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Which Type of Urbanization Better Matches China's Factor Endowment: A Comparison of Population-intensive Old Puxi and Land-Capital-intensive New Pudong [post-print]

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Running head:

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Abstract: Based on a comparative study of New-Pudong (East Shanghai) and Old-Puxi (West Shanghai) in their respective ability to absorb rural migrants, the very essence of urbanization, this paper finds that, constrained by the current Hukou system and land tenure system, although New-Pudong has emerged as one of the most modernized urban areas in the world, it did so under an urbanization model that is government oriented and characterized by high land-intensity and capital-intensity. This model represents a serious mismatch in terms of China's factor endowment that is characterized with a large but relatively poor rural population. In sharp contrast, guided by market mechanism under private land ownership and free migration, the Old-Puxi emerged as an urbanization model that was very adaptable to China's factor endowment and stage of development. Therefore, as a model of endogenous urbanization, the Old-Puxi is more efficient and inclusive, at the same time more sustainable economically and environmentally, and for this reason more applicable to China at a time when China needs to urbanize most of its rural population urgently to avoid the further worsening of the rural/urban divide and income disparity.

Key words: Migrants, Urbanization, New-Pudong, Population-intensive, Land-Capital-intensive

JEL Classification N95, O18, P23, R52

1 Introduction

China has long been trapped in agrarian society and endogenous urbanization is the only way out. In the past 30 years since the mid-1980s when reforms shifted from rural to urban areas, despite the huge amount of investment poured in by the government, and despite the sea changes in the skylines of cities across the nation, urbanization in China is facing the following issues. On one side, land urbanization proceeds much faster than population urbanization as a result of the Hukou system¹ and the land tenure system. The second system leads to prohibitively high rental and housing price that makes settling down impossible for migrant workers. On the other side, urban development has been imitating the spatial configuration of North American cities where land supply is abundant but population size is relatively small. Consequently, new built areas, new towns, and new industrial parks have a high concentration of glimmering skyscrapers, luxurious apartment buildings, big roads, big squares, and big supermarkets, but many of them are empty and ghost-town like. Meanwhile, hundreds of millions of migrant workers have to live in old slums or newly emerged but illegal urban villages.² Obviously, China's current exclusive urbanization model cannot sustain in the long run for a nation that still has a huge pool of relatively poor rural residents with little amount of arable land per capita. China must find an urbanization path that reflects its factor endowments. In this sense, it is the Old Puxi model instead of the New Pudong model that China should turn to for inspiration.

1.1 The Essence of Urbanization is to Urbanize Rural Population

According to the well-accepted definition,³ urbanization can only take place when rural residents and their families have increasingly moved to and settled down in urban areas, resulting in the continuous decline of rural share in a nation's total population. In China, however, many cities only care to improve their existing urban population's living conditions. They achieve this by preventing newly arrived rural population from

¹ See section 2.2 below for reference.

² The concept 'urban villages' can refer to very different urban phenomena. For instance, in urban planning literature it refers to an alternative, often more humane concept in contrast to the once popular modernist approach to urbanization. In China's context, it refers to collectively owned enclaves surrounded by state-owned urban areas, and inhabited mainly by indigenous rural villagers as landlords and migrant workers as their tenants. These urban villages are autonomous to a large extent by default, because the urban planning officials do not think it their business to regulate the spatial configuration of these collectively owned villages. They often view the villages as the dark side of China's urbanization, hotbed of crimes, de facto slums that should be eliminated as soon as possible.

³ According to Wikipedia (<http://en.wikipedia.org/wiki/Urbanization>), Urbanization (or urbanisation) is the physical growth of urban areas as a result of rural migration and even suburban concentration into cities, particularly the very large ones.

settling down permanently. Although these cities become increasingly modern, prosperous, and greatly expanded spatially, except for Shenzhen and a few, most of them do not contribute much to urbanization nationwide, because they play a very limited role in reducing the rural share in total population. The fact that there are more than 260 million migrant workers who are not really urbanized because of Hukou and/or the housing price indicates that China's urbanization is far from inclusive.

Urbanization should proceed along two dimensions simultaneously: first, contributing positively to absorbing rural migrants, and second, seeking self-improvement in infrastructures and living conditions as economy grows (Wen, Xiong 2011). The simultaneity of these two tasks is imperative for a typical developing nation if it does not want to widen rural-urban income disparity. For the same reason, it is also note-worthy that a nation should not focus on the second dimension only, because it is a never-ending process even in those nations that have long finished urbanization .

While China has been doing very well along the second dimension, it has achieved this at the expense of moving fast enough along the first dimension. Many cities find strong excuses in the current hukou system and land tenure system to exclude rural population from permanently settling down in their cities. By refusing to move along the first dimension faster, they can achieve much faster changes along the second dimension. This explains why so many cities in China can change their skylines and infrastructures constantly. While this is good for the images of these cities, by focusing mainly on the second dimension, the progress along the first dimension, a more urgent task for a developing nation with huge rural population such as China, has been seriously delayed, resulting in the following serious consequences.

