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## Real Income Determinants in Rural and Urban China

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### Abstract

Substantial internal migration has been occurring for over two decades along with economic growth in China, are rural-urban migrants having better off real income than rural non-migrants in the return to education and age? What kind of character does migration location play in terms of the rural-urban real income gap? This paper will probe such issues and investigate the significance of different consequences in real income between migrants group and non-migrants group. By applying multiple linear regressions on the testing hypothesis, paper reaches the conclusion that rural-urban migrants are only having more favorable real income return to education in a lower level, and the return to age for both groups is statistical significant but very economic moderate. Migration location, on the other hand, is the most decisive factor when it comes to the real income gap between rural non-migrants and rural-urban migrants, choosing migrate to metropolises or better developed urban regions is associate with bigger real income gap between rural areas than those decide to move to less developed urban towns.

**Keywords:** internal migration, education, age, migration location, real income gap.

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**Contents****Abstract**

<b>1. Introduction</b> .....	2
<b>1.1 Paper Introduction</b>	
<b>1.2 Aim and Scope</b>	
<b>2. Research Background</b> .....	3
<b>2.1 General Condition of Internal Migration in China</b>	
<b>2.2 Previous Studies</b>	
<b>2.2.1 Education and Age</b>	
<b>2.2.2 Migration Location</b>	
<b>2.3 Theory</b>	
<b>2.4 Hypothesis</b>	
<b>2.5 Limitation</b>	
<b>3. Data</b> .....	8
<b>3.1 Source and Sample</b>	
<b>3.2 Data Management</b>	
<b>4. Methods</b> .....	16
<b>4.1 Statistical Model</b>	
<b>4.1.1 Testing Model for Hypothesis 1</b>	
<b>4.1.2 Testing Model for Hypothesis 2</b>	
<b>4.1.3 Testing Model for Hypothesis 3</b>	
<b>5. Results and Estimates</b> .....	17
<b>5.1 Return to Education in Income</b>	
<b>5.2 Return to Age in Income</b>	
<b>5.3 Income Gap in Terms of the Migration Location</b>	
<b>5.4 General Estimates</b>	
<b>6. Analysis and Discussion</b> .....	22
<b>7. Conclusion</b> .....	26
<b>References</b> .....	27
<b>Appendix</b> .....	29

## **1. Introduction**

### **1.1 Paper Introduction**

There is a rising tendency of internal migration with the emerging economic development in China after the 1980s. Huge flows of rural to urban migrants brought a dynamic population in many perspectives, migration joins the connection between rural and urban areas, and lead to huge productivity and industrialization return in both micro and macro levels. As the appealing higher nominal income level in urban areas has always been the motivation of internal migration in China, (Zhu 2002) this paper will talk about the different consequences in real income between rural-urban migrants and rural non-migrants.

Whether rural-urban migrants have better off return to education and age in real income than rural non-migrants will be examined by data collected in 2002, as well as the influence of migration location on the real income gap between migrants group and non-migrants group. Multiple linear regressions methods will be the used, other determining factors of individual's income such as sex, marital status, health condition and so on will also be took into account.

Conclusions will be obtained according to the empirical evidence from previous studies and regression results from the models. As the amount of internal migration population in China is huge and still growing over time, indications from this paper could make a better understanding and give development strategy implications on such issues.

### **1.2 Aim and Scope**

The empirical influence from migration on macro economy has been clearly seen through the increasing productivity and growth rates, however, how migration affected individuals themselves in a micro level is always hard to drop a conclusion. Despite the inevitable connection from migrants to their households back in sending regions, the dimensions of individuals' well-being are also complicated and diverse to measure as it concerns fiscal return, health condition both psychically and mentally, social welfare, human capital acquisition and other chain reactions that might brought by the decision of movement.

The nature of internal migration in China is that emigrating with household only occupies 20 percent of total moving population up till 2006, and the rate is decreasing over time. (Hussain 2008) The mainstream of migrants is largely composed by individuals without household members. Urban residents only shares 30 percent proportion of total population, despite a small amount of people move from one urban area to another, rural to urban migration conclude the main type of internal migration in China. Apart from the reasons like job change and family reunion, economic factors prevail among most of the migration moves. Nominal income gap between rural and urban areas becomes the major motivation for individuals to migrate. (Zhu 2002)

This paper aims to investigate the condition of Chinese internal migrants in a micro level, and while nominal income gap is the major motivation for individual migrants

to move from rural regions to urban areas, examine the difference in real income between rural to urban migrants and rural non-migrants can somehow show the well-being of migrants at some degree. Study samples will be limited to individuals moving without household members as they are the main composition of rural-urban migration in China. Data will be based on a cross section survey held in 2002 while spontaneous migration movement has been conducting for more than two decades. Different consequence between migrants group and non-migrants group driven by the return to education, age and location will be discussed as to see whether mobility in China has brought benefits to individual migrants' real income.

The topics of this paper will focus on two questions:

- 1) *Do rural-urban migrants have better off real income than those rural non-migrants in the return to education and age?*
- 2) *What kind of character does migration location play when it comes to the real income gap between migration group and non-migration group in China?*

By focusing on these three individual-level characteristics: age, education attainment and migration location, measured as real income, this paper will investigate the differences between rural-urban migrants and rural non-migrants in standard of living.

## **2. Research Background**

### **2.1 General Condition of Internal Migration in China**

Before the 1978 economy reform in China, internal migration was strictly controlled by the state in the name of planned economy. Migration was treated as part of the command policies which makes very less sense to national economy or migrants' individual living condition. The only economic concerns that have something to do with migration in China were all about fulfill state goals, the other micro economic subjects were submerged. (Pieke and Mallee 1999) It was after 1978 that existed genuine spontaneous migration flows, rapid growth and economic boom during 1980s to 1990s has created an upsurge in internal migration in China.

The motivations behind internal migration movement in China are various, but the major push and pull reasons are increasing nominal income gap between rural-urban areas and expanding labor demand in urban regions because of the industrialization. (Zhu 2002) Rural-urban migrants desire seeking a better life with higher income as the policy of internal migration has been loosen and economic reform brought a dramatic promising prospect for mobility. Internal migration in China over these economy growing years has indeed been providing outstanding efforts to macro economy and urban construction, but still, urban to rural migrants are considered a disposable resource and are having a hard time blend into receiving regions. Discrimination becomes the biggest obstacle when it comes to the internal migration population, especially for those rural-urban migrants in well developed coastal areas. Chinese government has applied strategies such as industrial relocation and promoting compulsory education in all rural areas to bring up the development as a

whole, but the flows of rural to urban migration are still continuously growing. For sending regions, although they might enjoy the benefit of capital transfer from remittance, rural skill drain gradually becomes the most fatal problem for development in a long run. State policies that allow the interior to benefit from industry for many hinterlands did not really work out well, huge income gap between rural and urban is still appealing to rural migrants. And for receiving regions, labor supply indeed has met the demand of expanding urbanization, but it is also challenged with decreasing wage and increasing unemployment rate. With 20 percent of total population in China is defined as “floating population”, the significance of internal migration is getting prominent on both macro and micro economy.

Internal migration in the case of China has its unique characters. First, the size of moving population is huge, and it is getting amplification with time. Huge flows of floating population has created pressure on authority and receiving regions. Second, control from pervious planned economy period still matters through household registration system. Though pro-market policies have promoted vast mobility of population, individuals’ movement is still strongly bonded with their type of household registration. And finally, the current migration is not simply a natural consequence of China’s rapid economic growth, but on the other way around, it is migration that accomplished early industrialization and development to a large extend. (Pieke and Mallee 1999: 29) Migration may prove to be one of the most powerful forces in China’s demographic history, and it will be important in the future as well.

## **2.2 Previous Studies**

The driving factors behind the divergence between rural-urban migrants and rural non-migrants in income are several. However, education, age and migration location are three most essential elements to consider in the case of China. All of them are playing important roles in employment enrollment, job type choices, migration staying period, income sources and even decision-making for moving at the first place.

### **2.2.1 Education and Age**

Providing education to household members in rural China is usually a family decision. Although Chinese government has carried out many rural education projects and established foundations cover most of provinces, the feedback of these actions is with little success. Low intensity of school locations and relatively high tuitions for rural families are two key reasons discourage the motivation of go to school in rural areas. Whether household members should be sent to have schooling is largely depend on the basis of expectations of the returns on these investments. (Edwards and Ureta 2003) Could pervious received education be paid off in later life becomes the most critical perspective to consider for rural families, especially if it can bring a higher return in income.

Case study in Northeastern China shows that even though educational attainment is not an entry barrier for rural migrants to work in urban sectors, it only applies to jobs in informal sector. While in formal sector, education is essential for migrants both as a determinant of income level and as a condition for employment by companies and enterprises. (Wang, Maruyama and Kikuchi 2000) Level of education can somehow represent the reliability and overall status for migrants, with urban areas absorb rural migrants at different education level under different job types, evidence indicates that the average entry wages of urban informal sector are 30 per cent higher than the rural agricultural wages. And to some rural villages in Northeastern China, the ratio can jump to 70 per cent as to support the theory that with adequately same education level, rural to urban migrants enjoy better incomes than rural non-migrants.

Similar experience is performing for age factor as well in the case of internal migration in China. As migration group is not a random sample from overall population, the majority of migrants tend to be disproportionately young. (Todaro 1980) Young migrants with transferable skills and decent education can definitely earn more money than stay at rural hometowns. However, opportunity to gain higher income in urban areas is not only attempting to young rural residents, people within working age are also appealed to income gap and tend to move to bigger cities. Mapping of net migration for worker-age cohorts from 1990-2000 in China shows that internal migration happens across all provinces, (Appendix: Graph 1) well developed provinces like Zhejiang and Guangdong can be observed an obvious tendency of internal-province migration, which residents with working age 15 to 64 migrate from rural regions to province capitals or bigger cities. (Cromley, Hanink and Ebenstein 2010) This proves the theory that internal migration in China occurs to people among all ages, better return in income does not only confine the factor of education, but also to migrants with different ages. Rural to urban migrants are still better off in wages than rural non-migrants on the perspective of age.

### **2.2.2 Migration Location**

Internal migrants usually choose to move within the province their rural regions belong, it is for the consideration of migration cost and better adaptation in receiving areas, about 65 per cent of internal migration in China is happened within provinces. However, rural residents are also willing to move longer distances if the destination wages and employment opportunities are relatively higher, especially for those well-educated migrants. (Todaro 1980) One thing should be paying attention is that it is not the absolute income diversity that attract the migrants, but the expected rural-urban income difference. The motivation of movement is largely driven by the predictable income streams over time rather than by the current earnings. (Ma 2011) As metropolises like Guangzhou, Beijing and Shanghai becomes the popular destination regions to migrate over years, and better developed coastal provinces like Guangdong, Zhejiang and Jiangsu are still receiving huge proportion of rural migrants, it is believed that income levels in big cities and coastal provinces are way higher than other receiving regions in China. And accordingly, an increase in

urban-rural income ratios could increase migration flows, the larger rural-urban income gap is, the stronger is the propensity of movement.

