

## **The Roles of Higher Education in China's Inclusive Urbanization**

*Lennon H.T. Choy<sup>1</sup> Jing Li<sup>2</sup>*

- 1. Associate Professor, Department of Real Estate and Construction and Ronald Coase Centre for Property Rights Research, The University of Hong Kong*
- 2. Assistant Professor, Department of Economics and Finance, Hang Seng Management College*

### **Abstract**

One momentum of rural-urban transition in China is for university graduates to work and live in the city where they pursued tertiary education. Against this background, we investigate the role of higher education on urban growth in China. A panel data analysis reveals that a 1% increase of share in the population with at least a bachelor's degree induces regional population growth by 0.158%, which is significantly higher than those of the western world. Nevertheless, contrary to other developed countries, inflow of high caliber immigrants from rural or cities of lower tiers in China in fact brings down real wages. A 1% increase of population share with a bachelor's degree will suppress real wages by 0.439%. We hypothesize that in China where education resources are limited, higher education attainment induces faster urban growth through breaking the barriers to rural-urban transition for new job market entrants, but at the cost of lower real wages due to affluent labor supply. The empirical evidence also shows that a 1% increase of population share with a bachelor's degree will jet up housing prices by 0.873%. As a result, talented new migrants may find city lives unaffordable. It poses pressing challenges to China where the country is advocating the idea of inclusive urbanization. This paper will discuss some of the key issues in relation to the provisions of education and housing services in China such that local governments can be more embracing to rural degree holder migrants, who will play a contributing role in urban growth.

**Keywords:** Higher Education, Employment, Housing Price, Real Wage, Urban Growth

## 1. Introduction

China accommodates one fifth of the world's population, and its urbanization is quickening up. After over thirty years' rapid expansion, China is facing increasing economic, social, environmental pressures and constraints. At the crossroad, new urbanization has been proposed in 2013. According to Premier Li's speech (CCP, 2013), "New Urbanization focuses on the people, stimulates huge consumption and investment demand, creates more job opportunities, and makes peasants rich and people happy. It is combined with agriculture modernization". Although the concept is not alien to the public, the dynamics of urban growth needs to be further explored. China's economic growth was featured by fierce regional competition. To take the lead in political promotion tournament, local governments became increasingly aggressive in quickening industrialization and urbanization to boost economic development (Li, 2013), and have motivation to encourage construction projects and provide public facility when the commodity housing market provides extra fiscal income for them (Lu, 2010; Li et al., 2011). Although local government is actually in control of land transaction, legal access to land use rights is not easy, especially for rural land acquisition in recent years. Investigation of how home registration system (*hukou*) prevents rural-urban transition has provided a first perspective to study the mechanism of urban growth in China.

A second perspective involves more fundamental theory which has been tested in developed economies (e.g. Glaeser et al., 2006): A boost in labor quality can bring forth an increase of real wage and housing price. Enhanced labor quality then stimulates urban growth. This context is particularly consistent with what happened to China over the past 15 years: Since 1998, the higher education system has undergone profound institutional reforms to reshape the structure of universities and colleges. More government sponsored, second-tier or below universities have been merged into first-tier universities, known as the "985 Universities",

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which refers to a group of top Chinese universities aiming at developing into world-leading research institutions.

While these top universities have attracted talented student intakes across the nation, in most cities where these universities are located the housing prices have also escalated to record high. Although significant institutional changes have taken place in urban land and housing markets, a series of socio-economic conflicts have also arisen, such as high housing price and vacancy rate, increasing income inequality, overbuilding, deterioration of living environment, and over-exploitation of natural resource. Rocketing housing prices, suppressed real wages and worsening environment could bring about urban sprawl and brain strain problems. Facing unprecedented complexity in speeding up the urbanization process, local governments are in quest for sustainable and balanced regional growth.

China has been advocating the idea of inclusive urbanization lately (World Bank and DRCSC 2014). The main thrust is to make appropriate provisions in cities such that rural-to-urban migration can be made more embracing, efficient and sustainable. One momentum of rural-urban transition in China is for university graduates to work and live in the city where they pursued tertiary education. It poses both opportunities and challenges. While the high calibre rural migrants will become major driving forces of economic growth in cities, real wages and housing prices will respond which in turn may make city lives unaffordable to them. This study thus attempts to investigate the dynamics of urban growth from a human capital resource perspective. Following Glaeser et al. (2006), we carry out a panel data analysis based on 30 provincial level units in China to investigate the impact of higher education on urban growth across regions. We intend to clarify the mechanism by examining the roles of education levels on housing prices, real wages, and employment. Drawing conclusions from the empirical results, we will discuss the key policy issues in the education and housing markets for inclusive urbanization. The remainder of this study is organized as follows. Section 2 reviews theoretical and empirical studies on determinants of urban growth. Section

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3 describes the empirical model based on Glaeser et al (2006). Section 4 provides the estimation results. Section 5 discusses the research implications. Section 6 elicits the policy implications for inclusive urbanization with respect to the empirical results. Section 7 concludes the findings.