The rural-urban divide in China continues to widen and the rural-urban income disparity continues to stay at a level that is among the highest in the world. Although according to the official data, the urbanization ratio has risen to 52% by 2012, if we exclude the 260 million migrant workers who are yet to obtain urban Hukou and yet to settle down, the real urbanization ratio could be as low as 36% (State Statistical Bureau, 2012) .

Compared with the urbanization ratio of 26.4% in 1990, the real urbanization ratio in 2012 actually only increased to 35.29%, or increased by 33.7%,⁴ far less than the increase in urban built areas (239%), or the

⁴ In 2012 the population with non-rural hukou as a share of China's total population was 35.29%.
http://news.xinhuanet.com/2013lh/2013-03/06/c_114917440.htm

increase in urban construction areas (260%) .

1.2 Why China's Urbanization must focus on the First Dimension

The central issue facing China is no longer whether or not China should use urbanization as an effective path to modernization, or whether or not China should accelerate the speed of its urbanization. The central issue is what type of urbanization model China should adopt. An ideal model should be consistent with China's factor endowment, environmentally sustainable, and inclusive with regard to rural migrants. By emphasizing inclusiveness, China can accelerate the absorption of its surplus labor in rural areas, lift rural poverty, and improve nationwide income distribution.⁵ Therefore, from now on China's urbanization should give priority to absorb rural population instead of exploring them as temporary laborers. This is not only required by social justice, but also by efficiency. This is the most effective way to boost internal demand at a time when external demand has been weakened due to the global financial crisis.

2 Let the Agglomeration Effects be the Pusher for Endogenous Urbanization

2.1 Population Agglomeration is a Precondition to Exhaust Agglomeration Effects

Sustainable urbanization should be driven by agglomeration effects. Agglomeration effects refer to the phenomenon that factors of production can increase their rate of returns by locating close to each other spatially. As long as owners of factors of production find that by moving closer to other factors spatially, they can earn higher rate of returns, they will have incentive to make such move. As more and more factors of production get concentrated in a certain space, an urban area arises and gradually expands. When all the factors are allowed to move freely, an endogenous process of urbanization driven by profit seeking, income seeking, and welfare seeking will take place automatically. Firms and households decide on their free wills whether they should move closer to this urban center or not depending on whether they can increase their rate of returns or level of welfare. As long as the net agglomeration effects are not exhausted, factors of production will not stop moving closer to this spot.

For a city or a town, the most important factor of production is its population, as can be seen by the fact that

⁵ Most cities only have incentive to absorb the rural residents living in their suburbs when they are asked to help raise the nationwide urbanization ratio for two obvious reasons. First, they have no excuse not to urbanize them since they reside within their administrative boundaries. Second, they need to get the land from these residents for urban expansion.

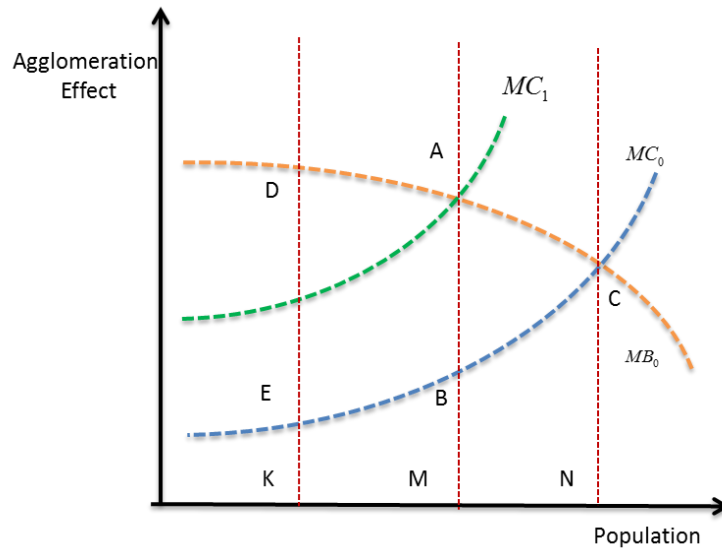
cities are ranked by population size. Without population, even if there is a high concentration of capital and land in the forms of magnificent buildings, broad streets, and large squares, it is nothing more than a ghost town. Therefore, population agglomeration is the most important thing for urbanization. More specifically, it is mainly the difference in population density that distinguishes an urban area from a rural one. For the same reason, it is the population density that provides the dynamics and vitality of an urban area as compared with its suburb.

Under a market system, rural laborers will flow into an urban area spontaneously to seek higher income that becomes available as a result of agglomeration effects. An abundant supply of labor will prevent wage rate from rising too fast. The lower wage rate in turn will attract capital to move in to seek higher rate of returns. The demand for housing by the growing urban population will also induce farmland to be converted into urban land. Therefore, for an endogenous process of urbanization, it is the agglomeration of population that starts first, followed by agglomeration of capital and land under a market-oriented economy. The agglomeration of population leads to the strong demand for housing, for services, and for all kinds of manufacturing products. This is a virtual cycle that leads to higher and higher agglomeration of capital, land, and in turn higher agglomeration of population.