### 2.3 Theory

The most essential factor for urban-rural migrants and rural non-migrants in the perspective of education return is that the former ones have better stages to exert their knowledge. Labor market in rural China is quite unitary, agricultural industry still occupies the major share and non-agricultural sector mostly does not need high education. Education can not find its place to promote productivity due to the type and scale of industry. Nominal income in rural areas, on the other hand, of course is lower than it in urban areas because of its weak productivity and purchasing power. Economic development in China has enlarged the faculty and labor demand of most informal sectors in urban areas, vacancies with various sorts have absorbed rural labor force at all levels. Basic manual work becomes the buffer for rural migrants with low education and good physical condition to step in, and then formal sectors attract well-educated migrants. Incomes in urban informal sector is not necessary lower than it in formal sector, migrant workers in urban informal sector can actually have chances to climb up to higher labor market level that provide them with higher wages than formal sector. (Wang, Maruyama and Kikuchi 2000) The variety of urban economy activities is the key to redeem the investment on education and thus the return to incomes.

For the consideration of age, it plays the role of accumulation dimension in both experience and other soft power. Experience from a unity work type usually has less value than jobs with diversity, non-migrants in rural areas are often facing similar kinds of labor activities while for rural-urban migrants, their working or even life experience are more abundant because of the environment. Migrants with longer period of staying or people who decide to settle down in receiving regions are generally gained more accumulation in human connection than those temporary workers. Chances for these “old” migrants to get promotion and income raise are way higher, especially if he or she has low job changing frequency. Elder rural-urban migrants might have less ascension room than the younger ones, however, the return to age in income is still more delightful than it staying in rural areas. Urban areas with better pension system and appreciation of accumulation give higher income return in the case of age.

The theory behind income gap and migration location has a mutual relationship and is interactive with both sides. As at first, the internal migration linked to the structural requirements of modern industrial economies and dual labor markets in urban areas, significant wage difference is the most appealing inducement for rural-urban migration. (Massey et al 1993) With focusing developing metropolises and big cities around coastal areas over years under the state open-up policies, major industrialization and foreign direct investment are largely happened in those regions as well. Consequently, branches of corporations have provided huge amount of

predictions of employment availability with comparatively rich conditions, those attract more well-educated rural-urban migrants come to big cities rather than third-tier urban towns. Moreover, some companies even provide training programmes for candidates to achieve higher income in his or her later career life as it will also bring higher productivity return to the company itself. Migration location acts a critical character to influence the income gap between rural-urban migrants and rural-non migrants, also it is considerable eventful for local economy in receiving regions since the flows of migration is getting bigger and bigger. Supply-demand framework has more circulation and flexibility in better developed metropolises' labor markets because of its own selectivity in migration composition. The degree of income gap between migrants and non-migrants is determined by the choice of migration location and state development polices, but mostly is driven by the former factor in the micro level.

#### **2.4 Hypothesis**

According to the empirical evidence from previous studies and hint from theories behind internal migration in China, the indication of two research questions is suggesting that rural-urban migrants are better off in real income than rural non-migrants in the return to education and age, and real income gap between these two groups tends to be more divergence in well developed receiving regions than those less developed urban towns. So the testing hypothesis for this paper would be:

- 1) The return to education in real income is better off for rural-urban migrants than those for rural non-migrants in China.*
- 2) The return to age in real income is better off for rural-urban migrants than those for rural non-migrants in China.*
- 3) The real income gap between rural-urban migrants and rural non-migrants is deeper in coastal receiving regions and metropolises than it in hinterland and second-third-tier urban areas in China.*

#### **2.5 Limitation**

While divided nominal income into real income for rural-urban migrants and rural non-migrants according to different living expenses in different regions, it is, however, assumed all the individuals are following the regional living expenses where they stay. One of the initial reasons for rural-urban migrants to work in urban areas rather than rural regions is that they want to earn urban level nominal income, which is more money, and then send back to rural homes. As their nominal income is divided by urban living expenses and calculated into real income, chances are rural-urban migrants' consumption level might not be loyal to average urban living expenses. Usually migrants are more frugal and tend to save earnings as much as possible. Especially for those temporary rural workers, normal average consumption as urban residents is quite luxury for them. This, of course, can cause the limitation when talking about the real income gap between rural-urban migrants and rural non-migrants in terms of the education, age and migration locations. The gap



between migrants group and non-migrants group can be bigger since rural-urban migrants are generally having less consumption than average urban living expenses in the most cases.

### **3. Data**

#### **3.1 Source and Sample**

The data is provided by Inter-university Consortium for Political and Social Research, database merged two surveys took in 2002, one focus on rural individuals and the other concerns to rural-urban individual migrants. Since both of the research questions are related to income differences between rural-urban migrants and rural non-migrants, the testing sample will consider the observations within normal working age, regardless of the channel how individuals gain their incomes. The scale of sample covers 22 provinces and cities in China, except city Shanghai, which is the second largest receiving city back in 2000, (Fifth National Population Census of the People's Republic of China 2000) it includes most of the popular sending and receiving regions. The size of the sample is made by 13366 individuals with rural-urban migrants share 24%. In order to investigate the topic of real income gap between two groups in different migration locations, distinct life expense levels should also be taken into consideration. Thus Consumption Expenditure ratio is introduced to calculate real income in all hypothesis. The Consumption Expenditure of rural and urban households is cited from National Bureau of Statistics of China, being calculated same year as the survey. Consumption Expenditures are in detail to specific regions. (Appendix: Table 2)

The nature of this database is collected by interviews, so there might be biased in geographically due to the accessibility, but consider the fact that migration is not some random sample from population but rather very selective, far-reaching hinterlands are also not likely to have huge flows of migration. Missing data from Shanghai, however, might be a bias since it is the second largest receiving region when it comes to the internal migration in China. But this limitation would not affect the final reliability and representativeness on the return of education and age, since it only occupies 7% of total internal migration population in China in 2000. (Fifth National Population Census of the People's Republic of China 2000) It will, however, bring about deviation in hypothesis 3 when it comes to the rural-urban real income gap, as Shanghai is one of the most developed metropolises in China. From the sample of rural-urban migration, individual is only considered as "migrant" if he or she has left rural hometown for more than three months in a nature year, because some rural residents may have the possibility to seek extra work outside the residence place during the non-harvest seasons. Non-migrants, on the other hand, are defined as rural residents who have not left his or her own rural hometown more than three months in a nature year.

#### **3.2 Data Management**

In order to be confident about the analysis and results comparison between two groups, factors that could influence individual's income should be controlled as

much as possible. Variables should also be compatible and exist in both groups.

Dependent Variable:

*Income [ln(income) (real)]*

For rural non-migrants, the income is assumed as total personal wage, including both agricultural and non-agricultural activities. For rural-urban migrants, it is weighted as average monthly income from 2002. Rural non-migrants' total personal wage is measured yearly, so the number will be divided into 12 in order to coordinate the monthly income of rural-urban migrants. This variable will be used in logarithmed form, as it enables estimating relationships with elasticizes. However, this will create omitted observations if his or her income is zero. Consider the distinct living expense between rural areas and urban areas, as well as well-developed metropolises and less-developed second-third-tier towns, different consumption expenditure ratios will be taken into consideration. Nominal income will be calculated into real income before it is logarithmed.

Calculate average living expense for rural area, well-developed urban cities and less-developed urban cities according to China Statistical Database 2002:

$$\overline{\text{Living Expense}} = \frac{\sum_{n=i} \text{Living Expense}}{N}$$

<b>Less-Developed Urban</b>	9156.253
<b>Well-Developed Urban</b>	14972.17
<b>Rural Location</b>	3509.419

Using well-developed urban area living expense as the standard, so the ratio for less developed urban area would be:

$$9156.253/14972.17 = 0.612$$

The ratio for rural area would be:

$$3509.419/14972.17 = 0.234$$

So the real income will be calculated as:

<b>Less-Developed Urban</b>	a/0.612
<b>Well-Developed Urban</b>	b
<b>Rural Location</b>	c/0.234

A, b and c represent the nominal income in these three places and the dependent variable is logarithmed real monthly income, unit in RMB.

Showing logarithmed real income distribution in centiles, (Table below) the 10% percentile group individuals in total sample are sharing average logarithmed real income by 5.18, and the value of 20% percentile group is 5.87, which is 99.37% increase in real income than people from first group. The ratio of real income increase grows slowly as the percentile gets higher, and from 90% percentile to 100%

percentile, the difference of value jumps from 7.94 to 10.8, which indicates the final 10% of the population in total sample is enjoying 16.5 times higher income than those people in 90% percentile group. So for the variable  $\ln(\text{income})$ , the value is fairly distributed with the last 10% percentile of individuals having extreme high income than the others.

*Table: Percentile distribution of dependent variable  $\ln(\text{income})$  (real).*

Variable: $\ln(\text{income})$ (real)	
Percentile	Centile
0	-1.03
10	5.18
20	5.87
30	6.28
40	6.57
50	6.79
60	7.00
70	7.26
80	7.54
90	7.94
100	10.80

Independent Variables:

I: Key Dependent Variables:

*Individual Type*

It is a dummy variable labels whether observation is rural non-migrant or rural-urban migrants.

*Table: Percentile distribution of  $\ln(\text{income})$  (real) corresponding to independent variable individual type.*

In(income) and Individual Type			
Rural Non-migrants		Rural-urban Migrants	
Percentile	Centile	Percentile	Centile
0	-1.03	0	3.49
10	4.86	10	6.20
20	5.65	20	6.35
30	6.08	30	6.48
40	6.50	40	6.71
50	6.79	50	6.80
60	7.05	60	6.91
70	7.33	70	7.11
80	7.66	80	7.31
90	7.99	90	7.58
100	10.26	100	10.80

From the relation between dependent variable and individual type, clearly for rural non-migrants, the 10% percentile group is having 282% less in real income than the same group in rural-urban migrants, but the gap of same percentile groups between migrants and non-migrants is getting smaller and smaller. And the rural-non migrants' mean  $\ln(\text{income})$  value is exceeded rural-urban migrants' while reaching 50% percentile group, and keep leading until the 90% percentile. This indicates for 50% of the lower population in total sample, rural non-migrants are having less real income than rural-urban migrants, but things go the other way around while percentile achieves 50%, and rural non-migrants start to have more real income than rural-urban migrants, until the richest 10% percentile of population in both groups, migrants are better off about 71.6% in real income than it for non-migrants.

#### *Migration Location*

Together there are 22 counties and cities in sample, in order to investigate the different consequences between coastal or better developed regions and hinterlands, variable is created into dummy, as six places like Beijing, Zhejiang, Guangdong, Liaoning and Shangdong are divided into well-developed and the others be labeled as less-developed areas. For rural non-migrants, it is the province they are currently living, and for rural-urban migrants, it is the province they migrated to and living in 2002.

*Table: Percentile distribution of  $\ln(\text{income})$  (real) corresponding to independent variable location.*

In(income) and Location			
Well-developed (25.32% in total sample)		Less-developed (74.68% in total sample)	
Percentile	Centile	Percentile	Centile
0	-1.03	0	-1.03
10	5.52	10	5.10
20	6.14	20	5.81
30	6.55	30	6.20
40	6.81	40	6.48
50	7.13	50	6.71
60	7.48	60	6.90
70	7.73	70	7.15
80	7.96	80	7.40
90	8.28	90	7.73
100	10.26	100	10.80

For individuals living in well-developed regions, the real income is on average better than those staying in less-developed areas, and the tendency is increasing through the percentile. As the final 100% percentile group, average real income for people living in less-developed regions is actually 71.6% higher than people living in well-developed regions.

