Available online www.jocpr.com

Journal of Chemical and Pharmaceutical Research, 2014, 6(3):689-696

Research Article

ISSN : 0975-7384
CODEN(USA) : JCPRC5

Social decision-making index system of homestead transference based on the practice of Eastern China

Yang Jie[1] and Wu Guangdong[2]

[1]*School of Economics and Management, Tongji University, Shanghai, China*
[2]*School of Tourism and Urban Management, Jiangxi University of Finance and Economics, Nanchang, China*

ABSTRACT

This article aims to study the decision-making regarding homestead transference from the point view of public decision choice theory and try to build the homestead transference Social Choice Theory index system from the perspectives of economy, society and ecology etc. and on the basis of the practical data collected from two provinces and three cities of China. And then according to the research on homestead transference in Shanghai Fengxian district, analyze and evaluate the homestead transference decision-making by means of the Social Choice Index System proposed in this article, so to bring forward the related policy suggestions.

Key words: Urbanization; Homestead Transference; Social Choice Theory; the Prospect Theory

---

INTRODUCTION

Urbanization is an inevitable trend of the economic society development. The development of urbanization can not only bring dramatic changes in social and economic relations, but also accelerate the fundamental reformation of land use in urban and rural areas. Homesteads transference in rural area, especially in the joint section between city and countryside, is a very important and unavoidable part of the urbanization process. To some extent it reflects the city development and the economy advancement of the rural area, but on the other hand, some practical problems such as the social security and employment pressure regarding the rural residents come after. Homesteads transference has significant and profound influences to the society so it should be extremely discreet when carrying it out. So to build a decision making index system of homesteads transference is a way to improve the decision of homesteads transference more scientifically and more objectively.

THE INDEX SYSTEM

The objective environment of decision-making for homesteads circulation includes natural, economic, social and institutional conditions to which the decision-making is related. In order to realize the maximum social benefits of homesteads circulation, we shall not only consider the homestead itself but also take the local economy developing level, social situation and natural conditions into account. Therefore, when building the homesteads circulation decision-making index system, this article intends to build it from the perspectives of economy index, social index, natural endowments index and ecological index on the basis of the space-time law, social decision-making deciding factors and identification towards them.

Due to the vast varieties of factors affecting the social decisions of homesteads circulation, how to choose 3 levels of indicators to build the index system reasonably is the critical issue which needs to be solved during the decision-making process. This paper builds 40 fundamental indexes on the basis of five level 1st indexes, which are population, economy, society, natural endowments and ecology. Furthermore, by means of combining studies on related documents and taking good advantages of the information gathered from the research on two provinces and three cities, and further screening the circulation decision-making indexes, then removing those factors not significantly affecting the final decisions, the article obtains the following index system (table 1).

Table 1 homesteads circulation social decision-making index system

	Level 1	Level 2	Level 3
Homesteads Circulation Social Decision-making Index System	Population index	Total amount	Total population amount in village
			Total households amount in village
		Employment structure	Non-agricultural employment rate
		Population urbanization	Population urbanization proportion
		Population houses needs	Farmers' needs to divide and live apart
	Economic index	Income level	Household annual average income
			Per capita annual income of the contracting land
	Social index	Security ability	Urban social security participants amount
			Per capita annual bonus
	Natural endowments	Location	Landform
			Distance from commercial service center
		Comprehensive house situation	Building time
			Average household homestead area
			Average household living area
			Unoccupied house-rate
			Lease rate
		Contracting land factor	Average household land area
		Other collective construction land using factors	Total area of the village
			Collective construction land use right transfer proportion
	Ecological index	Ecology factors	Expected new added green land
			Pollution degree
			Whether to be an area where natural disaster usually happen or not

Table 2 Calculation way of homesteads circulation social decision-making variable values

number	Index	Variable value	unit	Calculation way	Affecting direction
1	Total population amount of the village	X_1	person	Total population amount of the village	-
2	Total household amount of the village	X_2	household	Total household amount of the village	-
3	Non-agricultural employment rate	X_3	%	Non-agricultural employment population/total population amount	+
4	Population urbanization rate	X_4	%	Non-agricultural population/total population amount	+
5	Farmers' needs to divide and live apart	X_5	%	Single adult population/total population	+
6	Household annual average income	X_6	Rmb	Average annual income of each household in the village	+
7	Per capita annual income from the contracting land	X_7	Rmb	Average annual income from the contracting land of each household in the village	-
8	Social security participants amount	X_8	Person	Total population who has the rural or urban social security account	+
9	Per capita annual bonus	X_9	Rmb	The annual collective income/total population of the village	+
10	landform	X_{10}		To judge according to the landform types	-
11	Distance from commercial service center	X_{11}	Km	The distance from the commercial service center area	-
12	Building time	X_{12}	Year	The average building time among all the houses in the village	-
13	Average household homestead area	X_{13}	M^2	The average area value of all the homesteads in the village	+
14	Average household living area	X_{14}	M^2	The average value of all the households living area in the village	+
15	Unoccupied house rate	X_{15}	%	Non-permanent residential population/total population	+
16	House Lease rate	X_{16}	%	Lease households/total households	+
17	Average household contracting land area	X_{17}	Mu	The average value of all the households contracting land area	-
18	Total area of the village	X_{18}	Mu	Total area occupied by the village	+
19	Collective construction land use right transfer proportion	X_{19}	%	Township enterprises amount, scale, occupation area etc	+
20	Expected new added ecological green land	X_{20}	%	The proportion of green area and total area	+
21	Pollution degree	X_{21}		Includes the pollution extent to atmosphere, water, soil etc.	-
22	Whether to be an area where natural disaster usually happen or not	X_{22}		Includes flood, water and soil erosion, earthquake etc	+