## **2. Literature Review**

The long-run interaction between economic development and urban growth has been well documented in western societies. Increasing urban population raises the demand for housing construction and hence housing production (Hendershott and Weicher, 2002). Peek and Wilcox (2006) found the positive impact population growth on housing investment in the US was declining. Fisher and Gervais (2007) found that declines in household formation and increased delay in marriage caused less volatility in housing investment. Green et al. (2005) estimated the price elasticity of housing supply across regions. Metropolitan areas which are heavily regulated always suggest lower elasticity. Fast growing communities tend to suggest higher elasticity. In supplement, population density also plays a role in determining supply elasticity. Glaeser et al. (2006) presented a theoretical framework to integrate heterogeneous conditions of housing supply and urban development. Their empirical findings are consistent with the theories that differences in nature of housing supply across metropolitan areas determine how cities respond to productivity increase.

Concerning determinants of housing price, Ozanne and Thibodeau (1983) identified the sources of inter-city rents and housing prices in 54 metropolitan statistical areas during 1974 to 1976 period. Empirical results suggest that household income, number of households, distance to ocean or lake, population growth, price of non-housing goods, land use restrictions, construction costs, taxes, wages and utilities are all significant in explaining housing rentals. For property prices, most of the factors are insignificant except land use regulations, land prices and the ratio of households that are non-elderly single persons. Potepan (1996) modeled the market dynamics of housing price, housing rent and urban land price among 55

US metropolitans from 1974 to 1983. Household income and construction cost are identified as common factors contributing to the price variations in the three inter-related submarkets. Fortura and Kushner (1986) discovered that demand side factors are major determinants of inter-city housing price differentials, including household income, anticipated inflation, and the fraction of non-family households. Manning (1988) studied the impact of local specific and non-tradable amenities, such as mild climate and better environment, on the inter-metropolitan housing and land price differentials. They concluded that topographical restriction and climate change have positive effect on housing prices, while income, population, legal land use restriction, air pollution and crime rate have no impact.

There have been a growing number of empirical studies on the interaction between socio-economic-demographic factors and urban growth in China (e.g. Liu et al., 2002; Anderson and Ge, 2004; Peng et al., 2007; Chen and Zhu, 2008; Wu et al., 2010; Chen et al., 2011). Han (1998) estimated the population growth elasticity of housing construction is estimated to be near unity. Fu et al. (2008) suggested that the demand shocks contribute an extra 70 percent of cross-city variations in population growth compared to housing consumption growth. Availability of infrastructure, cost of urban development and income inequality are also determinants of the supply elasticity. Zhang and Kahn (2008) indicated that Beijing's urban form can be explained by the mono-centric model. Specifically, population density, land and housing prices decline with distance from the city centre. They also find that proximity to public transit, clean air, prestigious schools and universities, and amenities are capitalized into housing prices in Beijing. Interestingly, residential building heights and housing unit sizes have no significant relationship with distance from the city centre, indicating that stringent urban planning policies may prevent market forces to adjust. Ngai and Lu (2010) found that the new generation of peasant-workers are fascinated by urban lifestyle and unwilling to return to the rural area, thus resulting in more urban housing demand. Choy et al. (2011) maintained that increase in urban population, household income and business confidence have positive impact on residential investment in China. Mak et al.

(2012) suggested that changes in population and housing prices are most important determinants of housing starts differentials. Choy et al. (2013a) observed that FDI inflows only have modest impact on boosting economic growth, and its spill over effects may be marginal. He et al. (2013) found that substantial cultivated land has been changed for urban, industrial and infrastructure uses, thus stimulating economic growth. On the legal aspect, incomplete property rights would lead to inefficient industrial land use in the urbanization process, thus resulting in poorer economic performance (Choy et al., 2013b).