### *Education Years*

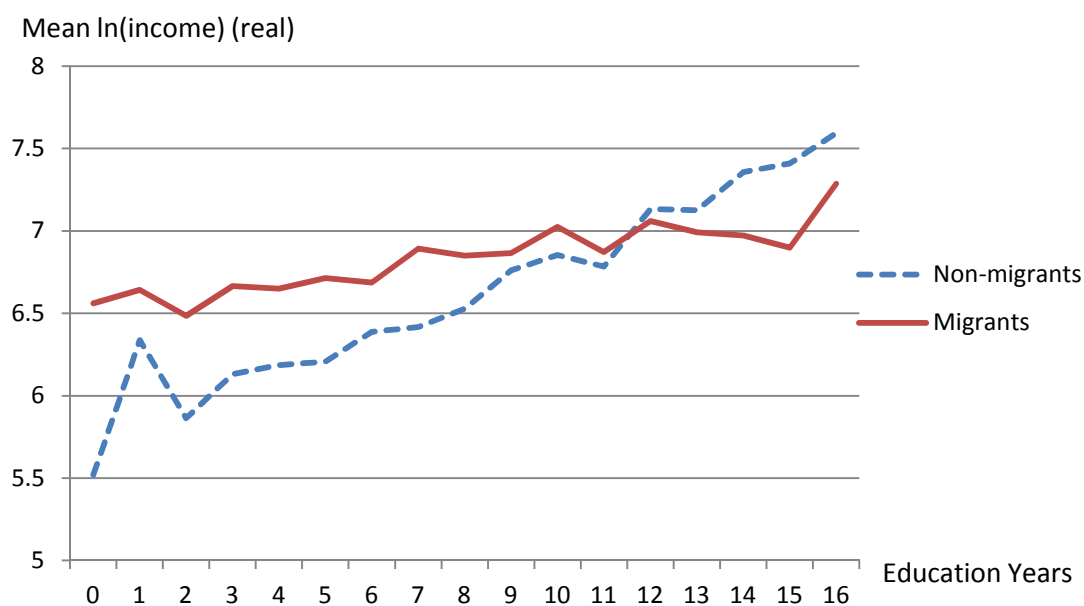
Total years of individuals' receiving education. From the testing sample, the scale of education years is from 0 to 16 years for both migrants and non-migrants, with mean value 7.86. For urban-rural migrants, the mean value of receiving education is 7.87 and for rural non-migrants, the mean education years are 7.86. (Appendix: Table 3) It seems there is no divergence on education years between migrants group and non-migrants group observed by mean values. However, there might be a possibility that for migrants, people could come from mainly two ends due to the dual labor market system in urban areas, which indicates very low educated migrants into physical work and well educated migrants into formal or highly skilled careers.

*Table: Percentile distribution of ln(income) (real) corresponding to independent variable education years.*

Variable: Education Years			
Rural Non-migrants		Rural-urban Migrants	
Percentile	Centile	Percentile	Centile
0	0	0	0
10	5	10	5
20	6	20	6
30	7	30	7
40	8	40	8
50	8	50	8
60	9	60	9
70	9	70	9
80	9	80	9
90	11	90	11
100	16	100	16

But by looking at the distribution of education years for both groups, the hypothesis that rural-urban migrants are polarized in receiving education is wrong. Both groups are evenly distributed and actually, they follow the same pattern of distribution in education years, which is about 80% of people in migrants group and non-migrants group are having middle school and lower than middle school education. The average education receiving years for top 10% individuals in both groups is the same, about 16 years.

Graph: Mean  $\ln(\text{income})$  (real) by education years between two groups.



For the relation between education years and  $\ln(\text{income})$ , migrants seem have a higher starting point than non-migrants, both of them are having increasing tendency of  $\ln(\text{income})$  as the increase of education years, but rural non-migrants begin to have higher return in real income than rural-urban migrants after the 12 years of education in this sample.

#### *Age and Age<sup>2</sup>*

Age of individuals in 2002. As the increasing of age, the return to income might have a diminishing return, same theory as Preston curve, income is believed to reach its peak while individuals turn to some certain age period, and then follows a decreasing trend with age. (Preston 1975) Hence introduce age square into independent variables is necessary. Age scale in this sample will be limited from 16 till 65, which is the common and legal age for working. The mean value of age in total sample is 35.86, for rural non-migrants, the number is 36.25 and for rural-urban migrants, mean age is about 34.66. (Appendix: Table 3) Migrants group overall on average, is two years younger than non-migrants group.

*Table: Percentile distribution of ln(income) (real) corresponding to independent variable age.*

Age	Mean ln(income) (real)	
	Non-migrants	Migrants
16-20	6.56	6.44
21-25	6.78	6.73
26-30	6.68	6.88
31-35	6.59	6.89
36-40	6.61	6.89
41-45	6.68	6.83
46-50	6.47	6.79
51-55	6.28	6.54
56-60	6.28	6.57
61-65	6.11	6.33

For the relation between age and real income between two groups, non-migrants gain more real income than migrants from age 16 to 25. This is probably because individuals from both groups under such age are committing physical labor activities, rural-urban migrants might be paid more on nominal income, but since the living expense is also higher, rural non-migrants would have more benefit on real income. But after the 26, migrants groups are having around 20%-35% more real income than non-migrants. Non-migrants face income diminishing return while reach 46-50, and migrants achieve the diminishing return on age 41-45.

## II: Control Variables:

### *Household Member Numbers*

Number of members in observation's household. Internal migration in China is usually a family decision, and family condition can influence individual's movement by migration location and staying period. Rural non-migrants' mean household population is around 2 while urban-rural migrants mean household population is approaching 3. It seems with a greater number of members in one household, individual is more likely to migrate. One of the unique characters about China's internal migration is that, most of rural-urban migrants will follow the pattern of former migration locus in their families. Almost 90% of migrants had family members, friends or other acquaintances from the home village at the destination before their arrival. (Kleinwechter 2012) Whether individual's family has members in receiving region or did one of the members has migrated is critical to later individual's moving decision. And with a higher number of members in household, individuals will also have a higher chance of migration.

### *Sex*

Dummy variable as male and female. From the beginning of spontaneous internal migration, the main composition of migrants is male. However, as later urban area expands its informal sectors, females are also being absorbed in textile factories, service sector and other non-physical labor market. In this case, female shares 42.9%

in 2002 migration sample.

#### *Marital Status*

Dummy variable as married and the others. The others include divorced, widowed and unmarried. Evidence in case study shows that for migrants, share of married status is relatively decreasing, especially for those well-educated migrants seeking jobs in big cities, single migrants are becoming the mainstream. (Wang, Maruyama and Kikuchi 2000) In the case sample, approaching 90% of migrant individuals are labeled as married, the ratio is even higher than non-migrant individuals. This indicates that by the time of 2002, married individuals are still the majority of migration population. It could also be explained by the fact that the mean age of the migration sample is almost 35, which is beyond the average marriageable age in China.

#### *Health Condition*

Dummy variable as very healthy/healthy or sub/under healthy. It is a very subjective variable as it only represents individual's personal perspective of his or her own feelings. However, it might affect his or her later income and migration location choices. Code health or very healthy as 0 and sub-under healthy as 1, with mean value 0.09 for rural-urban migrants and 0.11 for non-migrants, migrant individuals overall tend to be more health than non-migrants.

#### *Party*

Dummy variable as whether individual belongs to the Communist Party. Being part of Communist Party may have advantage in job seeking and later career promotion, especially in state-owned companies. Most individuals in both group are coded as not belong to the party.

#### *Minority*

Dummy variable as whether individual is minority or not. Minority merely shares less than 10% in Chinese total population. They contribute widely but highly concentrate in hinterlands. Chinese government has published some policies that provide priority and subsidies to minorities due to their scarcity population, however, the effect on income is not considerable. But it could be decisive to some specific work fields. There are only 8.6% of migrants and 8.8% of non-migrants being labeled as minority in 2002 sample case.

#### *Hukou Type*

Dummy variable as whether individual is living and working at the place his or her household registration is being registered. Assume all observations in rural individual sample are residence within the registered Hukou place, and in rural-urban migration sample, some are within and some are without. Hukou system, or Household Registration system, is a left over policy from planned economy period. It was used to control and restrict population migration at the first place, but began to lose its stint power after both market economy and state policy have been promoted and loosen. The main intention of including this variable is that at some places, rural Hukou type might face discrimination when finding work and locating income levels.

#### *Living Urban Years*



How many years individual has lived in urban areas by the year 2002. Regard rural non-migrants have lived in urban areas for 0 years, the faculty of this variable for rural-urban migrants is varied from 0 to 43 years. With the mean value 7.23, it is assumed that most rural-urban migrants move to urban areas temporary, most of them tend to leave and go back to rural hometown after a period of time working in urban areas.

Between dependent variable and independent variables, there appears no simultaneity so far and all observations are random samples from total population. From the variables distribution tables (Appendix: Table 3) and central tendency graphs, variable years of education is highly concentrated at 9, which is loyal to the reality that China has nine-year compulsory education. By looking at the variable years of education in frequencies between migrants group and non-migrants group, it shows both groups have the same pattern of distribution, which indicates the former hypothesis in variable description is not true. Years of education is not polarized at two ends for migrants due to the dual labor market in urban areas, on the contrary, both migrants and non-migrants have similar peak at 7-9 years of schooling and declining tendency at two ends. For variable age, 64% of populations in non-migrants group are under 40, the rate is reaching 81% for migrants. The share of young adults is way higher in migrants group than it in non-migrants group, although the difference in mean ages is only two years old between two groups.

#### 4. Methods

The theoretical model for this case would be:

$$\ln(\text{income}) = f(\text{individual type, location, education years, age, age}^2, \text{household member number, sex, marital status, Communist Party, minority, health condition, hukou type, living urban years})$$

The source of the database is reliable, the size of the sample is quite decent for measuring and representing the whole internal migration population in China, choosing variables have covered most essential factors when it comes to the individual income between two groups. However, missing data in Shanghai and other unobservable conditions could have effect on model's confident level. Hence the final significant level will be determined in 5%.

##### 4.1 Statistical Models

Multiple linear regression will be the statistical model of this cross-sectional data. By running Breusch-Pagan test for examining heteroskedasticity, results suggest robust standard errors. (Appendix: Table 5) Testing normality in residuals by using Jarque-Bera test, model 1 and 3 reject the null hypothesis and fail to have normality, only model 2's residuals are normally distributed. (Appendix: Table 7, 8, 9, 10) And checking multicollinearity by applying Variance Inflation Factor, all variables from all three models are fine to go. (Appendix: Table 6)

#### 4.1.1 Testing Model for Hypothesis 1

As the first testing hypothesis is that:

1) *The return to education in real income is better off for rural-urban migrants than those for rural non-migrants in China.*

According to the variables codebook, (Appendix: Table 4) set dummy variables to individual type with education years, make the prediction of income at same years of education by individual type, the comparison model would be:

$$\ln(\text{income}) = \alpha + \beta_1 \text{Individual Type} + \beta_2 \text{Location} + \beta_3 \text{Education Years} + \beta_4 \text{Education Years} * \text{Individual Type} + \beta_5 \text{Age} + \beta_6 \text{Age}^2 + \beta_7 \text{Household Member Numbers} + \beta_8 \text{Sex} + \beta_9 \text{Marital Status} + \beta_{10} \text{Communist Party} + \beta_{11} \text{Minority} + \beta_{12} \text{Health Condition} + \beta_{13} \text{Hukou Type} + \beta_{14} \text{Living Urban Years}$$

Hold other things constant, the prediction of income at different years of education by individual type with completely flexible specification can be predicted.