P.S. In the table, '-' represents positive index, the smaller it is, the bigger probability is. '+' represents negative index, the bigger it is the bigger probability is.

Based on the goal of homesteads circulation social decision-making, this article analyzes the calculation way of the

indexes and their impact on the decision-making directions. Refer to the table 2 for details.

It is noteworthy that when judging if the index belongs to benefit index or cost index, this article sets off from the perspective of social decision-making. Therefore, differences must exist between the judging criteria and normal cost-benefit judging criteria. For instance, from the social decision-making point view, average household homestead area and average household living area indexes reflect the collective potential volume, the bigger the index is, the bigger the circulation probability is. However, to analyze from the cost and benefit perspective, the compensation cost increases following the area, so it will appear that bigger index value causes smaller circulation probability.

DECISION MODEL BASED ON THE SOCIAL CHOICE INDEX SYSTEM

Based on the above discussion, most of the decision-making theories have their own limitations, because all those theories and measures are built on the basis of rational person and optimal decisions. However, the prospective theory introduces psychology into the undefined decision-making process, taking limited rationality as the precondition, assuming that people will take different behaviors when encountering uncertain risks, benefits and lost in different situations, and the behavior choices are not up to the expected absolute value but depend on the relative amount. In fact, the relative measurement matches with human's behavior judgment more than the absolute measurement. Therefore, to introduce the prospective theory to be the basis of the evaluation is able to better reflect the decision-making body behavior's risk preference and loss aversion psychology, to fully reflect the reacting process among all the indexes. Hence, this article applies prospective theory to study homesteads circulation social decision-making issue, and this can better reflect limited rational person's decisions in front of uncertain risks, thereby enhancing science and objectivity of the decision-making behaviors and playing as a guide for the homesteads circulation social decision-maker to finalize the decisions under uncertain risks.

According to the prospect theory, the decision-making process is divided up into two stages, editing and evaluation. Editing stage is to organize and analyze each different kind of possible result, and appropriately simplify it to facilitate the following evaluation and selection. The editing phase involves benchmark selection, value function calculation and decision weighting function calculation. While during the evaluation stage, decision-makers should assess the results obtained from the editing stage and chose the most prospective plan to implement. This stage includes alternatives prospect value calculation and selecting the plan which has the highest value to be the final decision.

In the research of homesteads circulation social decision-making, apart from the study on the establishment of index system, another most important content is the value assignment for index weighting. According to the related research, the methods to define index weighting mainly include subjective assignment and objective assignment ways. The former means to determine the weightings according to the evaluators' emphasis extent on each index, such as level analysis method and expert experience assessment method. The objective assignment method means to determine the weighting values on the basis of the original data connection degree or the information provided by each index, such as entropy value method, factor analysis method and multiple correlation coefficient method. Considering that the obvious value assignment differences caused by selecting different experts with different experiences will create unstable result, this article is going to apply the subjective analyzing method.

The homesteads circulation social decision-making index system includes cost index, benefit index and interval index. Those indexes could be possibly independent, or influenced by each other and even self-related. Therefore, this is a multi-attribute and multi-objective gray system's comprehensive evaluation process. This article chooses prospective theory as the basis of evaluation to fully reflect the interaction process among those factors, introducing gray rational theory to eliminate the impact between these indexes. Refer to the following steps for the entropy method to calculate the level 2 index's weighting to get rid of the influences caused by subjective scoring.

(1) Dimensionless indexes

Apply [-1, 1] linear transformation operator on the basis of rewarding the good and punishing the bad: if the index value is higher than the average level assign positive value from 0 to 1, otherwise give the negative value from -1 to 0, as follows:

$$r_{ij}=\begin{cases}\dfrac{x_{ij}-Z_j}{\max\{\max_j(x_{ij})-Z_j,\,Z_j-\min_j(x_{ij})\}}\\[2ex]\dfrac{Z_j-x_{ij}}{\max\{\max_j(x_{ij})-Z_j,\,Z_j-\min_j(x_{ij})\}}\end{cases}$$

x_{ij} -- Real value of index $Z_j=\frac{1}{n}\sum_{i=1}^{n}x_{ij}$ --average value of each sample

As for the homesteads circulation social decision-making index system built in this article, cost or benefit types of the indexes are listed in table 3.