While these studies have looked into the urban growth dynamics from various perspectives, they are mainly based on the economic-urban nexus, or in other words capital resource aspects. Another strand of studies has investigated the urban growth dynamics from the human resource aspect. Urban growth and city size expansion were identified to account for greater income inequality (Haworth et al., 1978). Black and Henderson (1999), by pre-assuming endogenous economic growth and exogenous population growth, found that local information spill over to promote agglomeration while human capital accumulation increases city size. Clark et al. (2002) maintained that culture plays an increasingly important role in elevating urban economic vitality. Storper and Scott (2009) raised the question “Do jobs follow people or do people follow jobs?” and came up with evidence that amenities have potent effect on the migration patterns of highly educated human capital, but subject to the location of firms where they worked in. Huber (2014) found that in most European Union countries commuters are more skilled than non-commuters but worse educated than migrants.

Regarding the relationship between human capital enhancement and employment, Simon (1998) found city level employment growth was positively and persistently associated with human capital enhancement. Simon and Nardinelli (2002) further demonstrated that cities with more advanced human capitals grow faster in the long run, in the sense that 1 standard deviation of human capital growth induces 38% increase of annual city employment growth on average during a time span of 86 years. Shapiro (2006) observed that 10% increase in

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concentration of college graduates contributes to a 0.8% increase in local employment growth. However, there is no empirical evidence for the effect of high school graduates. Concerning the relationship between human capital and income, Berry and Glaeser (2005) noticed a tendency of increasing wage premium for better educated workers driven by skilled entrepreneurs to innovate. Florida et al. (2008) pointed out that creative class outperformed traditional education attainment in explaining regional difference of wages.

In this study, we intend to test the effect of human resource enhancement in terms of higher education attainment on urban growth dynamics. For validation purpose, the effect of capital resource enhancement in terms of industrial working population is also provided. It is expected that the elasticity of higher education attainment on urban growth would be larger compared to previous studies, due to the imbalanced education resources and distorted labor markets in China. A *Human Capital Concentration Proposition* is therefore proposed as follows: In China where education resources are much more limited compared to developed economies, higher education attainment induces faster urban growth through breaking the barriers to rural-urban transition for new job market entrants, but at the cost of lower wages due to affluent labor supply.

### **3. Empirical Model**

The methodology adopted in this research follows the theoretical model of Glaeser et al (2006). We intend to provide an empirical test of the Glaeser et al. (2006) model for China's economic regions, including 22 provinces, 4 municipalities and 4 autonomous regions. There are two goals for providing the empirical analysis in the context of China: First, Glaeser et al. (2006) empirically tested their theoretical model using city-level data in the United States. This paper provides new empirical evidence for the theoretical model at the provincial level. Second, housing market and urban politics dynamics, i.e. political constraints on the housing supply, would be very different in China and in the United States. We intend to test whether

the same relationships between higher education attainment and population growth, wages, and housing prices which exist in the US apply to China as well.

The first variable representing the productivity shock is the employment rate of the industry, or the share of working population among total population in the region. Evidently, higher employment rate indicates prosperity in the economy and hence more rapid urban growth.

The second variable representing the productivity shock is the share of adults with at least a bachelor's degree. Human capital enhancement should be positively associated with housing prices, as indicated by Table 1.

**Table 1** Status of House by Education Attainment of Household Head

<i>Education Attainment</i>	<i>Numbers of Family Households</i>	<i>Persons of Family Households</i>	<i>Number of Room Per Households</i>	<i>Per Capital Floor Space of Building</i>
<b>Total</b>	<b>340002959</b>	<b>1177469293</b>	<b>2.72</b>	<b>22.76</b>
No Schooling	22695266	67447656	2.50	22.42
Literacy Class	6262058	20238743	2.68	23.20
Primary School	112721792	406098016	2.81	23.08
Junior Secondary School	132932079	477884025	2.78	22.18
Senior Secondary School	36355841	123605844	2.65	22.74
Secondary Technical School	11393240	32609402	2.35	23.64
Junior College	11876035	33490889	2.35	25.23
University	5390230	15072272	2.39	26.00
<b>Postgraduate</b>	<b>376418</b>	<b>1022446</b>	<b>2.38</b>	<b>27.81</b>

Data Source: National Bureau of Statistics of China

The unit of analysis in this study is economic region including provinces, municipalities and autonomous regions, as defined by the National Statistical Bureau. We need to reconstruct different panel data series which are time inconsistent.

Housing Price: Housing price index is constructed from the average commodity housing price of the region. The price index at the current time  $t$  is constructed with the preceding year  $t-1 = 100$ . The base year of housing price index = 100 is set at year 1980.