2.2 A Simple Analytic Framework of Population Agglomeration

For a given amount of land and capital, as the size of urban population increases, the marginal benefits of population agglomeration fall in terms of increasing returns to scale, knowledge sharing, deeper division of labor, more competition-induced efficiency gains, more inventions and innovations; but its marginal cost of population agglomeration rise in term of time, grime, and crime. Figure 1 shows the population agglomeration effects. The vertical axis measures the effects of population agglomeration, and the horizontal axis measures the population size of a city. The gradually falling marginal benefit curve is represented by MB_0 ; and the gradually rising marginal cost curve is represented by MC_0 . In a market-oriented urbanization process, the natural population size of an urban area is determined by the intersection of these two curves at point N. As long as the marginal benefit curve is still above the marginal cost curve, additional households will continue to move in to exhaust the net agglomeration effects until the population size reaches point N.

Fig. 1 The Agglomeration Effect of Urbanization



Under the market mechanism, changes in the factor prices will induce changes in the magnitude and direction of factor movements, consequently lead to changes in the combinations of factors, resulting in changes in the size of an urban area and its spatial configuration. The wonderful thing here is, changes in the price of any factor will spread and affect all the other factor prices automatically, causing corresponding adjustments in the allocations of all the factors. It might involve millions of major or minor adjustments. But these adjustments will be taken care of automatically by the owners of factors who seek to maximize their profits or minimize their losses in response to changes in the factor prices.

In the absence of a market mechanism, it needs millions of bureaucratic decision-makings before all the necessary adjustments in resource allocation can take place, even if we assume that there is enough information available to the bureaucratic decision-makers, and even if we assume that somehow they can overcome their inertia. Of course, in the real world such information does not exist in the absence of real factor markets, and no bureaucracy can overcome its own inertia, let alone the detrimental effects of their rent-seeking behavior. That means that in the absence of market mechanism, most of these necessary adjustments will not take place, hence distortions in the allocation of all the factors of production will follow. Over time, the accumulated distortions will prevent the agglomeration effects of a city from being fully exhausted.

In China's case, such distortions come particularly from two institutional barriers. The first one is the Hukou system that denies the free entry of rural population to settling down in urban area as citizens. This system is represented by the vertical line at point K, causing a much smaller size of population for any given city due to the efficiency loss represented by Triangle CDE. Second, the distortion can also take the form of prohibitively high housing price that is totally beyond the reach of migrant workers from rural areas. In China's case, this much inflated housing price is caused by the monopsony of the government over the demand of farmland and its monopoly over the supply of urban land respectively. The combined effect of the government monopsony and monopoly is represented by the upward shift of the marginal cost curve MC_1 . As a result, the population size will be pushed back to point M, and the efficiency loss thus incurred is represented by Triangle ABC. If China can reform its Hukou system and its land tenure system, its urban areas can absorb much more migrants from rural areas by expanding its urban boundaries to the natural equilibrium point of N to avoid the efficiency losses.

2.3 The Capacity to Absorb Rural Population is the Key to Measure Good Urbanization

Based on the discussion above, we can see that it is imperative for China to lower the cost of population agglomeration, i.e., the housing cost, in order to exhaust the agglomeration effects. It is important for China to do so at this stage of development in a way that is consistent with China's factor endowments. Different urbanization path can have very different capacity to absorb rural population. We will use the following three measurements: 1. Population size; 2. Population density; 3. Capacity to create job opportunities, especially the job opportunities for migrant workers from rural areas outside the boundary of a city. In what follows, we will use these three yardsticks to compare the performance of Pudong and Puxi.

3 The Performance of Old Puxi and New Pudong

Pudong (East of Huangpu River or East Shanghai) and Puxi (West of Huangpu River or West Shanghai), the two urban areas divided by the Huangpu River, followed two very different paths of urbanization in modern era. The case of the two areas of Shanghai, thus, provides a very unique and convincing evidence to show the big difference between the case of having a land market to allocate land and the case of having only bureaucratic control and allocation of land.

Before 1953 Shanghai, at the time limited physically to Puxi, was the largest metropolis in East Asia. Its built area, consist of the International Settlement, the French Concession, and the Chinese Community, was the most dynamic and prosperous area in China.⁶ The construction of Pudong New Area, now one of the most modern urban areas in the world, was not being started until 1992 under the direct financial sponsorship and guidance of the government planning.⁷

If we ignore the ideological sensitivity caused by the association of old Shanghai' with Concessions and only focus on the different urbanization paths that the Old Puxi and the New Pudong have followed, we will find that they represent very different capacity to absorb rural population, and for this reason, very different performance of agglomeration effects. The sharp contrast in these two indigenous experiences provides very valuable insights for the future of China's urbanization.

3.1 Population Size and Density

Old Puxi maintained a very high population growth rate throughout most of its modern history in sharp contrast to the very slow expansion of its built area. Its initial population size was 0.54 million in 1852, mostly concentrated in the traditional Chinese town of Nanshi that existed long before 1842. One year after China was forced to open Shanghai and the other four seaports at the end of the first Opium War, the foreigners were allowed to rent land from local farmers and to build their own housing and offices outside Nanshi. This was the origin of Concessions. Since then the total population of Shanghai increased by 9 times in 1950 to 4.98 million.⁸ If we ignore the initial population living in Nanshi, and only focus on the initial population of less than 0.1 million living in the river shores and the farmland outside Nanshi, then the population growth rate was even more amazing of almost 50 times during this period.