#### 4.1.2 Testing Model for Hypothesis 2

The second testing hypothesis is:

2) *The return to age in real income is better off for rural-urban migrants than those for rural non-migrants in China.*

For the relation between rural non-migrants and rural-urban migrants in terms of income and age, dummy variables can be set to predict income at same age by different individual type, the comparison model would be:

$$\ln(\text{income}) = \alpha + \beta_1 \text{Individual Type} + \beta_2 \text{Location} + \beta_3 \text{Education Years} + \beta_4 \text{Age} + \beta_5 \text{Age} * \text{Individual Type} + \beta_6 \text{Age}^2 + \beta_7 \text{Age}^2 * \text{Individual Type} + \beta_8 \text{Household Member Numbers} + \beta_9 \text{Sex} + \beta_{10} \text{Marital Status} + \beta_{11} \text{Communist Party} + \beta_{12} \text{Minority} + \beta_{13} \text{Health Condition} + \beta_{14} \text{Hukou Type} + \beta_{15} \text{Living Urban Years}$$

Same as variable years of education, precise investigation on different age can be predicted if control other things equal between two groups.

#### 4.1.3 Testing Model for Hypothesis 3

The third testing hypothesis is that:

3) *The real income gap between rural-urban migrants and rural non-migrants is deeper in coastal receiving regions and metropolises than it in hinterland and second-third-tier urban areas in China.*

Create dummy in terms of the individual type for variable location, the testing model would be:

$$\ln(\text{income}) = \alpha + \beta_1 \text{Individual Type} + \beta_2 \text{Location} + \beta_3 \text{Location} * \text{Individual Type} + \beta_4 \text{Education Years} + \beta_5 \text{Age} + \beta_6 \text{Age}^2 + \beta_7 \text{Household Member Numbers} + \beta_8 \text{Sex} + \beta_9 \text{Marital Status} + \beta_{10} \text{Communist Party} + \beta_{11} \text{Minority} + \beta_{12} \text{Health Condition} + \beta_{13} \text{Hukou Type} + \beta_{14} \text{Living Urban Years}$$

### 5. Results and Estimates

Table: Results from 3 regressions:

Dependent Variable	ln(income)		
	Regression 1	Regression 2	Regression 3
Independent Variable	Coef.	Coef.	Coef.
Individual Type	0.474*** 0.059	-0.264 -0.210	-0.705*** -0.041
Migration Location	-0.435*** 0.024	-0.439*** -0.024	-0.636*** -0.028
Migration Location*Type	/	/	0.966*** -0.004
Years of Education	0.082*** 0.005	0.067*** -0.004	0.066*** -0.004
Years of Education*Type	-0.052*** 0.006	/	/
Age	0.039*** 0.007	0.039*** -0.008	0.043*** -0.007
Age*Type	/	0.016	/
Age <sup>2</sup>	-0.001*** 0.000	-0.001*** 0.000	-0.001*** 0.000
Age2*Type	/	0.000	/
Household Population	0.079*** 0.010	0.080*** 0.011	0.085*** -0.009
Sex	-0.108*** 0.021	-0.104*** 0.021	-0.119*** -0.021
Marital Status	-0.054 0.034	-0.049 0.035	-0.046 -0.034
Communist Party	-0.273*** 0.037	-0.288*** 0.037	-0.261*** -0.037
Minority	0.376*** 0.037	0.381*** 0.037	0.354*** -0.036
Health Condition	-0.225*** 0.035	-0.227*** 0.035	-0.217*** -0.034
Hukou	0.033 0.026	0.030 0.026	0.036 -0.023
Living Urban Years	0.018*** 0.002	0.016*** 0.002	0.017*** -0.002
_Constant	5.484*** 0.162	5.619*** 0.184	5.692*** -0.16
<b>Number of obs</b>	13366	13366	13366
<b>Prob &gt; F</b>	0.0000	0.0000	0.000
<b>R-squared</b>	0.1099	0.1076	0.4966
<b>Root MSE</b>	1.1095	1.111	1.0908

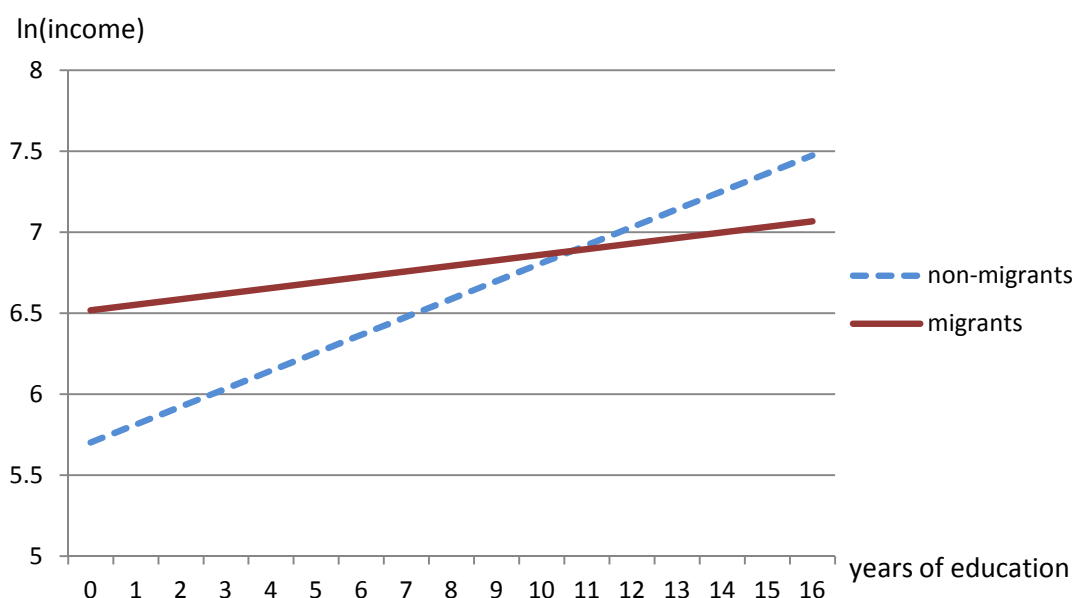
Note: \*\*\* indicates significance at 99% level, \*\* indicates significance at 95% level, \* indicates significance at 90% level.

### 5.1 Return to Education in Income

The regression results from hypothesis 1:

From the regression results, variable education years generally plays a positive role in income, which means for both migrants and non-migrants, with the increase of education receiving years, income would also follow raising up. As rural-urban migrants is coded as 1 in dummy variables, being a migrant is actually having less return to education years in income. As a matter of fact, according to the regression results, 1 year increase in education years is associated with 8.2% increase in  $\ln(\text{income})$  for non-migrants, and the same rate for migrants is only associated with 3% increase in  $\ln(\text{income})$ . Both of them are statistically significant at 5%.

The patterns of the return to education years in  $\ln(\text{income})$  for rural non-migrants and rural-urban migrants are:



Note: unit for education is per year.

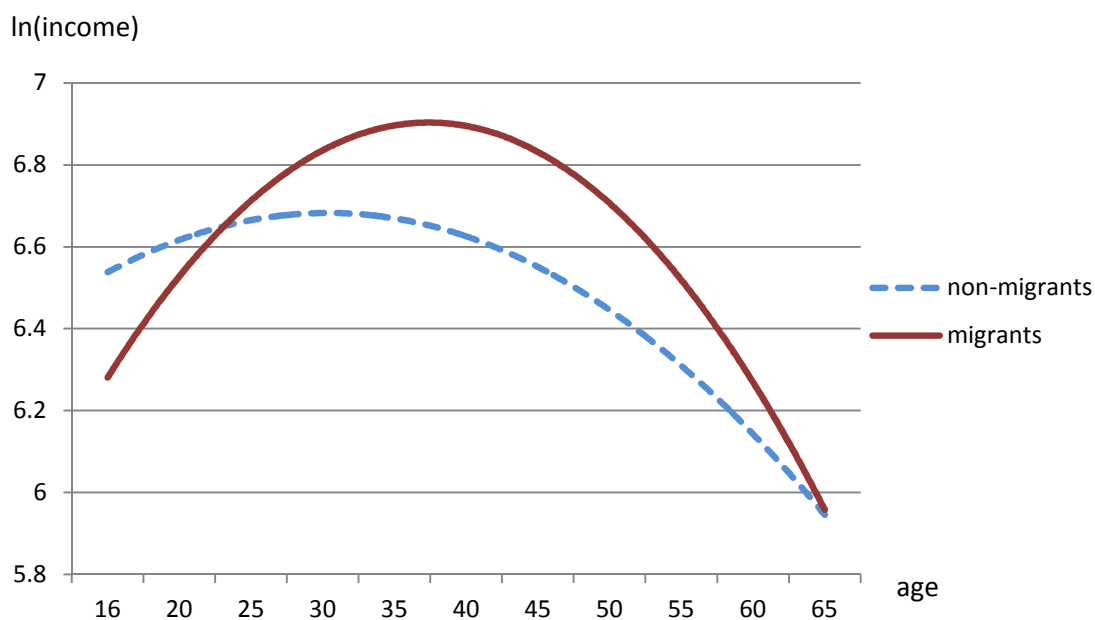
From the graph of return to education years in  $\ln(\text{income})$  for both groups, migrants pattern has less increase in  $\ln(\text{income})$  with years of education than non-migrants group. Non-migrants group, on the other hand, can be clearly seen a upward tendency of  $\ln(\text{income})$  as the increase of education years. Hold other things being equal, have same years of education to rural non-migrants and rural-urban migrants, migrants group is better off in income than non-migrants group at the beginning, but being exceeded when education years reaches 11. The return to education years in income is more favorable for non-migrants than migrants, non-migrants get more paid off in rate from education in income than migrants.

## 5.2 Return to Age in Income

The regression results from hypothesis 2:

The regression result shows there is a diminishing return to age and  $\ln(\text{income})$  for both migrants group and non-migrants group. For rural-urban migrants, the return to age in income is more favorable than rural non-migrants, as migrants group is coded as 1 in dummy variables, 1 year increase in age is associated with 5.4% increase in  $\ln(\text{income})$ , for non-migrants group, 1 year increase in age is only associated with 2.2% increase in  $\ln(\text{income})$ . The effect at mean in difference for migrants groups is -1.6% on real income and for non-migrants groups the ratio is 5.5% on real income. Rural-urban migrants and rural non-migrants seem to have same degree of diminishing return in age since the coefficient of dummy variable  $\text{age}^2$  is 0.

The pattern of the return to age in  $\ln(\text{income})$  between two groups would be:



Note: unit for age is per year.

By looking at the two group patterns, migrants group obviously is better off in the return to age in income than non-migrants group. Dependent variable  $\ln(\text{income})$  reaches its peak for migrants while his or her age arrived 40, and then going downwards. For non-migrants,  $\ln(\text{income})$  has reached its maximum value while individual is only around 35, then gradually dropping as the increasing of age. If holding other things constant between two groups, the return to age in income is more profitable for non-migrants and the beginning, but soon being surpassed by migrants group when individual reaches 25 years old, then both patterns follow going up with the increase of age. After migrants and non-migrants achieve their peaks and start to decrease with age, migrants group overall is still having more return in income than non-migrants group.

### 5.3 Income Gap in Terms of the Migration Location

The regression results from hypothesis 3:

As the regression table shows, being a migrant and non-migrant is absolutely having huge difference in  $\ln(\text{income})$ , and in terms of the migration location, dummy variable indicates non-migrants living in rural hinterlands are having 42.5% more  $\ln(\text{income})$  than migrants who move to urban hinterlands. And for those migrants who moving to better developed urban areas or metropolises, their  $\ln(\text{income})$  is 89.7% more than rural non-migrants in the same province. It shows if individuals are just migrating from rural hinterlands to less-developed urban towns, real income would not raise but decrease.