CPI: The consumer price index of each region at current time  $t$  is constructed based on the preceding year  $t-1 = 100$ . The base year of consumer price index = 100 is set at year 1980.

Productivity Shock I: We compute the employment share of the industry in the region. This measure predicts the degree to which regional industry employment growth would affect regional housing demand.

Productivity Shock II: The share of adults with at least a bachelor's degree is employed to indicate the impact of skilled workers on the population and growth of the region. Previous studies indicate a strong and positive effect of human capital.

Wage: The proxy for wage is taken as the income per capital of the region.

As the mainstream statistical publications in China, the Real Estate Yearbook provides land price from 35 major cities, while the Land Resource Yearbook provides land price from 30 provinces and municipalities. However, both yearbooks are only available after 2000. Given the limited time span  $T$ , it is necessary to expand the range span  $N$  to provide consistent estimation of coefficients. Hence we establish panel data model to investigate the impacts of productivity shocks for regions with different housing supply elasticity. Both fixed effect and random effect panel data analysis will be carried out, since we intend to control the effect of year and location under the fixed effect model while control the effect of regional political leaders' behavior under the random effect model. We also control GDP growth for the panel regression.

#### **4. Estimation Result**

Unlike previous literature which mostly capitalizes on city level data, we choose provincial level data for analysis as China's fierce regional competition has led to repetitive investment

and homogenous industry across cities within the same region. The 1980s' textile industry rush, the 1990s' economic development zone rush, the 2000s' airport rush, and the ongoing real estate rush all indicate that local governments have a tendency to follow their competitors' development strategy. As Li and Zhou (2005) point out, a distinguished feature of the political promotion tournament in China is that participant cares about his comparative position among competitors. Political participants thus have little incentive for win-win cooperation, but show great interest in winner-loser game: upgrading their own performance and undermining others' (Li et al., 2015). This explains why duplicative investment in overheated industries exists for a long time, yet local governments would support this kind of vicious competition, since duplicative investment and local protectionism would add to political rivals' survival costs (Li et al., 2015). Investigation of provincial level data could better control the effects of political tournament across cities, thus providing a more adequate understanding of the urban growth dynamics and evolution.

#### 4.1 Fixed Effect Model

Table 2 presents the fixed effect panel data model of how higher education attainment affects population, income and housing price.

**Table 2** Impact of Higher Education on Population, Income and Housing Price (Fixed Effects)

<i>Productivity Shocks</i>	<i>Population</i>	<i>Income</i>	<i>Housing Price</i>
<b>Labor Share</b>	0.081	-0.384	0.104
Adjusted R-squared	0.26	0.08	-0.04
<b>Labor Share with controlled effects</b>	0.065	<b>-0.486**</b>	0.538
Adjusted R-squared	0.26	0.22	0.01
<b>Population Share with Bachelor's Degree</b>	<b>0.137**</b>	-0.193	0.554
Adjusted R-squared	0.27	0.08	-0.03
<b>Population Share with Bachelor's Degree and controlled effects</b>	<b>0.123*</b>	<b>-0.439***</b>	<b>0.873**</b>
Adjusted R-squared	0.27	0.23	0.03
<b>Integrating Both Productivity Shocks</b>			
<b>Labor Share</b>	-0.091	-0.086	-0.517
<b>Population Share with Bachelor's Degree</b>	<b>0.158**</b>	<b>-0.406**</b>	<b>1.071**</b>
Adjusted R-squared	0.27	0.23	0.03

\*\* indicates significant at 5 percent, \*\*\* indicates significant at 1 percent, \* indicates significant at 10 percent.

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On the column of population, the correlation between labor share and population growth is insignificant, while the correlation between population share with at least a bachelor's degree and population growth is significant and positive. Specifically, a 1% increase in educated population share would induce regional population to increase by 0.123%. Integrating both productivity shocks into the regression, highly educated population share has significant and positive impact on population growth while labor share still has no significant effect. In particular, a 1% increase in highly educated population share would induce regional population to increase by 0.158% after considering the effects of labor share. This coefficient is much larger than what has been observed in previous studies (e.g. Glaeser et al., 2006), which indicates a strong tendency of university graduates choosing to work and live in the city they studied in.