In terms of population density and efficiency in land use, Old Puxi was also impressive, as was shown by the

⁶ Due to changes in administrative areas and urban development, the concept of Puxi could be fluid. Currently, it refers to Huangpu, Luwan, Changning, Jingan, Xuhui, Putuo, Hongkou, Yangpu, and Zhabei. They cover the old urban area built before 1953 and the urban areas west of Huangpu River built after 1953. In this article, the term "old Puxi" refers to the old urban areas built, including all the Concessions and all the Chinese community that existed before 1953, an area much smaller than the current Puxi that has expanded into the former suburb of Shanghai.

⁷ In this article, the term "the New Pudong" refers to the areas that was built after 1990. Unless specified, data related to this term do not include Nanhui District that was merged with the New Pudong District in 2009. All the related data also exclude Nanhui.

⁸ Unless specified, all the population data of modern Shanghai are adopted from the book entitled "The Study on Demographic Changes in Old Shanghai" by Zou (1980). The data regarding Shanghai and the Pudong New District after 1990 are calculated by authors based on the data from the corresponding Shanghai Statistical Yearbooks (Shanghai Statistical Bureau, 1988-2012) and Pudong New Area Statistical Yearbooks (Shanghai Pudong New Area Statistical Bureau, 1994-2012) from 1994 to 2011.

index of population per km² and area possessed per person in downtown Shanghai. They were more than 47,000 persons/km², and 21 meter²/person respectively. The Old Puxi was obviously following a population-intensive but land-saving path of urbanization. In contrast, the path taken by the New Pudong is rather different. Its population with local Hukou status increased by 44% from 1990 to 2010, but its population density is far lower than that of Old Puxi. The total acreage of the New Pudong Area now reaches 1210 km² after its merge with Nanhui District in 2009. There is no direct information about how big its total built area is. However, even if we assume that all the permanent residents of the Pudong New Area are concentrated in an area of 600 km² (its total acreage before the merge of 2009), the population density is only 6967 per km².⁹ This population density is not only much lower than that of the Old Puxi in 1930s, but also much lower than that of the average population density of whole Shanghai as well as that of Puxi today. If we add the other 600 km² and use the whole acreage of the Pudong New Area reported in its official website, its population density will be even lower. This fact shows that after a huge amount of capital and land poured into this area, the capacity of the Pudong New Area to absorb migrant workers is actually becoming weaker and weaker, as is shown by Table 1. The population density of built area of the New Pudong Area has been declining from 23.6 thousand/km² in 2000 to 14.8 thousand/km². The efficiency in land use is also reduced. The per capita acreage possessed rose from 42.42 m²/person in 2000 to 67.51 m²/person.

Table 1 Population Density and Per Capita Acreage Possessed in Built Area

Year	Old Puxi			New Pudong		
	1945	1947	1950	2000	2005	2010
Population in Built Area (million)	2.80	3.73	4.14	2.40	2.79	5.04
Built Area (km ²)	86.67	86.67	86.67	101.90	170.00	340.26
Population Density of Built Area (1000/km ²)	32.3	43	47.8	23.6	16.4	14.8
Per Capita Acreage possessed (m ² /person)	30.90	23.2	20.90	42.42	60.89	67.51

Note: 1. Since the data on built areas of Shanghai are not available for the Republican Era, we sum up as a

⁹ The total acreage of the Pudong New Area is 1210 km² with a permanent resident size of 4.12 million in 2012, according to the official website of the Pudong New Area: http://english.pudong.gov.cn/html/pden/pden_ap_oop_mp/List/index.htm

proxy of built area the central areas of Shanghai where the non-farming employment rates were very high, i.e., the 20 administrative districts including Huangpu, Laozhai, Yimiao, Penglai, Songshan, Lujiawan, Changshu, Xujiahui, Changning, Jingansi, Xincheng, Jiangning, Putuo, Zhaibei, Beizhan, Hongkou, North Sichuan Road, Tilanqiao, Yulin, and Yangshupu. In doing so, we treat the whole International Settlement and the French Concession as the completely built area. We then calculate the difference of the central area defined above on one side and the sum of the two Concessions on the other, to obtain the acreage of the Chinese Community in 1945, and treat it as the proxy of the built area of the Chinese community. In what follows, the Chinese Community, the Concessions, and the central area of Shanghai refer to these definitions given above respectively.

2. The data on the exact number of residents actually living in the built area of the New Pudong Area are not available. As a proxy we assume that all the permanent residents within the boundary of the New Pudong Area all reside in its built area. This calculation tends to overestimate the population density of the built area of the New Pudong Area. However, Despite the possible overestimation, the result shows that the population density in the New Pudong Area is much lower than that of Puxi.