Calculate the different total effects for different type of individuals, here got table:

Individual Location	Total Effect
non-migrants in well-developed rural	-47.1%
non-migrants in less-developed rural	0%(R.C)
migrants in well-developed urban	29.8%
migrants in less-developed urban	-34.6%

From the table it can be seen that, the real income gap between non-migrants living in well-developed rural area to migrants living in well-developed is about 76.9% for the latter ones. And for migrants staying in less-developed urban areas to non-migrants living in less-developed rural regions, rural non-migrants are actually having 34.6% more real income than rural urban-migrants. If individuals moving from well-developed rural sector to less-developed urban sector, the real income will raise about 12.5%, and if one migration from less-developed rural areas to well-developed urban regions, the real income will raise about 29.8%.

The income gap between migrants in well developed urban cities and rural non-migrants in the same regions definitely have the hugest real income gap. Holding other things constant, non-migrants from well developed rural areas will be better off in income if they migrate to any type of urban areas, especially metropolises or coastal regions. For non-migrants in less developed rural regions, he or she will only have raise in income if the receiving place is well developed urban areas.

### 5.4 General Estimates

From the regression results, the return to education in income is apparently more favorable to rural non-migrants than to rural-urban migrants. Age factor, on the other hand, rural-urban migrants will have more return in income than it for rural non-migrants. Migration location weights economic and statistic significant at all regression models, which indicates if migrants choosing to moving to hinterland or second-third tier urban cities will face less return to education and age as those migrate to metropolises, and non-migrants living in hinterland rural areas are having much less paid off in terms of education and age than those non-migrants staying in coastal regions. Being a female is associated with negative effect on income when it

comes to either migrant or non-migrant, the return to education and age in income is less profitable than being a male. Control other things constant, sex factor determines females more or less get 10% less in income than male among all regressions. Not belong to minority is positively associated with income, however, it might be biased since there is less than 9% of total population are being labeled minority in the sample. Married individual seems better off than those not married in all regressions, and health condition is negatively connected to income if individual's personal feeling is sub or under healthy. Household population has positive effect on income for both migrants and non-migrants, more members in individuals' households, more income is related.

Back to the hypothesis, regression 1 shows if individual is migrant, he or she will actually has less return to education in income than non-migrants. The return to education in income is only better for migrants than non-migrants if years of education is less than 11 years, this simply says migrants with high school diploma or even higher degree would not be better off working in urban areas. Investment in human capital does not seem be paid off in later career life for migrants living in urban areas. Regression 2 indicates with the increase of age, the reaction of income for migrants and non-migrants are both significant, but it is more sensitive for rural-urban migrants than it for rural non-migrants. The coefficient for non-migrants is only 0.022 while for migrants, it reaches to 0.054. Regression 3 suggests that income gap between rural non-migrants and rural-urban migrants is indeed corresponding to migration location. Even take different living expense into account, compare earnings in real income rather than nominal one, it still indicates migrating to well-developed metropolises and first-tier coastal urban cities will have better pay back than those who move to less-developed urban towns. Thus the income gap between two groups is distinct depend on individuals' migration location.

Regression results denied hypothesis 1 that the return to education in income is better off for rural-urban migrants than those for rural non-migrants in China, it suggests the return to education in income is actually more favorable to rural non-migrants in a long run. And if holding other things constant, non-migrants' income would actually exceed migrants' if both of their education years are over 11. Hypothesis 2 is confirmed that when it comes to the age, the return in income is indeed better for rural-urban migrants than rural non-migrants. Real income gap between migrants group and non-migrants group is loyal to the hypothesis as well, expect one case that non-migrants living in hinterlands rural areas are actually enjoying better real income than migrants working in hinterlands urban regions.

## 6. Analysis and Discussion

Predict the return to education and age associate with real income between rural-urban migrants and rural non-migrants, interpret to elasticity by:

$$\varepsilon = \beta * \bar{X}$$

From the regression results of education years, assume variable years of education

by using the average value 7.86 years, it is predicted that for rural-urban migrants, 1% increase in education years, evaluated at 7.86, cause real income to increase by 0.24%, and for rural non-migrants, the ratio is about increased by 0.64%.

For the return to age in real income between two groups, using the mean value from the sample which is 35.86 years old, take the negative diminishing return into account, it indicates that 1% increase in age leads to 1.94% increase in real income for migrants, and 0.79% increase for non-migrants.

The difference is quite dramatic for both variables. Every one year increase in education for non-migrants can bring back  $\exp(0.052)$ , which is 5.3% more return to income than non-migrants. And one year increase in age is expected to have 3.3% higher return to migrants group than non-migrants group. Regression outcomes are having discrepancies to the former prediction hypothesis and theoretical considerations, investment in human capital such as education, brings about different consequences for rural-urban migrants and rural non-migrants as expected. No denying education is positively associated with real income, however, the return to education in income is more profitable to non-migrants rather than migrants. Migrating with less than 11 years of education for rural non-migrants is still being better off than just stay in rural hometowns, but moving to urban areas with higher education seems has the opposite effect, which leads to less income. Age, on the other hand, seems favorable to rural-urban migrants than rural non-migrants all along. Internal migration movement can pay back a higher rate of income than those who just stay in rural home towns with the same age. At this level, only concerns to income return, migration is generally a beneficial action for rural individuals, especially for those with lower education background.

The outcomes brought by the choice of migration location are more marginalized than any other factors. Choosing move from hinterlands rural area to coastal or metropolises is predicted to have 98.6% more return in income than move to second-third urban towns or hinterlands. Choosing move from coastal rural area to big cities or first-tier urban regions is predicted to have 98.6% more return in income than move to hinterland urban towns. Coincidentally on rates, both results suggests no matter which kind of location rural-urban migrants comes from, as long as they choose to migrate to metropolises or bigger cities, real income would be 98.6% more than they decide to move less-developed urban towns. This result is largely responded to the hypothesis that real income gap is wider between rural and well-developed urban areas than it between rural and less-developed urban regions. However, as it was mentioned in previous studies, migration population overall is a very selective group, it is not conducted under random samples. The individuals moving to big cities and better-developed regions are mostly with higher education or more proper working experience than those who do not. Long distance moving certainly will cost more money, and consequently living in metropolises will also lead to higher daily expenses, migrants will only consider and determine to move if he or she is confirmed to be able to afford these. Despite the ratio is approaching to double in income return than those migrants who move to less developed urban towns, the fact that rural-urban income gap is deeper between metropolises and rural



than second-third tier cities and rural is quite reasonable.

The reasons why age can get better return in migrants group rather than non-migrants group while education can not, and rural-urban income gap is huger between big cities and rural areas are closely related to the national economy development strategies. The pattern of spatial diffusion in economic policies has largely determined the pattern of migration. (Shen 2013) Institutional drivers like relaxation and reform in hukou system are no longer the most important factors, as a matter of fact, hukou system can not be regarded as the major biases when it comes to the internal migration any more. Results from regression 3 indicates hukou system is not even statistical significant on the problem of urban-rural income gap. And all three regression shows hukou is not even statistical or economic significant when it comes to the return of age and education. The subsequent increase in migration flows after 1978 was, and still is, driven by the rapid and unbalanced economic development in China.

Putting most focus on rural areas makes rural regions have less expansibility. Education can be only better redeemed in urban areas since it has no demand in rural industrial sectors, but the quality of the education matters more in this case. Complete education system with decent quality in urban areas enables urban residents more competitive than rural-urban migrants. Although most of rural areas have nine years compulsory education, quality of the education is way more under the urban with same years of education. The majority of the rural-urban migrants find it only accessible to jobs with lower education demand, since the better ones were taken or not qualified for them. And while welfare policies and pension system have been nicely sorted out in rural areas, relevant affairs are still blurry and behind in rural regions. Emerging and building urban areas, especially around coastal regions, has attracted foreign and domestic investments, industrialization and urbanization provided labor demand and thus dragged migration flows, later predictable rural-urban income gap becomes the biggest appealing motivation to spur more rural migrants into urban regions. With the migration labor, industries in urban areas will be accomplishing more growth. Rural-urban income gap plays a very tricky role in internal migration movement, it is both the motivation and explanation behind why rural-urban migrants are better off than rural non-migrants in terms of fiscal return.

Back to rural sending regions, migration is definitely doing great contribution to local economy, as well as to households in a micro level. As rural-urban migrants are largely temporary, they still have an intensive exchange with their hometowns and villages. Rural-urban migrants send back remittance while they are working in rural regions, and bringing back more advanced technology in farming or agriculture when they return home. Return migrants actually were found to have higher investments in production machinery, consumer durables and housing stock. (Kleinwechter 2012) The volume of local business created by return migrants might not be gigantic in actual number, but they are having a greater impact on local

economy than the number suggests.

Besides, the remittance migrants send back is becoming more and more crucial to their households. Rural residents usually use remittances for household health care and education due to the relatively high costs compare to their incomes. Whether other members in household could get education and medical treatment somehow, is largely depend on the receiving remittances send back by the migrants of the family.

Generally speaking, sample contribution and regression results suggest there is indeed no entry bias for rural-urban migrants when it comes to the education level. Individuals with different education years can fit into urban receiving regions just fine. However, the testing outcome indicates rural-urban migrants with higher education level are actually having less profitable real income than rural non-migrants with same years of education, it could be explained that for urban labor market, it mainly absorbs migrants labor force from lower level, and since rural-urban migrants receive education in rural hometowns, poor education quality is also a bias when it comes to the higher level labor market demands. The return to age in real income for rural-urban migrants and rural non-migrants are both statistical significant, but not economic significant as expected. Approach diminishing return among 40s for both groups suggests rural-urban migrants are not necessarily having better types of work than rural non-migrants. Although migrants group is better off than non-migrants group in the return of age factor, the profit in a long run is not that notable.

Variable living in urban years for rural-urban migrants demonstrates a positive relation with real income, however, consider the average living in urban years for rural-urban migrants is 7 years, the general effect on real income is appropriate but not considerable. Positive association between household population and real income emphasizes the importance of family in the whole internal migration movement. As it mentioned in previous studies that 90% of rural-urban migrants have family members or friends in receiving regions before their departure, it indicates the potential limitation of migrants' mobility and probably the unitary of their job types as well, since most of the jobs are introduced by former migrants in receiving regions. In this case, internal migration in China might not as dynamic as it was thought to be.

Although the predictable income gap is the genuine attracting pull factor for rural-urban migrants to move nor the real income gap, regression results proved rural-urban income gap is not groundless. As a matter of fact, choosing migrate to better developed urban areas or metropolises is predicted to have almost double real income than those choose move to second-third tier urban towns. This confirms the truth that top receiving regions in China are all coastal located or major big cities. And it seems the theory of rural households without migrants can gain through the increase in wages associated with a reduction of the village labor force is not that significant as the existing gap. (Kleinwechter 2012)

## 7. Conclusion

Spontaneous internal migration in China over two decades has proved the importance of demographic dynamic to macro and micro economies. This paper talks about the impacts on micro level by investigating the different consequences in real income between rural-urban migrants and rural non-migrants in China, estimating the return to education and age, as well as the choice of migration locations, the difference consequences in real income between two groups are confirmed less optimistic than thought.