On the column of income, the correlation between labor share and income growth is insignificant, while the correlation between population share with at least a bachelor's degree and income growth is significant and negative. Quite unexpectedly, a 1% increase in highly educated population share would lead to 0.439% *decrease* in income growth. This finding is inconsistent with previous studies (e.g. Berry and Glaeser, 2005) in which higher education tends to be positively associated with wages. This inconsistency with previous literature may indicate that higher education adds to employee's recruitment cost in China. Besides, after integrating both productivity shocks into the model, neither highly educated population share nor labor share has any significant impact on income growth.

On the column of housing price, the correlation between labor share and housing price growth is insignificant, while the correlation between population share with at least a bachelor's degree and income growth is significant and positive. Specifically, a 1% increase in highly educated population share would induce housing price to increase by 0.873%. After integrating both productivity shocks into the model, highly educated population share has significant and positive impact on population growth while labor share has no significant

impact. In particular, a 1% increase in highly educated population share would induce housing prices to increase by 1.071% after considering the effects of labor share. Such large elasticity indicates that the government may need to rebalance educational resources to accommodate demographic inflows in major cities.

#### 4.2 Random Effect Model

Table 3 presents the random effect panel data analysis of how higher education attainment affects population, income and housing price.

**Table 3** Panel Data of Productivity Shocks on Population, Income and Housing Price (Random Effects)

<i>Productivity Shock</i>	<i>Population</i>	<i>Income</i>	<i>Housing Price</i>
<b>Labor Share</b>	<b>0.195***</b>	-0.035	0.159
Adjusted R-squared	0.11	-0.003	0.002
<b>Labor Share with controlled effects</b>	<b>0.197***</b>	0.004	0.156
Adjusted R-squared	0.11	0.14	0.04
<b>Population Share</b>	<b>0.187***</b>	-0.007	<b>0.221*</b>
Adjusted R-squared	0.125	-0.004	0.009
<b>Population Share with Bachelor's Degree and controlled effects</b>	<b>0.187***</b>	-0.009	<b>0.221*</b>
Adjusted R-squared	0.12	0.14	0.05
<b>Integrating Both Shocks</b>			
<b>Labor Share</b>	0.058	0.069	-0.380
<b>Population Share with Bachelor's Degree</b>	<b>0.141**</b>	-0.065	<b>0.539*</b>
Adjusted R-squared	0.12	0.14	0.05

On the column of population, the correlation between labor share and population growth becomes significant and positive. Similar to Table 2, the correlation between population share with at least a bachelor's degree and population growth is significant and positive. Specifically, a 1% increase in labor share would induce regional population to increase by 0.197%. A 1% increase in highly educated population share would induce regional population to increase by 0.187%. Integrating both productivity shocks into the model, highly educated population share has significant and positive impact on population growth while labor share has no significant impact. In particular, a 1% increase in highly educated population share would induce regional population to increase by 0.141% after considering the effects of labor share.

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On the column of income, the correlation between labor share and income growth is insignificant, while the correlation between population share with at least a bachelor's degree and income growth is also insignificant. After integrating both productivity shocks into the model, the impacts of highly educated population share and labor share on income growth are still insignificant. On the column of housing price, the correlation between labor share and housing price growth is insignificant, while the correlation between population share with at least a bachelor's degree and income growth is significant and positive. Specifically, a 1% increase in highly educated population share would induce housing price to increase by 0.221%. After integrating both productivity shocks into the model, highly educated population share has significant and positive impact on population growth while labor share has no significant impact. In particular, a 1% increase in highly educated population share would induce housing prices to increase by 0.539% after considering the effects of labor share. Hausman Test suggests that fixed effect model is better than random effect model to estimate the impacts.