3. The data source of Old Puxi is from Zou (1980, p90-122).

3.2. The Capacity to Create Jobs

The capacity to create job opportunities in an urban area is the most important dimension of the agglomeration effects of an urban area, because it determines the number of migrant workers that can truly be absorbed by this urban area. A city with high agglomeration effects should have high capacity of job creation. Table 2 shows that in 1935 the jobs per km² in the International Settlement (the result of the merge of the British Concession and some other smaller Concessions except for the French Concession) reached 32,000. In 1950, the total number employed in the central area of Old Puxi reached 1.87 million, or 21,500/km². In contrast, even if we assume that all the permanent residents live in the built area of the Pudong New Area, the jobs per km² is much lower than that of the Old Puxi. This index has been declining from 14000/km² in 1997 to 6538/km² in 2005, significantly lower than average of 11000/km² for Shanghai at the time. The reason is the New Pudong focuses on capital and land intensive sectors and does not view it as its main concern to create labor intensive job opportunities to absorb migrants from rural areas. The New Pudong has been focusing on

air transportation, shipping, finance and other high value added sectors with some manufacturing. This strategy is not conducive to creating the kinds of job that can absorb rural migrants more easily, as the experience of the Old Puxi shows. The latter mainly relied on low-end services to absorb rural migrants in addition to manufacturing jobs. Pudong has also been developing services, but they are mainly high-end service jobs targeting at the white-collar migrants such as finance, law, and trade. This difference in job creation strategy explains why the population density there is so low, because it is not that livable in Pudong in the absence of vibrant low-end services.

Table 2 Employment and its Sectorial Distribution

Area	Total employment (million)	Built area (km ²)	Employment/km ² (person/km ²)	Employment structure (%)		
				Primary	Secondary	Tertiary
International Settlement (1935)	0.72	22.6	31,682	0.2	28.6	71.2
Old Puxi (1946)	1.66	86.7	19,119	0.5	28.4	71.1
Old Puxi (1950)	1.87	86.7	21,519	0.5	22.0	77.4
New Pudong (1997)	1.04	70.2	13,986	4.1	57.5	38.4
New Pudong (2005)	1.44	170	8,474	1.4	39.6	59
New Pudong (2008)	1.51	245	6,909	0.9	40.3	58.9
New Pudong (2010)	2.35	340.3	6154	0.1	38	61.9
Shanghai (2008)	1053.24	901.5	11683	4.7	40.3	55

Notes: 1. The data on the distribution of employment across built and non-built areas within Pudong and that within the whole Shanghai are not available. So we assume instead that all the employment was concentrated in the built area both for the New Pudong Area and for Shanghai. This calculation, of course, tends to overestimate the capacity of the New Pudong Area in job creating. However, the result still proves that the New Pudong Area has a lower capacity in job creating than Puxi.

2. The data of 2010 for the New Pudong Area do not include urban self-employment, but include the employment of Nanhui District, a basically rural area that was merged with New Pudong Area in 2009.

3. The data source of Old Puxi is from Zou (1980, p106、107).

3.3 The Capacity to Absorb Migrants

The migrants were the main source of population growth of Old Puxi. Their share in Puxi's total population once reached as high as 85% (Table 3). The migrant workers came from almost every corner of the nation, but mostly from the neighboring provinces. Many of them were poor and broken peasants (Honig, 1992; Xin, 2009). Old Puxi was also the refuge during the famine or war periods, opening its door to hundreds of thousands of refugees. Under the Old Puxi model, migrants, even the poorest and most unskilled, could enter Shanghai to look for jobs freely. This free migration system allowed them to share its agglomeration effects without institutional barriers. The relatively low wage rate as a result of the abundant supply of laborers from China's poor rural areas provided great incentive for capital, foreign or at home, to flow in to seek cheap labor. The poor peasant migrants made great contribution to the productivity and prosperity of Shanghai and earned their citizens there in return.

Even today, the capacity of Puxi is higher than Pudong in absorbing rural migrants due to its spatial configuration. Out of 23 million permanent residents that currently live in Shanghai, only 5 million are living in Pudong. Among them around 2 million are migrants. The rest 18 million residents are living in Puxi and other districts. Among them, about 7 million are migrant workers from the rest of China. This example shows that the capacity of the New Pudong to absorb migrants is very weak (Table 3). This is especially shocking if we look at the large amount of capital and land poured in, and the many almost empty apartment buildings there waiting to be occupied.

It is true that the population density of Lujiazui, the new financial center in Pudong, an area across the Huangpu River from the Bund, has a relatively high population density during the day time. However, a short distance away from Lujiazui, one would find many streets that look almost empty. In order to cover up the fact that the sidewalks and the stores along them look like deserted, trees and flowers are planted to shield them from sight. After dark the apartment buildings in many residential communities east of Lujiazui are lightless. Compared with Puxi, people could hardly believe that these residential areas are actually a few miles away from crowded Puxi. They look like a ghost town.

Table 3 The Origins of Shanghai Population by Native Place (in percent)

Year	Old Puxi							New Pudong		
	1885	1900	1915	1930	1935	1946	1950	2000	2005	2008
Shanghai Local	15	19	17	22	21	20.7	15.1	68.6	66.2	63.6
Non-Shanghai Local	85	81	83	78	79	79.3	84.9	31.4	33.8	36.4

Note: 1.Data for the period 1885-1935 were for the International Settlement only; Data for 1946 and 1950 were for the whole Shanghai.