Urban regions with various of economic activities have indeed provided the platform for rural-urban migrants to redeem their education better than it in rural hometowns, but due to the poor quality of the migrants' education, dual labor market in urban areas is mainly absorbing migrant labor in a lower level. Which means with the increase of education years, rural-urban migrants are not having a very profitable return to education in real income? As a matter of fact, regression result shows if holding other things constant, the return to education in real income for migrants is only better than non-migrants with less than 11 years of education. For the return to age in real income, rural-urban migrants are doing better than rural non-migrants, but both of them are having quite small economic significant response. The choice of the migration location is proved to be the most decisive factor when it comes to the rural-urban real income gap. Results show that no matter which rural regions migrants come from, moving to well developed urban areas or metropolises is associated with almost double return in income than those migrate to less developed urban towns. The real income gap between rural-urban migrants and rural non-migrants plays the motivation as well as the outcome of internal migration in China.

The tendency of internal migration has largely followed the economic development strategies in China both spatially and in time. However, internal migration is not only the side effect of national economic development, but on the contrary, migration flows supply the labor force for economic growth and the relation between them is mutual and complementary. The different consequences between real income for rural-urban migrants and rural non-migrants have lent the indication that emphasis should also be paid in micro level, as it can lead to further impact on the future development strategies.

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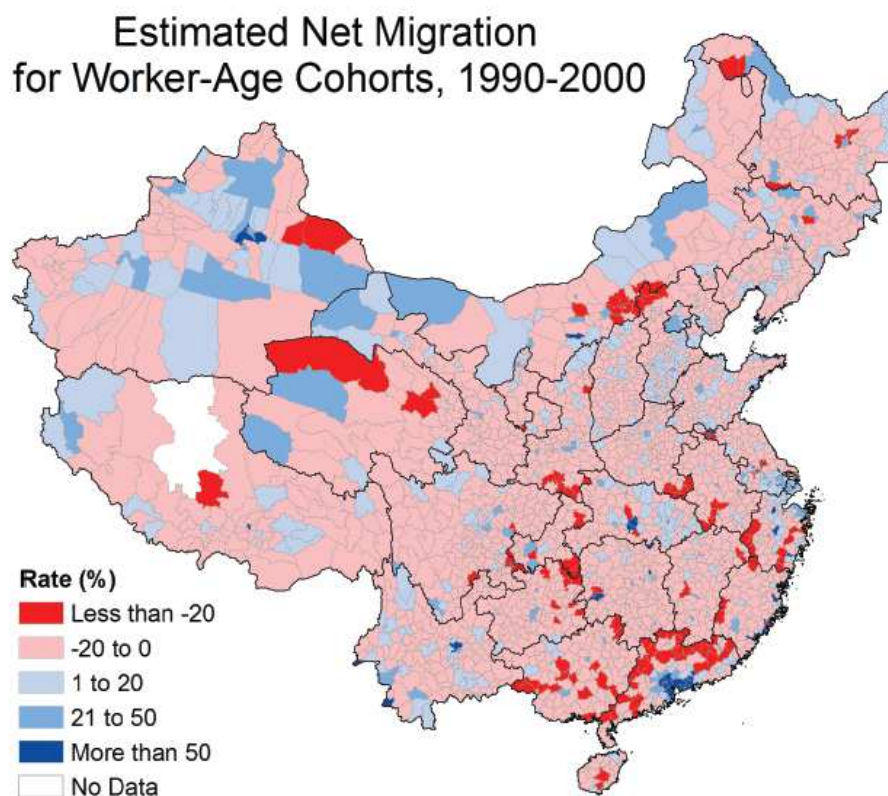
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## Appendix

## Graph 1



*Graph 1: Spatial distribution of estimated net migration rates for worker-age cohorts. A negative rate indicates net out-migration and a positive rate indicates net in-migration. Worker-age cohorts are aged 15-64.*

*Source: Robert G. Cromley, Dean M. Hanink and Avraham Y. Ebenstein, 2010.*

**Table 2:**  
**Per Capita Annual Consumption Expenditure of Urban and Rural Households by Region**  
 Unit: Yuan  
 Year: 2002

Less-Developed Urban	Expense	Well-Developed Urban	Expense	Rural Location	Expense
Hebei	9611.29	Beijing	19619.2	Beijing	7409.9
Shanxi	9056.81	Zhejiang	16758.43	Tianjin	4207
Inner Mongolia	9376.23	Liaoning	10222.44	Hebei	2743.4
Jilin	9517.49	Shandong	10784.45	Shanxi	2480
Heilongjiang	8508.72	Guangdong	17476.35	Inner Mongolia	2905.4
Jiangsu	11708.7	<b>Average</b>	<b>14972.2</b>	Liaoning	3232.7
Anhui	9175.2			Jilin	3044.4
Jiangxi	8831.04			Heilongjiang	3045.1
Henan	8619.94			Shanghai	10273.7
Hubei	10846.77			Jiangsu	4849.5
Hunan	10805.57			Zhejiang	7092.3
Guangxi	10585.1			Anhui	2599.3
Hainan	10618.06			Fujian	4898.5
Sichuan	10464.9			Jiangxi	3125.8
Guizhou	8931.61			Shandong	3721.2
Yunnan	11189.65			Henan	2481.7
Shaanxi	10311.95			Hubei	2987.9
Gansu	9713.69			Hunan	3685.2
Qinghai	9655.71			Guangdong	5228.5
Ningxia	9757.07			Guangxi	2956.8
Xinjiang	10931.88			Hainan	2743
Ningxia	9757.07			Chongqing	2505.6
Xinjiang	10931.88			Sichuan	2706.9
<b>Average</b>	<b>9156.25</b>			Guizhou	1843.4
				Yunnan	2290.9
				Tibet	1645.2
				Shaanxi	2750.5
				Gansu	2007.8
				Qinghai	2387.3
				Ningxia	2497.5
				Xinjiang	2445.6
				<b>Average</b>	<b>3509.42</b>

*Table 2: Per Capita Annual Consumption Expenditure of Urban and Rural Households by Region, 2002.*

*Source: National Bureau of Statistics of China, 2012.*

Table 3:

<b>Migrants obs. : 3247</b>
<b>Non-migrants obs. : 10119</b>

<b>Migration Location</b>	<b>well-developed urban</b>	<b>less-developed urban</b>
Migrants	19.13%	80.87%
Non-migrants	27.31%	72.69%
<b>Sex</b>	<b>male</b>	<b>female</b>
Migrants	57.1%	42.9%
Non-migrants	73.26%	26.74%
<b>Marrital Status</b>	<b>married</b>	<b>the others</b>
Migrants	90.27%	9.73%
Non-migrants	73.9%	26.1%
<b>Party</b>	<b>yes</b>	<b>no</b>
Migrants	3.08%	96.92%
Non-migrants	12.19%	87.81%
<b>Minority</b>	<b>yes</b>	<b>no</b>
Migrants	8.56%	91.44%
Non-migrants	8.84%	91.16%
<b>Health Condition</b>	<b>very healthy or healthy</b>	<b>under or sub health</b>
Migrants	91.01%	8.99%
Non-migrants	88.68%	11.32%
<b>Hukou</b>	<b>within registered place</b>	<b>without registered place</b>
Migrants	30.89%	69.11%
Non-migrants	100%	0%

	<b>Min</b>	<b>Max</b>	<b>Mean</b>
<b>Years of Education</b>			
Migrants	0	16	7.87
Non-migrants	0	16	7.86
<b>Age</b>			
Migrants	16	65	34.66
Non-migrants	16	65	36.25
<b>Household Population</b>			
Migrants	1	9	2.77
Non-migrants	1	9	2.05
<b>Living Urban Years</b>			
Migrants	0	43	7.23
Non-migrants	0	0	0

Table 3: Variables distribution for rural-urban migrants and rural non-migrants.



**Table 4:**

<b>Variable/Dummy Code</b>	<b>0</b>	<b>1</b>
<b>Individual Type</b>	rural non-migrant	rural-urban migrant
<b>Location</b>	coastal and well-developed regions	hinterlands and less-developed regions
<b>Sex</b>	male	female
<b>Marital Status</b>	married	divorced, widowed and unmarried
<b>Communist Party</b>	yes	no
<b>Minority</b>	yes	no
<b>Health Condition</b>	very healthy or healthy	under or sub healthy
<b>Hukou Type</b>	living in registered place	not living in registered place

*Table 4: Code book for dummy variables.***Table 5:**

Breusch-Pagan test for heteroskedasticity:

	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>
<b>Chi2(1)</b>	311.11	301.23	311.11
<b>Prob&gt;Chi2</b>	0.0000	0.0000	0.0000

Ho: Constant variance

Variables: fitted values of ln(income)

Results: reject null hypothesis, module is suffering from heteroskedasticity.

*Table 5: Breusch-Pagan tests for three models.*

**Table 6:**  
Variance Inflation Factor for testing multicollinearity:

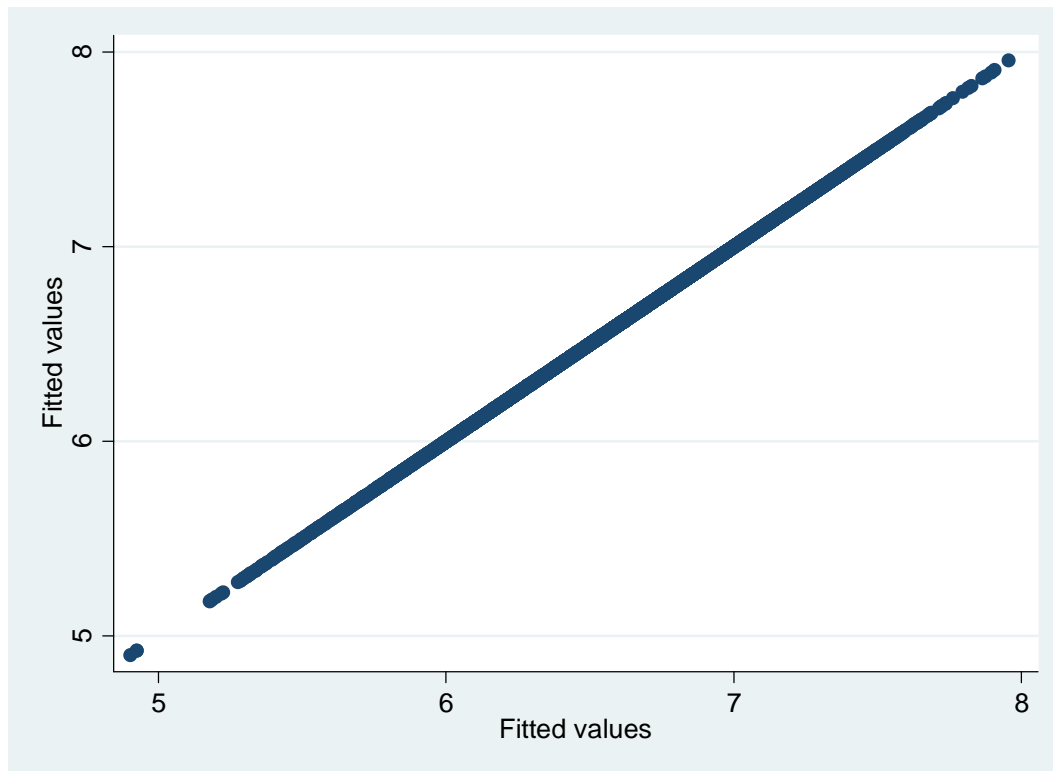
Variable	Model 1		Model 2		Model 3	
	VIF	1/VIF	VIF	1/VIF	VIF	1/VIF
age	69.29	0.01	82.07	0.01	68.75	0.01
age*type	/	/	639.99	0.00	/	/
age_square	59.22	0.02	68.83	0.01	58.78	0.02
age2*type	/	/	179.72	0.01	/	/
individual type	13.47	0.07	165.72	0.01	8.36	0.12
location*type	/	/	/	/	5.29	0.19
education*type	10.38	0.10	/	/	/	/
hukou type	2.71	0.37	2.72	0.37	2.71	0.37
living urban years	2.61	0.38	2.76	0.36	2.61	0.38
marital status	2.43	0.41	2.47	0.40	2.43	0.41
household member no.	1.93	0.52	2.18	0.46	1.91	0.52
sex	1.19	0.84	1.19	0.84	1.19	0.84
education years	1.57	0.64	1.15	0.87	1.15	0.87
party	1.16	0.87	1.15	0.87	1.05	0.95
health	1.05	0.95	1.05	0.95	1.15	0.87
location	1.05	0.95	1.05	0.95	1.32	0.76
minority	1.01	0.99	1.01	0.99	1.01	0.99
<b>Mean VIF</b>	12.08		76.87		11.27	