## **5. Discussion**

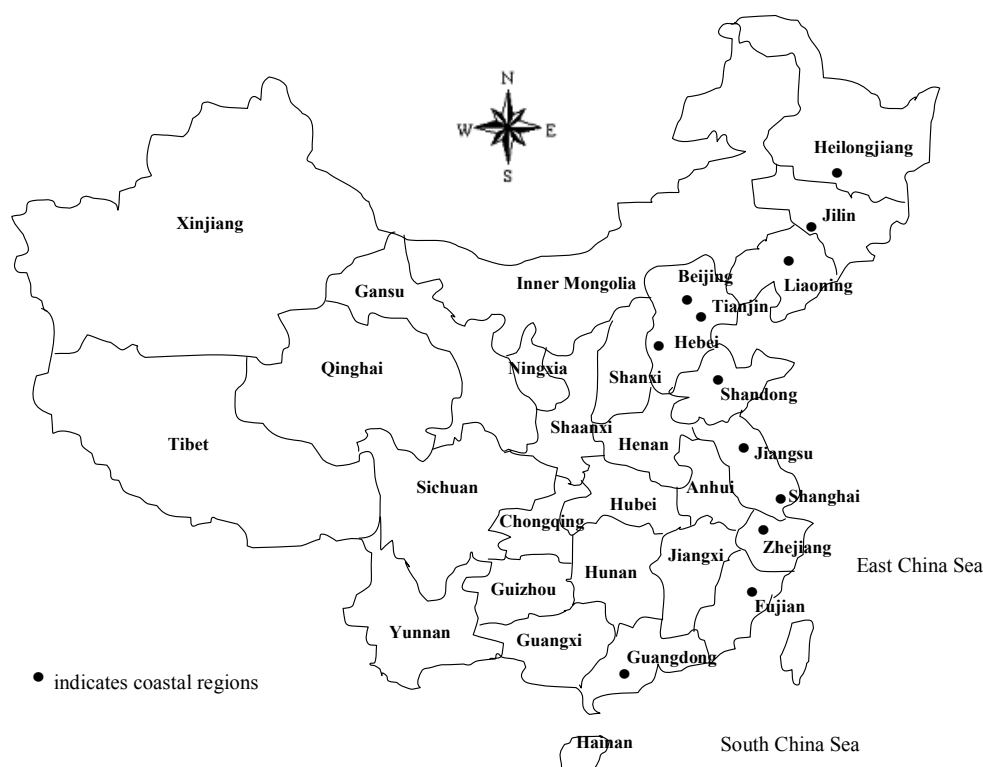
Estimation results of both fixed effect and random effect models suggest that increase in the population with at least a bachelor's degree has significant and positive impact on population growth and housing price. Furthermore, empirical results of fixed effect model suggest that increase in the population with at least a bachelor's degree has significant but negative impact on real wages. To further illustrate the human capital concentration proposition, the following section discusses from two aspects, namely higher education reform and distorted labor markets.

### **5.1 Higher Education Reform**

China's higher education reform was initiated in 1998. In the country, top universities fall into two leagues, namely the "985 Universities" and "211 Universities". Actually "985 and "211" are not the number of the universities in the leagues but the names given to them. The

initial composition of “985 Universities” (or the C9) includes Peking University, Tsinghua University, Fudan University, Zhejiang University, Nanjing University, University of Science and Technology of China, Shanghai Jiao Tong University, Xi’an Jiao Tong University, and Harbin Institute of Technology. Similar to the Ivy League in the US, the Russell Group in UK, and the Group of Eight in Australia, C9 has recruited a large proportion of talented students across the nation. Later on the “985 Universities” program has expanded its inclusion of top universities to thirty-nine by the end of year 2011. For “211 Universities”, it refers to in the Twenty-First century (the former 21), there are around One hundred universities (the latter 1) will be launched as leading higher education institutions.

**Figure 1** Coastal and Inland Regions of China



Source: Drawn by the authors

Most of the 985 universities are located in the northern and eastern parts of China. In fact, among these coastal provinces and municipalities, Beijing has 8 universities, Shanghai has 4

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universities, Tianjin has 2 universities, Shandong has 2 universities, Liaoning-Jinlin-Heilongjiang has 4 universities, Jiangsu-Zhejiang has 3 universities, and Guangdong-Fujian has 3 universities, ranked in the “985” program. Altogether two thirds (twenty six out of thirty nine) of the “985 Universities” are located in the coastal regions (eleven out of thirty one) of the nation, as is shown in Figure 1. For “211 Universities”, the number was in total 112 by 2011. Again, Beijing has 26 universities, Shanghai has 9 universities, Tianjin has 4 universities, Shandong has 3 universities, Liaoning-Jinlin-Heilongjiang has 11 universities, Jiangsu-Zhejiang has 12 universities, and Guangdong-Fujian has 6 universities, ranked in the “211” program.

The coastal-inclined dispersion of the “985” and “211” leagues has allocated the majority of higher educational resources, including more research funding, higher remuneration of staff, better university facilities, and stricter recruitment process, to top universities located in the northern and eastern parts of China. Not surprisingly, property prices have also increased more in these regions. According to National Bureau of Statistical of China (NBSC, 2012), from 2002 to 2011 the average property prices of coastal regions have increased by 14.5% annually, while the figure for inland regions is 12.7%. More salient disparity is observed from population growth, where for coastal regions average population growth rate from 2002 to 2011 is 1.94% annually while for inland regions the figure is -5.97%. According to our results, the migration from inland to coastal regions is largely driven by university graduates who favor the living environment of large metropolitans. Although housing prices are higher, the higher education reform has enabled more rural students to enter universities in major cities. After graduation, highly educated young people would rather stay in large or medium sized cities than go back to hometowns (Yang, 2010). Moreover, the new generation of peasant-workers are more accustomed to urban life, thus being unwilling to return the rural area (Ngai and Lu, 2010).