2. The data source of Old Puxi is from Zou (1980, p112-113).

As Table 3 shows that Old Puxi absorbed a lot of migrants from the rest of the country. Many of them are poor peasants from rural areas outside Shanghai. In this sense, the Old Puxi really made a substantial contribution to China's urbanization. The reason that Old Puxi could do so was the free migration policy that it followed. It paid a price for honoring this policy. As Table 4 shows that about 10% of its residents lived in shelters, stores, public places, and even boats. As Table 4 shows that the majority of residents were living in various residential housing. We can infer that many of the poor migrants must have used these temporary sheltering places as a springboard to move on later to better jobs and better housing, since there was no Hukou restriction as an institutional barrier to prevent them from becoming Shanghai citizens and moving ahead. In addition, without government monopoly of land supply, it should be easier for the market to supply all types of housing in response to all types of demand from different income groups. This is why the share of those living in slums is not that high (Table 4). Had there not been these slums, the efficiency loss represented by Triangle ABC shown in Figure 1 would have been real. While slums should not be final destination, as long as they did not stop the social mobility, there is *raison d'être* for their existence to allow poor rural migrants to have access to agglomeration effects of urban areas. In order not to let them to lose social mobility, the government should provide infrastructures such as public education, public hospital, sewage system, electricity, and running water, etc.. If they were not properly provided, it should be called government failure, because one should not assume the market can provide these public goods or semi-public goods.

The situation of New Pudong represents an almost opposite case. Most of its newly built housings are luxury. They are totally out of the reach of poor migrant workers. Thus, a significant part of Pudong's agglomeration

effects are gone as a result of excluding the poor migrant farmers from living and working there. Actually, the migrant workers that are living in Pudong today are mostly not from rural (State Statistical Bureau, 2007). Instead, they are mostly from other cities and towns with high educational background. Therefore, they are not really rural migrants. Therefore, New Pudong has made a very limited contribution to China's overall urbanization at a time when China needs to urgently absorb a large amount of rural population to reduce the rural-urban divide and the rural-urban income disparity.

Table 4 Housing Conditions in the Chinese Community of Old Puxi, Dec. 1936

	Household	Population	Household Size (in person)	Household Share (%)	Population Share (%)
Residence	347 776	1 619 817	4.66	80.73	76.17
Store	36 671	235 916	6.43	8.51	11.09
Shelter	39 339	180 647	4.59	9.13	8.49
Public place	3 330	72 201	21.68	0.77	3.40
Boat	3 692	18 022	4.88	0.86	0.85
Sum	430 808	2 126 603	4.94	100.00	100.00

Note: 1, Foreigners are not included. 2, The data source of Old Puxi is Zou (1980, p100).

The layout or the spatial configuration of Puxi is also very different from that of Pudong. Pudong follows the concept once popular in North America that a city should be designed for private car users with super blocks, big streets, and gigantic shopping malls. The spatial configuration in Pudong thus is very unfriendly to pedestrians, and environment. The spatial configuration of Puxi is, in sharp contrast, very friendly to pedestrians, and to environment. It has much smaller blocks, but much denser road net with many intersections in addition to a high concentration of population. Along both sides of most streets are lined up with stores, providing all kinds of services to residents. These stores create a lot of job opportunities to local people as well as to migrant workers. This is why more unskilled and not well educated rural migrants prefer to live in Puxi where they can easily find jobs and affordable housings. They are intimidated by the spatial configuration of

Pudong characterized by its urban sprawling, low population density, and its prohibitively high rentals.

4 The Institutional Differences of the Old Puxi and the New Pudong

The conspicuous differences in the performance of the Old Puxi and the New Pudong in terms of population density, job creation, and capacity to absorb migrant workers from rural areas outside Shanghai are rooted in three institutional differences. They are land tenure system, migrant policy (Hukou system), and the public finance system.

4.1 The Urban Land System

The land tenure system is the most important institution for an urban area. A good land tenure system can lead to efficient use of land and greatly reduced the cost of population agglomeration. In Old Puxi, the land tenure system was reflected in the famous Land Chapter, which provided the most fundamental laws and regulations governing land ownership and transactions in the Concessions (Shi, 2001). According to this Land Chapter, private land ownership was recognized and protected by the municipal government after being registered, measured, and having the boundary of each plot clearly marked. Therefore, the Land Chapter provided the foundation for the management of all the land related properties, property rights, and their transactions. Second, the Land Chapter abolished the administrative restrictions on the quantity and price of land transactions, paved the road for land trade, land mortgage, and building construction as commodities for sale. The Land Chapter was also adopted by the Chinese community outside the Concessions. Farmers there were allowed to sell or rent out their land at the primary land market to the government and developers to reap the land appreciation. The farmers responded to higher land price by voluntarily increasing their land supply to urban development. The land market in Shanghai was quite efficient, as was evidenced by the fact that despite the fact that over the period of around 100 years, the Old Puxi absorbed rapidly a great amount of migrant population from outside Shanghai, in terms of built area, it expanded very slowly. On average, the Old Puxi added around one km² every year to its built area. Therefore, it was a highly land-saving urbanization model.