*Table 6: Variance Inflation Factor for three models.*

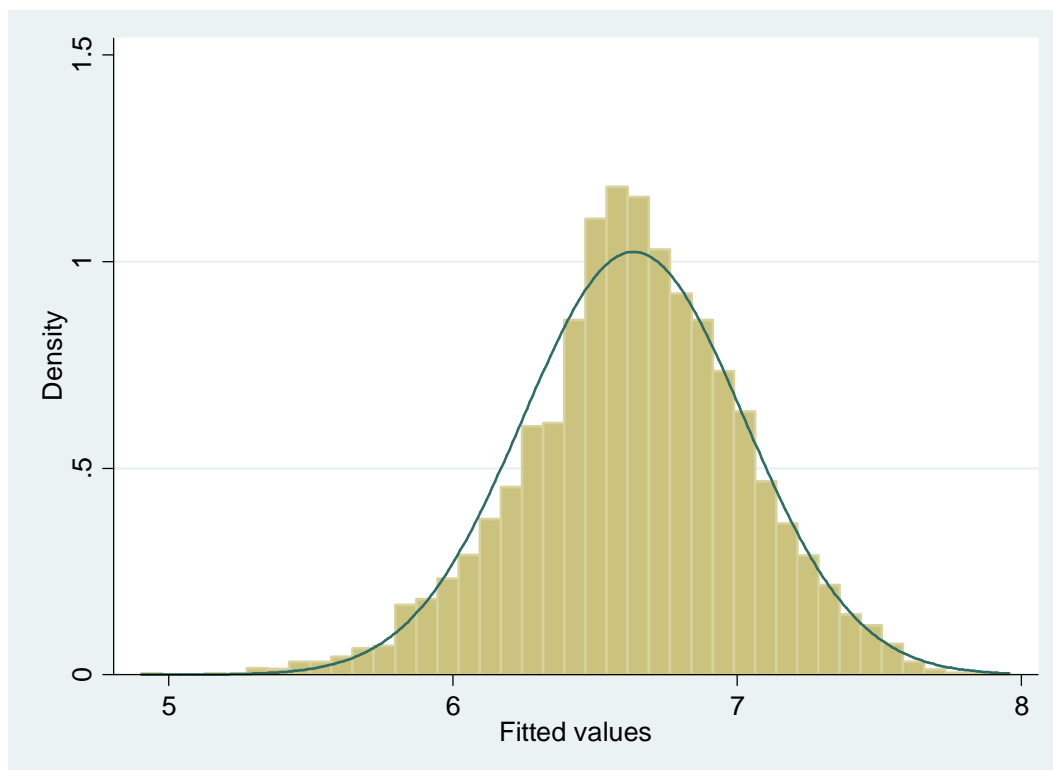
**Table 7:**  
Jarque-Bera tests for normality:

	Model 1	Model 2	Model 3
<b>Jarque-Bera Test Value</b>	6670.75	53.91	7492.20
<b>Jarque-Bera Critical Value (df=100)</b>	124.3	124.3	124.3
<b>Whether Reject Normality</b>	Reject	Fail to Reject	Reject

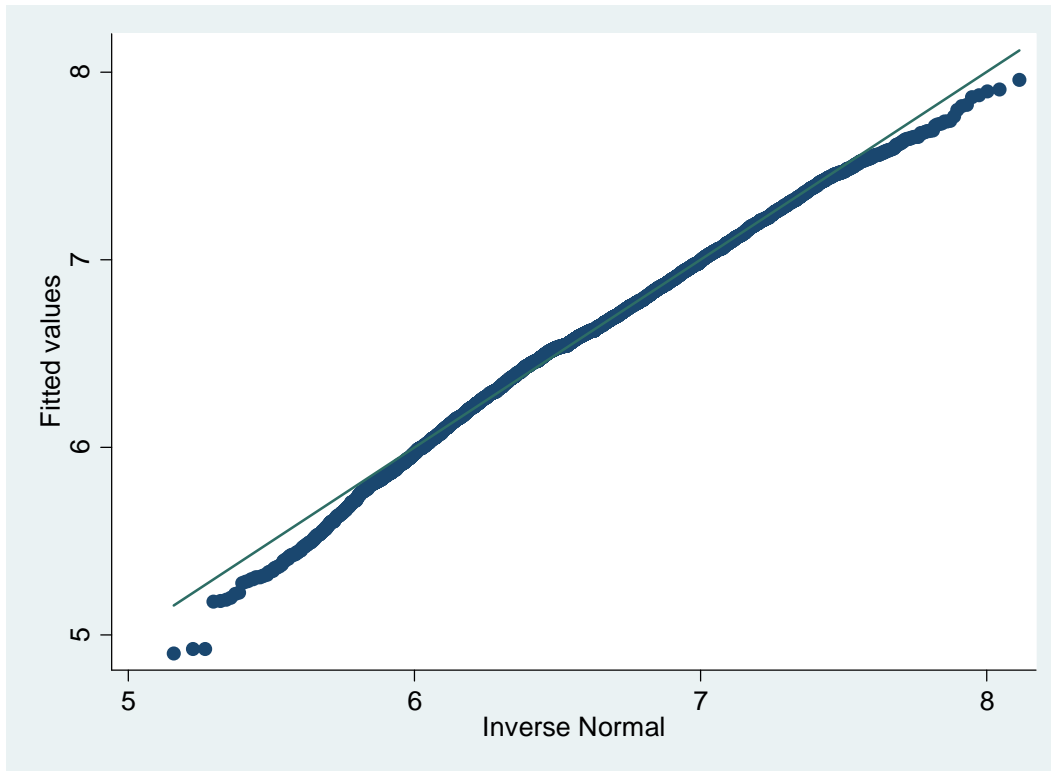
*Table 7: Jarque-Bera tests for three models.*

**Graph 8:**

Two way scatter plot of residuals and yhat.



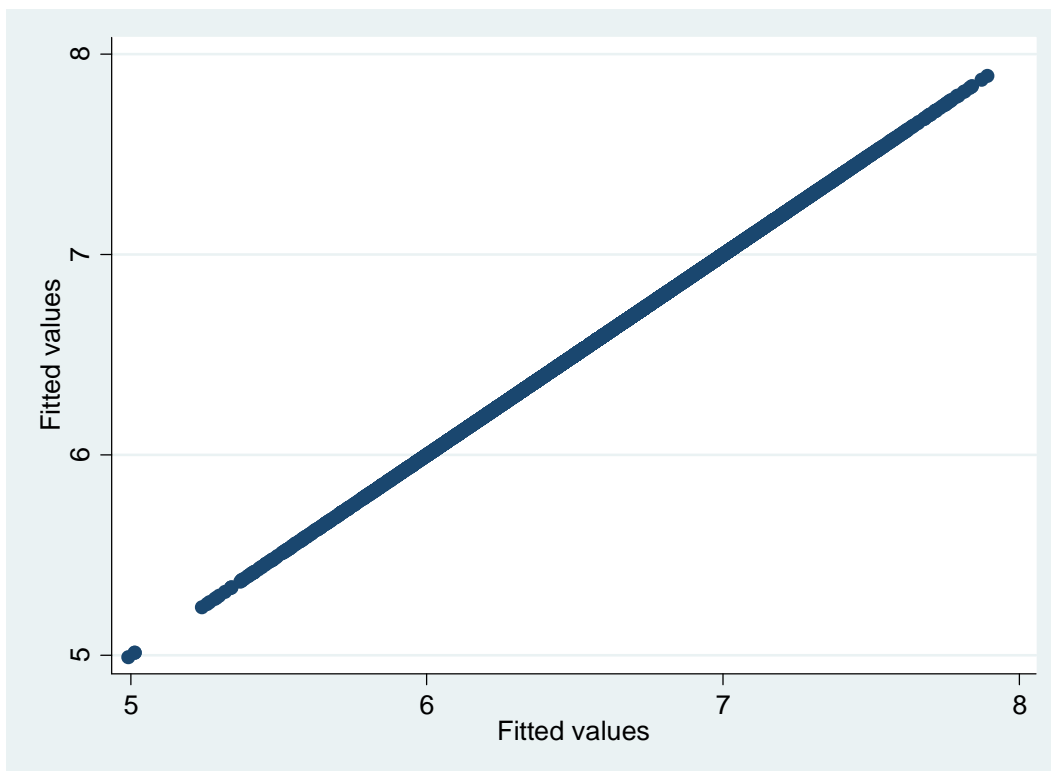
Histogram of residuals.



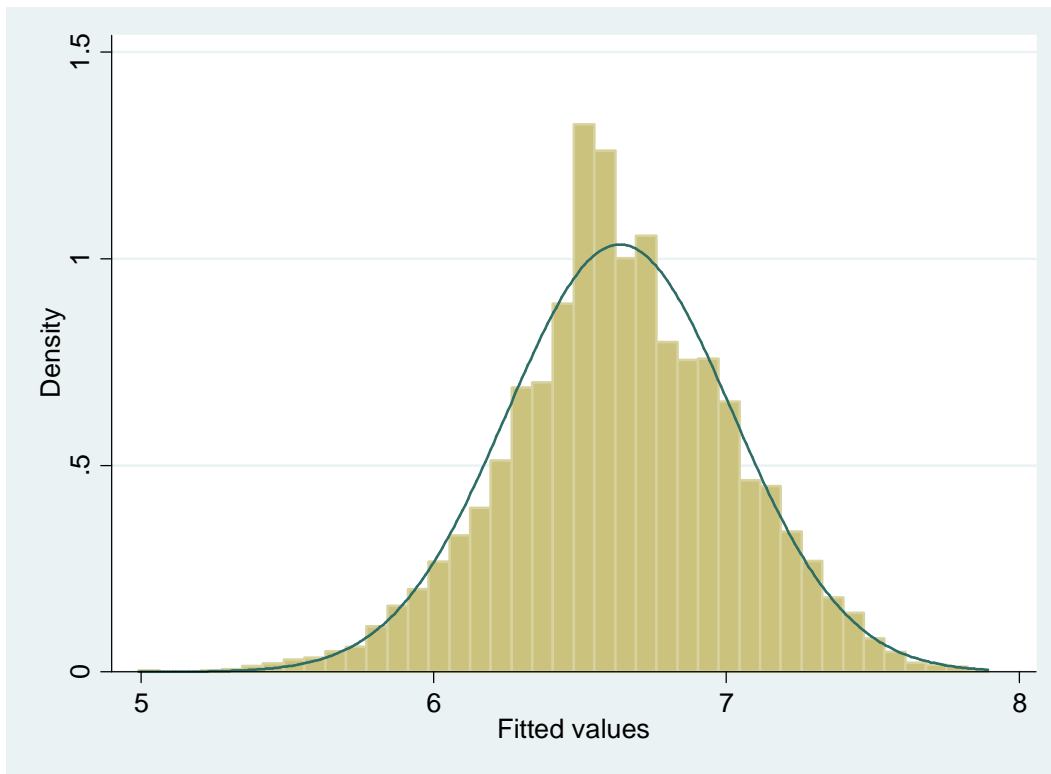
Quantiles of residuals against quantiles of normal distribution.