## **5.2 Distorted Labor Market**

Our empirical results suggest that increases in the population with at least a bachelor's degree has significant but negative impact on real wages, indicating that highly educated workers have marginally decreasing return of payment compared to less educated workers in China. This presents the first barrier to new job market entrants. The phenomenon that highly educated may not be better paid is documented in previous studies. Based on an urban survey, Wu and Xie (2003) revealed that higher earnings would lead to higher education levels in China only for recent market entrants. Fleisher et al. (2011) investigated the role of human capital to boost production, using panel data at firm level of China. They compared the marginal products of workers at different educational level, and find that marginal products are much higher than real wages, while the gap becomes even larger for highly educated workers. In foreign-invested corporations the returns to education in production are highest, indicating that more market-oriented system attracts more talented workers. Li and Zhang (2010) examined university graduates' job hunting after higher education reform, using the 2005 placement data for two colleges in China. Controlling other factors, they found that better GPA would give graduates a higher chance of getting employed, while pre-college urban *hukou* status, proxy of father's education and female advantage also facilitate graduates to find their jobs. From our perspective, for many university graduates from rural areas the option to work and live in large cities outweighs wage considerations. Facing sufficient human capital supply, employers tend to lower their offers for young graduates.

Expansion of foreign invested companies' business in China may lessen the problem through bringing in not only more physical capital, but also better management of human capital. In regions such as Shanghai and Beijing with most transnational corporations, we find escalation in both housing prices and real wages compared to other coastal and inland regions. But since China's education system is still examination based instead of creativity based, so that there are still insufficient private firms hiring large amount of labor, and because China still has a large proportion of working population from the rural areas who have less access to job in major cities, such distortions in the labor markets cannot be turned around overnight.



Apart from abovementioned factors, the structural imbalance between secondary and tertiary sectors in China may be another reason for the lower wage bands of university graduates. One argument is the mismatch between the market demand and the provision of training. The value added of China's economy, most of which is based on manufacturing sectors, requires more rural migrant workers than educated university graduates.

## **6. Policy Implications for Inclusive Urbanization in China**

The empirical results show that a 1% increase in the share of population with a bachelor's degree will induce population growth of 0.174%. Intuitively speaking, the net inflow of urban population either comes from intra-provisional migration from lower tier cities or from the rural areas. The prevailing policy in China for degree students getting a *hukou* in the place of study is as the follow. When the students start their studies, they will obtain a collective *hukou* to which the primary social benefits are not entitled. Only after graduation and getting employments by large corporations like the state-owned-enterprises or foreign firms can the students apply for their formal *hukou* status. Normally it is not a lengthy process, yet the lucky talented students are minority only. The rest will either be engaged by small corporations, or go back to their places of origins. For those who still strive for getting formal *hukou* in the places of work, they will need to impress the large corporations by their work performance. It means majority of the bachelor's degree holders will stay in the place of study or work for some while before they can obtain their formal *hukou* status.

Surveys done by China Urban Labor Survey in 2001 and 2010 revealed that after accounting for job characteristics, there was no significant difference between *hukou* and *non-hukou* holders in major cities as far as their salary packages are concerned. Having said that, degree holders without formal *hukou* status in fact face with the same problems as if their fellow migrant workers do: less privileged in term of social benefits. According to NBS (2012a), about 5.7 % of rural migrant workers and 12.6% of young migrant workers (below 30 years

old) in major cities are degree holders. Local governments should target for these groups of high caliber workers if they are convinced of our empirical findings that degree holders are potential driving forces for urban growth. In reality, nevertheless, it is far more complicated to embrace those migrant workers in cities because of their family needs. In 2010, it was reported that about 70% of all migrant workers migrated with their families, and around 50% of those families had at least one child studying in their places of work (Démurger, Li and Xu 2013). From inclusive urban growth perspective, vast amounts of considerations will be needed to accommodate the targeted immigrants with a bachelor's degree or above.