In sharp contrast, Pudong has been following a most land-intensive path. The local government uses its monopsony in obtaining farmland from the local peasants and monopoly in supplying urban land to reap the land appreciation. The model prompts the government to get more and more land in order to exact more land

appreciation. Now the Pudong New Area has an acreage 1210 km² after acquiring Nanhui district in 2009. The total acreage of Pudong is 12 times as large as old Shanghai's built area in 1953. In terms of built area, the New Pudong managed to add 15.8 km² every year, equivalent to half of the total Concessions or more than the total acreage of the French Concession that took more than one hundred years to build. These former Concession areas remain the most wanted area in whole Shanghai even today. While Pudong expands at a speed much faster than the old Puxi, it leaves much to be desired in terms of its land use efficiency and its livability. This is especially so when compared its capacity to absorb rural migrants with that of the Old Puxi. This lavish land-intensive model should not be duplicated in other parts of China given the scarce endowment of arable land in China.

Meanwhile, Old Puxi owes much to the presence of a true land market for its efficient use of land, as is evidenced by the fact that Shanghai expanded very slowly in its boundaries to let the growing population exhaust the existing agglomeration effects. In the absence of a land market, the information that otherwise should convey through land price about the opportunity cost of each piece of land was lost. The government can only rely on its whims and guesses to allocate land. As a result, the allocation is distorted, as is shown by the fact that after the huge amount of capital and land poured in, the capacity to absorb rural population is very weak in Pudong. One cannot help ask: does this represent a viable way to urbanize in the rest of China?

4.2 The Migration System

Free migration is the key to exhaust the agglomeration effects of a city. The rise of Old Puxi became possible only when the barriers to prevent Chinese from moving into the Concessions were broken by an accident that took place in 1851. Before then the Chinese were not allowed to live there according to the Chinese laws. The Concessions, established one year after the first Opium War, were thus like a ghost town with around 265 residents only as late as in 1851(Xiong, 1999a).When the rebellion of the Small Sword Party broke out, the residents from the traditional Chinese town of Nanshi flooded the Concession areas to seek safety and protection. The ghost town became booming and crowded almost overnight. Although the Concessions were not prepared for accommodating such a large number of refugees all a sudden, and the tranquility and peace prior to then were lost, driven by the commercial interest and rising rental, the British and French Consuls saw

the business opportunities. They proposed to the Chinese authorities to abolish the old laws that prohibited the Chinese to mingle with foreigners (Xiong, 1999b). Since even the Shanghai authorities themselves eventually fled to the Concessions for protection from the violent rebellion, they accepted the proposal. The Land Chapter was revised accordingly to legalize the status of those Chinese who chose to live in Concessions.¹⁰ Soon after the crackdown of the Small Sword Party, the Concessions became a safe haven again when the Taiping Rebellion broke out. More migrants, this time mostly from the provinces south of Yangtze River, many of them were poor rural residents, flooded Shanghai. Since then Shanghai frequently played this role as a refuge for provincial people running away from wars, famines, or poverty. For example, during the period 1930 to 1937, the total number of people who moved in or out of Shanghai amounted to more than 0.7 million from 0.25 million (Zou,1980). The free flow of migration made Shanghai dynamic and vibrant.

In sharp contrast, the growth of population in New Pudong is restricted by the Hukou system. In addition, the Hukou system also provides privileges such as preferential treatment for job, education, housing, medical insurance, and retirement package for those who have Pudong Hukou. This system restrains the rights of the migrant workers to be treated equal to the locals, slows down their integration and assimilation.

4.3 The Public Financial System

The public finance is crucially important for maintenance and improvement of urban infrastructures and public services, and for necessary transfers of income and wealth among different groups. Influenced by Western urban institutions (Jia,2007), the Old Puxi adopted a set of property taxes and housing duties based on the land tenure system and the land price generated by the land market. The property tax was based on the market value of a plot of land and the structures above it. The renter¹¹ of a plot of land or its possessor must pay the property tax proportional to the market value of the plot and the structure above it. The housing duty, proportional to rent, was paid by those who rented houses or apartments. The property tax and housing duty increased as the value of urban housings grew, and constituted a reasonable redistribution mechanism of income and wealth from land properties, at the same time constituted the main source of financial income for maintenance and further improvement of urban infrastructures. During the period 1926 to 1941, the revenues from the property

¹⁰ <http://www.shanghai.gov.cn/shanghai/node2314/node2319/node12344/userobject26ai17537.html>

¹¹ Under the Concession system, the original Chinese land owners nominally only rented out their land permanently to foreigners. Therefore, these foreigners only obtained permanent use rights to land and were called legally as renters.

tax and housing duty reached around 70% of the total tax revenue of the authorities of the International Settlement. In the case of the French Concession, these two sources reached about 64% of its total recurrent tax revenues (Xiong, 1999c). During the same period these two sources of tax revenues constituted around 40% of the total tax revenues in the Chinese community outside the Concessions (Wang, 1995).