*Graph 8: Model 1 Normality Tests in Residuals.*

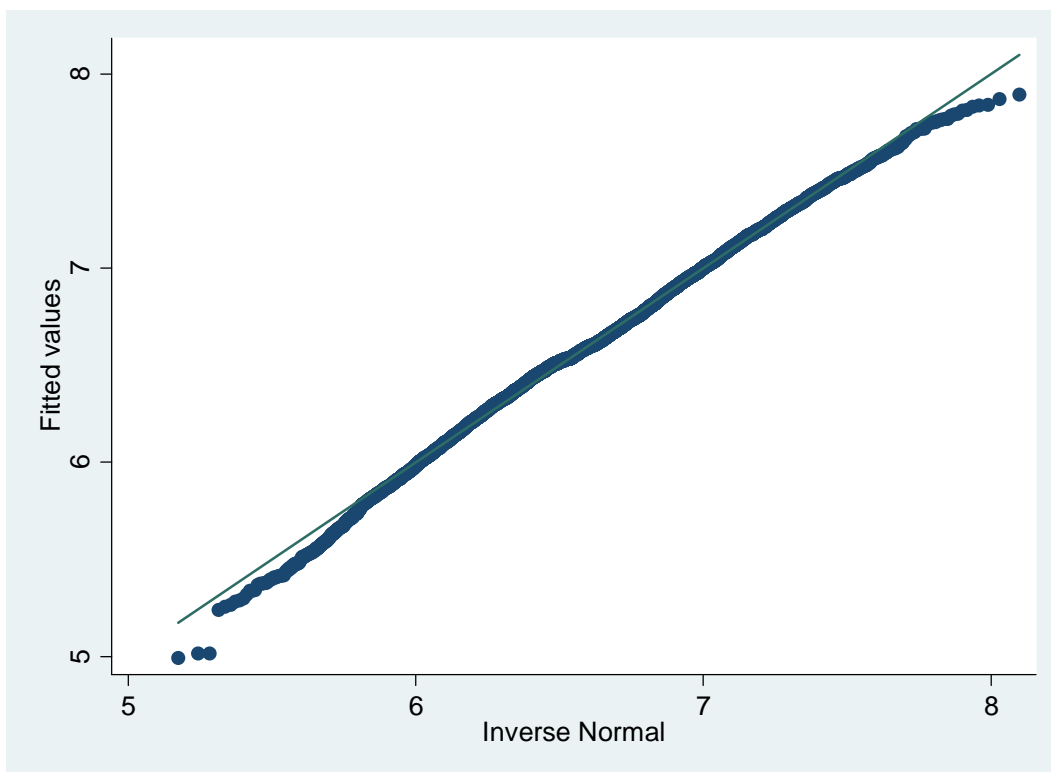
**Graph 9:**



Two way scatter plot of residuals and yhat.

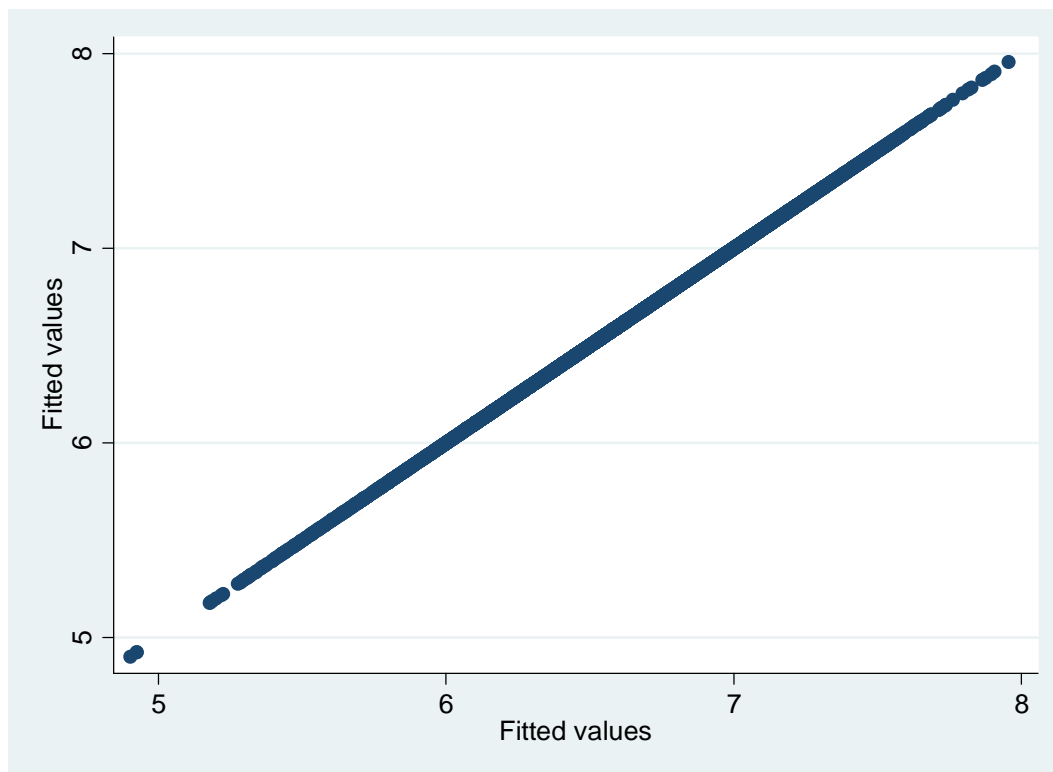


Histogram of residuals.

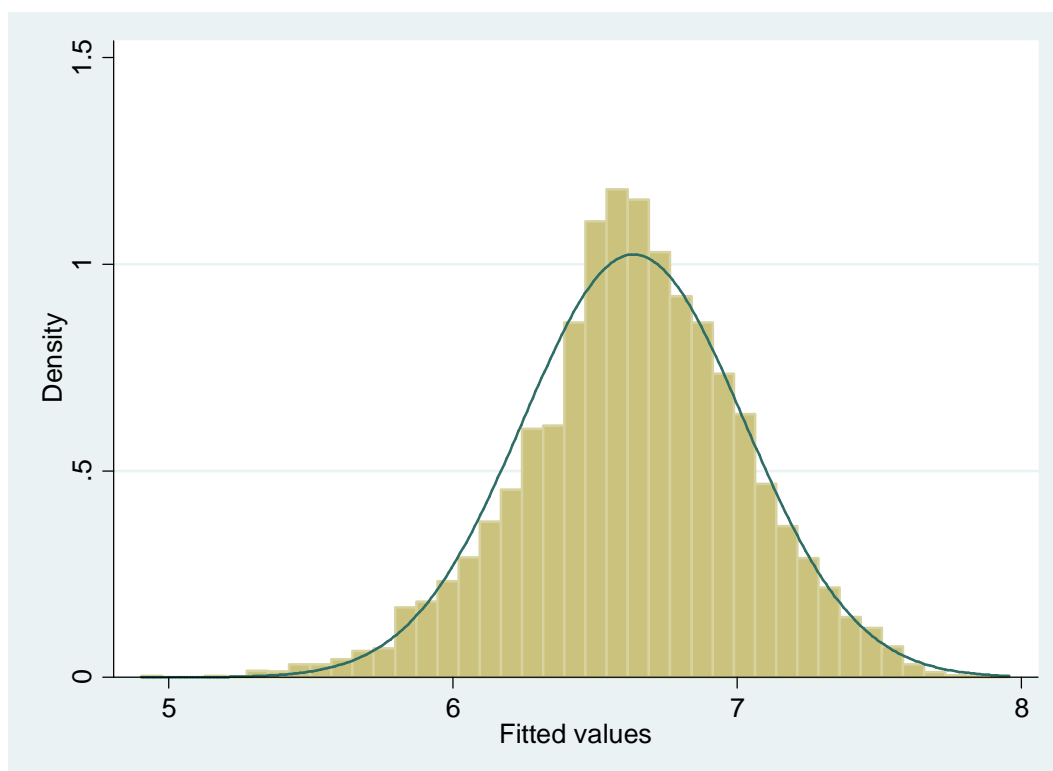


Quantiles of residuals against quantiles of normal distribution.

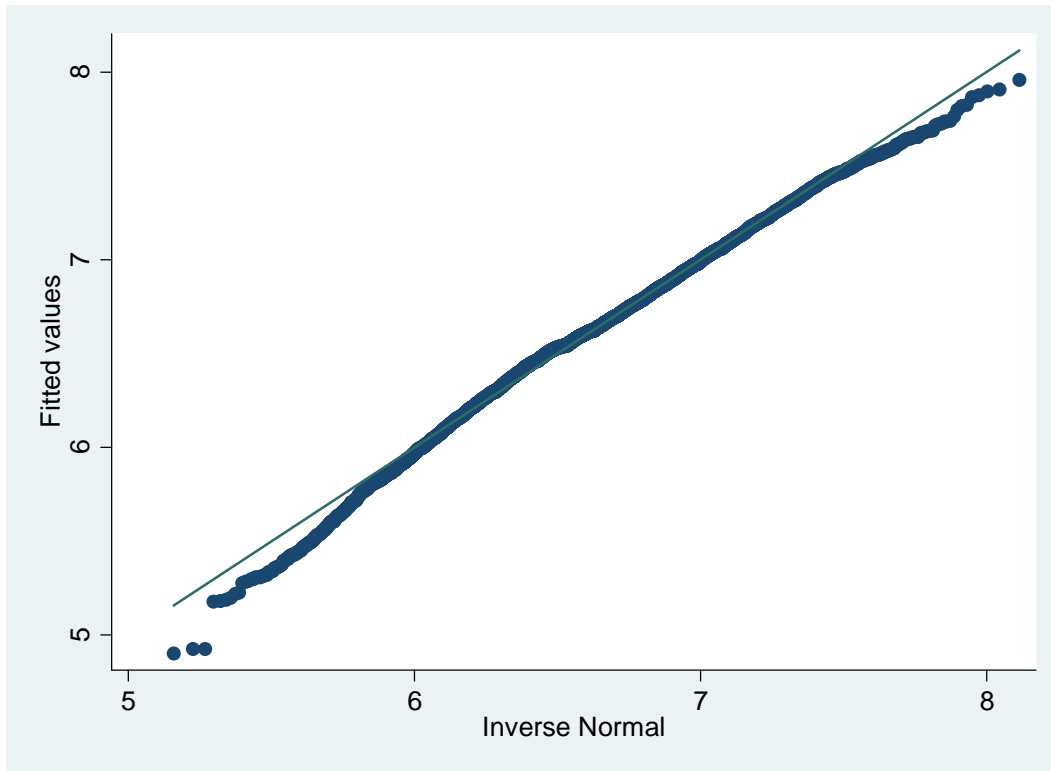
*Graph 9: Model 2 Normality Test in Residuals.*

**Graph 10:**

Two way scatter plot of residuals and yhat.



Histogram of residuals.



Quantiles of residuals against quantiles of normal distribution.

*Graph 10: Model 3 Normality Test in Residuals.*