World Bank and DRCSC (2014) suggests that:

*“An inclusive and efficient labor market would allow migrants to find the best matches for their talents and would provide the supportive training and learning infrastructure to help them continue this productive matching as the economy evolves”*

To facilitate productive matching, the procedures for migrant workers to apply for *hukou* status had been streamlined in many cities already. In Shanghai, a point system has been implemented such that applicants with appropriate educational and technical qualifications will be favored. However, in the course of achieving inclusive urbanization, local governments should at least consider making provisions for two important services to migrants in need, namely children education and housing.

Concerning education services for the children, major difficulties faced by rural migrants in cities include lower priority for admission in public schools, higher cost in private schools and established hurdles for university admissions as students are requested to take entrance exams back in their home towns where admission quotas are usually less than those in major cities. Some suggestions given by World Bank and DRCSC (2014) are worth considering, including

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the idea of “money follows people” such that migrants can send their children to public schools in cities with their entitlements of education allowances, provision of universal free pre-schooling service, as well as the removal of university entrance examinations hurdles etc.

Perhaps the bigger challenge for paving the way of inclusive urbanization is about housing services. As per our empirical findings, degree holder migrants not only face with lower growth of real wages but also escalating housing prices. 80% of Shanghai migrant workers are living in rental housing. Various local governments had carried some pilot schemes to make affordable housing to new migrants, though the outcomes were far from satisfactory. A low rent housing scheme had been trail run. It was however criticized for its unrealistic low income cap at RMB625 per month. In Shenzhen, a Peacock Plan was promulgated from which doctoral degree holders will receive lucrative housing allowances under the scheme. The eligible candidates under this programme are negligible.

World Bank and DRCSC (2014) calls for innovations in the housing market so as to achieve inclusive urbanization. It even explores the possibility of accessing the informal housing market, such as the so-called “small-property-right”, which refers to the permission of renting out premises with no legal titles. It appears that rocketing housing prices is a national phenomenon, local governments are rather handicapped under the centralized monetary system.

## **7. Conclusion**

China’s urban market is still in evolution. Rapid urbanization has taken place most notably in eastern coastal regions. This study investigates the effect of education levels on urban growth. The implications for implementing socio-economic policies are two folded: The hike in university graduates due to higher education reform should be properly handled to satisfy increasing housing demand. Housing affordability problem in major cities has been the key issue to fresh graduates and new migrants for the past decade. One way to solve this problem

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is to accommodate previous houses with limited property rights, such as converting them into affordable housing or low rent housing uses. Such proposal has been recently debated in the 2013 National People's Congress and the Chinese People's Political Consultative Conference. Since it is estimated that between 1995 and 2010, construction of houses with limited property rights nationwide amounted to 0.76 billion square meters, or 8% of total houses constructed during the same period, there is large room for local governments to turn these limited property rights housing into affordable and low rent housing.

Meanwhile, education resources should be better allocated to achieve more balanced urban development between developed and less developed regions, given the much higher elasticity of higher education attainment on urban growth in China compared to developed economies. Estimation results suggest that productivity shocks in terms of new university graduates have positive impact on urban population and housing price but negative impact on real wage, indicating that further tax and fiscal reforms are required to redistribute the incomes between the government and the people. This implication is consistent with previous studies. For example, Li and Chiang (2012) find that housing prices of the nation from 1998 to 2011 are not Granger caused by GDP growth, indicating that the growth of personal income does not catch up with that of national income, or *guojinmintui* (meaning the State progresses but the private sector retreats). The *guojinmintui* effect indicates that state owned enterprises have easier access to resources, while private owned enterprises face higher entry barriers in the market competition.

Actually it comes to our attention that at the time of writing this article, the unemployment rate of degree holders in China is alarmingly high. Nevertheless, as per our empirical findings suggest, absorbing degree holders is one of the key driving forces for urban growth. Good quality of tertiary education will help the youths to better equip themselves for the future challenges. At least they will find some basic skillsets, language abilities and computer

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literacy are helpful for their future career development. Besides, in the long run, producing more university graduates will also help boosting foreign direct investment.

World Bank and DRCSC (2014) advocates that inclusive urbanization can help rebalancing China's economy through maximizing human capitals, enhancing regional competitiveness and narrowing social and welfare gaps. While this paper proposes that some efforts can be put on the education and housing markets in order to facilitate inclusive urbanization, a fundamental fiscal reform in China should be called for such that sustainable sources of public finance can be generated locally, for instance through land sales and property tax etc.

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