In sharp contrast, the New Pudong relies on the revenues obtained through selling the land use rights to developers. The Pudong government relies on this source of revenue to finance the investments in infrastructures. During the period 1995 to 2008, the Pudong government sold the land use rights to an area amounted cumulatively to 73.6km². During the same period the total investment in urban infrastructures amounted to 188.3 billion Yuan; and the total social fixed investment amounted to 754.9 billion Yuan. They represent 20.93% and 21.27% of Shanghai's total government investment and total social fixed investment respectively. Such land finance cannot sustain because the expansion of urban areas sooner or later will stop and the revenues from selling land use rights to newly requisitioned land will dry when land requisition is no longer needed. The worst thing is that the government becomes so dependent on land requisitions that it never develops capacity to raise funds other than selling land. The easy revenues obtained by selling land use rights also seriously distort income and wealth distribution in favor of urban residents. In addition, this type of financing also leads to much inflated land and housing prices. The housing bubbles are a serious challenge faced by the Pudong government.

5 Learning from the Urbanization Path of Old Puxi

At a time when China is determined to build a market-oriented economy, China should not recommit the same mistake of relying mainly on the government as the major player of resource allocation to undertake the government designed social engineering. China should reform all the institutions that are inconsistent with market mechanism. Under the current Hukou system and land tenure system, guided and financially sponsored directly by the government, The New Pudong has risen into one of the most modern urban areas in the world over a period of 20 years miraculously. However, in terms of absorbing migrants from rural areas, offering them job opportunities, and integrating them into city lives, the New Pudong's performance is very poor, especially if taking into consideration the huge amount of land and capital poured into its infrastructures. Its

conspicuously low population density but high rental and housing prices are very inconsistent with China's need to accelerate the absorbing of rural migrants. Given China's factor endowments, stage of development, and rural-urban divide, the path of Pudong should not be duplicated in other parts of the nation because under this model, not only part of the agglomeration effects will be wasted, but also the spatial configuration will be pedestrian hostile and environment unfriendly. It is unsustainable because it is not endogenous urbanization. It can develop so fast because it relies on highly distorted factor prices. However, this distortion makes Pudong only focus on high-ended manufacturing and services, hence aggravating the bias in capital and land. Pudong can only create limited number of job opportunities that are suitable for migrant workers from poor rural areas. At the same time, the slums in the form of urban villages and over-crowded apartment buildings are developing in the peripheries of Pudong, despite the government efforts to prevent them from cropping up using the most restrictive Hukou system and urban management. In addition, there are reports about contests and confrontations between peasants and local government, as is expected given the compulsory land requisitions and unfair compensations, pointing to potential threats to social security and stability.

One can imagine that if the Pudong Model is duplicated in other parts of the nation, the result can only be worse. This is because Pudong is benefiting from being located next to Puxi, the largest, most populous, and mature metropolis of China. It can expect to get all kinds of technical, logistic, and other supports from Puxi, including sharing part of its most urbanized population. Indeed, some of the Puxi residents have migrated to Pudong seeking larger apartments and bigger streets so that they can drive their cars around. Such relocation of existing urban population does not contribute to China's overall urbanization. However, it does help Pudong avoid the same fate of becoming another ghost town. In this sense, the high population density of Puxi helps Pudong by spilling part of its population to Pudong. In other parts of the nation, the duplication of this model often turns the new development zones into ghost towns. Worse, after paying extremely high price to the government in order to get a piece of land, the developers can only build expensive office buildings and luxury apartment buildings, making the service sector, especially the badly needed low-end services almost impossible to survive there. In the absence of the convenience of all types of service, these new zones are unlivable. No wonder so many ghost towns crop up across the nation.

In summary of the lessons from the Old Puxi model, we can see that it is not because the then authorities of

old Shanghai already foresaw and predicted the future trend of urbanization. The fact that the spatial configuration of Shanghai turns out to be rather desirable a century later from the perspective of new urban planning idea itself shows what a wonderful combination of three things that can bring about: a land market, a free migration policy, and a set of land ownership based taxes. These three things jointly contributed to an inclusive, efficient, desirable, pedestrian and environment friendly spatial configuration with a high capacity of absorbing rural poor peasants in a Jane Jacob's way—that is, most of its residential communities are mixed in terms of profession, class, income, work shifts, educational and provincial background. In this environment new comers are quickly integrated and assimilated. This model is efficient in term of its land using, inclusive in terms of its easy absorption of rural migrants, and environmentally friendly in turns of its spatial configuration that is pedestrian friendly. In this spatial configuration, most people are happy walking around, or using public transportations.

Obviously, in order to avoid capital and land intensive urbanization with low capacity of absorbing rural migrants, urban planning should be based on land opportunity cost so that urban spatial configuration can better reflect China's factor endowments. In this sense, Pudong is not a good model. China should look more closely into the Old Puxi Model. The lessons from this model are much more relevant to China's urgent needs—to urbanize most of its rural population so that China can break the rural-urban divide and reverse the income disparity. It will be a great challenge whether scholars and government officials have the vision and courage to do so.

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