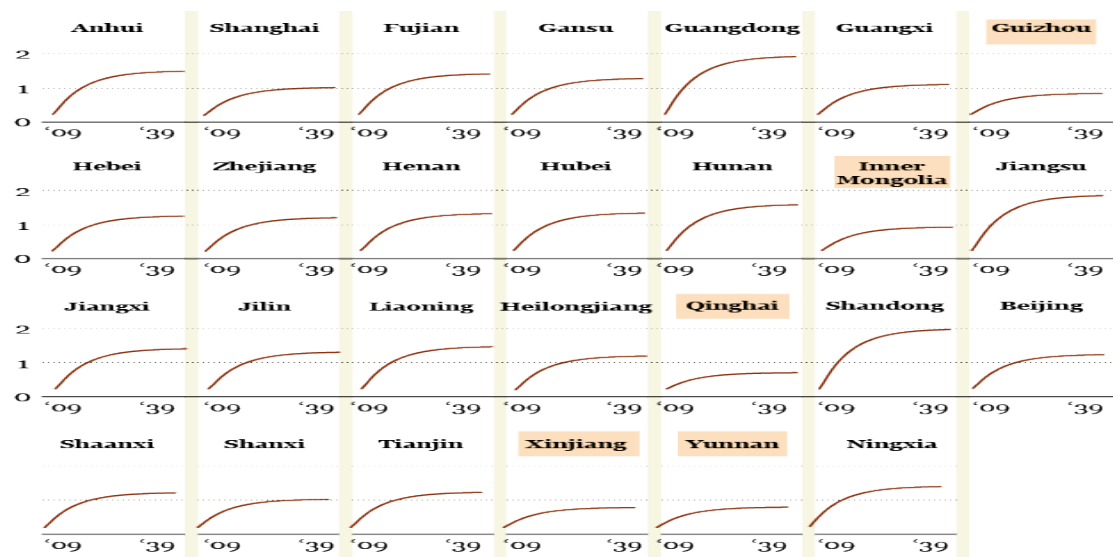
Ordos, have formed and expanded through all of China as the Government increases massive infrastructure investment. The purpose of massive infrastructure investment to the local cities of China was to increase the amount of economic growth through the urbanization of areas like Inner Mongolia, but now only few people inhabit these new towns and most shops close down due to the lack of demand. Even though many houses have already been built in newly formed cities and towns, most remain empty. Moreover, the formation and expansion of the ghost

towns in China clearly show that even though the Chinese central and local governments have heavily invested in constructing infrastructures and houses in local cities, they are not being used in the progress of China's economic development. Beijing's urbanization policies have led many local governments to build new towns and districts, creating "ghost cities" as many lack any real planning. (Want China Times) The phenomenon has resulted in property bubbles and wasted arable land, reports the People's Daily. If the Chinese government wants to conquer the problem of rising ghost towns and the countries wasted resources, government officials will have to figure out the demand of future residents and the supply of housing before they continue with their rapid economic growth policies. Also, the central government of China will have to modify the current local government evaluation system on the basis of distorted economic growth rate to solve the problems related to inefficient investment in local cities of China.

The third issue that has evolved in China is that the massive infrastructure expenditure strategy by the central government and the investment of local governments of China has brought financial risk to the local government. The local government borrows a huge amount of money from the central government to build infrastructure and houses for rapid economic growth and urbanization of local city. The number of ghost towns has increased throughout all of China showing that the Chinese local government has invested massive amounts of money in constructing infrastructures and houses for urbanization without considering exact supply and demand in real estate markets. Such an unplanned rapid urbanization policy would necessarily bring massive debts and liabilities to the local government. According to East Asia Forum, "Chinese local officials are not immune to ramping up debt-financed infrastructure investments, given

the opportunity. And the current state-controlled banking system is likely to be on standby to accommodate their wishes. As a result, China's economy is caught in a chronic cycle of sporadic surges in investment, financed at the first sign of easy credit, massive land requisitions, real-estate booms, piling up of local debt and ultimately bailouts (or, euphemistically, recapitalization), as banks and local governments assume too much debt". Moreover, the local government's financial crisis would be the chief obstacle to future investments, which can help to develop local economy.

Also, local government's financial risk may be due to China's recent 12th five-year plan for Western regions. According to Julia Gu, a journalist for China Briefing, "The 12th five-year plan (2011-2015) for 12 Western regions of China is aiming to narrow the gap between the country's wealthy coastal provinces and its under-developed Western 12 regions: Xinjiang, Tibet, Inner Mongolia, Guangxi, Ningxia, Gansu, Qinghai, Sichuan, Chongqing, Shaanxi, Guizhou, and Yunnan". From the same article, I could also find that the 12th five-year plan has the major seven development objectives set by the Chinese central government, but I mostly focused on the goal of expanding infrastructure construction in under-developed Western regions of China, since this goal is most directly related to our group's research topic. The 12th five-year plan for these under-developed Western 12 regions is seemingly a good plan for balanced development and reducing the gap between rich and poor regions, but it has led to financial and investment risks in some of these underdeveloped regions. From the following data graphs, this can be depicted.



NB: Sichuan, Chongqing, Hainan, and Tibet have been excluded from this sample due to incomplete data.

<<http://www.theatlantic.com/china/archive/2013/08/chinas-great-infrastructure-binge-in-charts/278597/>>

According to David M. Barreda and David Wertime, co-founder and co-editor of *Tea Leaf Nation*, these data graphs above show the local financial risks resulting from the Chinese government's infrastructure investment, and the values on the graphs were obtained by calculating the ratio between the present value of increased accumulated tax receipts and additional infrastructure investment. A ratio larger than 1 means gains from infrastructure investment exceed costs, or financial risk does not exist, while a ratio less than 1 means some degree of financial risk does exist. Specifically, we need to pay attention to the five cities highlighted, Guizhou, Inner Mongolia, Qinghai, Xinjiang, and Yunnan in that those cities commonly have a ratio less than 1, which means existence of financial risk. Also, from the data graphs we can see that some regions (i.e. Guangxi, Ningxia, Gansu, and Shaanxi) among the 12 western regions projected by the 12th five-year plan have a ratio larger than 1, which means non-existence of financial risk, thus it

cannot be concluded that the Chinese government's massive infrastructure investment policy necessarily leads to local government's financial and investment risks in all areas of China (there may be other economic factors at play), since financial risk does not exist in some projected regions like Guangxi, Ningxia, Gansu, and Shaanxi. Although, since we see that some of the Western provinces are following this trend of high financial risk with development we can conclude that the Chinese central government should take this risk into consideration when planning how much money to allocate to local regions, and examine the local government's urbanization plan before they decide to increase expenditures in order to avoid the local government's financial risks and further problems.

China's government strives to meet many goals with high infrastructure spending. They desire an urbanized society with highly developed companies and industries. They want to increase the GDP and economic growth of China, and not to mention the local government officials make a substantial amount of money through the corruption within the construction industry. The question now is, are the government's reasons valid enough to justify high infrastructure spending? From the arguments and evidence in this paper it can be concluded that, no, they are not justified. As China urbanizes, huge social issues such as ghost towns arise, and with high spending on infrastructure and low spending on welfare comes the issue of income inequality. Not only this, but with increased construction comes the confiscation of land and environmental damage upsetting the Chinese population. From an economic point of view, there are huge risks pertaining to the growing housing bubble, the issue of empty cities, and financial risk for local governments who are investing in the construction companies. Thus, China's

government's reasons for high infrastructure spending are valid in principle, but are dubious in practice, bringing problems to China's future.

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