Table 3 homesteads circulation social decision-making model variable type

Number	Index	Variable code	Variable type
1	Village total population	X_1	↓
2	Village total households	X_2	↓
3	Non-agricultural employment rate	X_3	↑
4	Population urbanization proportion	X_4	↑
5	Farmers' needs to divide and live apart	X_5	↑
6	Household annual average income	X_6	↑
7	Per capita annual income from the contracting land	X_7	↓
8	Social security participants amount	X_8	↑
9	Per capita annual bonus	X_9	↑
10	landform	X_{10}	↓
11	Distance from commercial service center	X_{11}	↓
12	Average building time	X_{12}	↓
13	Average household homestead area	X_{13}	↑
14	Average household living area	X_{14}	↑
15	Unoccupied house rate	X_{15}	↑
16	House Lease rate	X_{16}	↑
17	Average household contracting land area	X_{17}	↓
18	Total area of the village	X_{18}	↑
19	Collective construction land use right transfer proportion	X_{19}	↑
20	Expected new added ecological green land	X_{20}	↑
21	Pollution degree	X_{21}	↓
22	Whether to be an area where natural disaster usually happen or not	X_{22}	↑

P.S. "↓"means cost index; "↑"means benefit index

(2) Standardized Decision Matrix

Convert the sample matrix into standardized Decision Matrix:

$$R=(r_{ij})_{n\times m}=\begin{bmatrix}r_{11} & r_{21} & \cdots & r_{1m}\\ r_{21} & r_{22} & \cdots & r_{2m}\\ \cdots & \cdots & \cdots & \cdots\\ r_{n1} & r_{n2} & \cdots & r_{nm}\end{bmatrix}$$

(3) Determine positive and negative ideal solution and gray relational coefficient

Determine the positive and negative ideal solution, and calculate the Si to S+ and Si to S+ correlation coefficient matrix respectively regarding the index Aj.

Set $r_j^+=\max\{r_{ij},1\le i\le n\}$, $r_j^-=\min\{r_{ij},1\le i\le n\}$, $j=1,2,\cdots,m$, then the positive and negative ideal methods are as follows: $S^+=\{r_1^+,r_2^+,\cdots,r_m^+\}$, $S^-=\{r_1^-,r_2^-,\cdots,r_m^-\}$. Choose the two ideal solutions as the reference points, based on the gray relational analysis method, we know the Si to S+ and Si to S+ correlation coefficient matrix respectively regarding the index Aj can be calculated below:

$$\xi_{ij}^{+} = \frac{\min_i \min_j \left| r_{ij} - r_j^{+} \right| + \rho \max_i \max_j \left| r_{ij} - r_j^{+} \right|}{\left| r_{ij} - r_j^{+} \right| + \rho \max_i \max_j \left| r_{ij} - r_j^{+} \right|}$$

$$\xi_{ij}^{-} = \frac{\min_i \min_j \left| r_{ij} - r_j^{-} \right| + \rho \max_i \max_j \left| r_{ij} - r_j^{-} \right|}{\left| r_{ij} - r_j^{-} \right| + \rho \max_i \max_j \left| r_{ij} - r_j^{-} \right|}$$

$\rho \in [0,1]$ is the Distinguishing coefficient, normally $\rho = 0.5$

(4) Determine the index weight - Entropy Method

$$w_j = \frac{1 + \sum_{i=1}^{n} [(r_{ij} / \sum_{i=1}^{n} r_{ij}) * \ln (r_{ij} / \sum_{i=1}^{n} r_{ij})] / \ln(n)}{\sum_{j=1}^{m} \{ 1 + \sum_{i=1}^{n} [(r_{ij} / \sum_{i=1}^{n} r_{ij}) * \ln (r_{ij} / \sum_{i=1}^{n} r_{ij})] / \ln(n) \}}$$

(5) Calculate the prospect value

Value function formula and decision weight function formula:

Value function: $\begin{cases} v^{-}(r_{ij}) = (1 - \xi_{ij}^{-})^{\alpha} \\ v^{+}(r_{ij}) = -\lambda (\xi_{ij}^{+} - 1)^{\alpha} \end{cases}$

Decision weight function: $\begin{cases} \pi^{+}(w_j) = \dfrac{{w_j}^{r^{+}}}{[{w_j}^{r^{+}} + (1 - w_j)^{r^{+}}]^{\frac{1}{r^{+}}}} \\ \pi^{-}(w_j) = \dfrac{{w_j}^{r^{-}}}{[{w_j}^{r^{-}} + (1 - w_j)^{r^{-}}]^{\frac{1}{r^{-}}}} \end{cases}$

Then the prospect value of the solution Si is the summation of the positive and negative prospect values, refer to the following formula:

$$V_i = \sum_{j=1}^{m} \pi^{+}(w_j) v^{+}(r_{ij}) + \sum_{j=1}^{m} \pi^{-}(w_j) v^{-}(r_{ij})$$

(6) Comprehensive prospect value

Calculate the comprehensive prospect value for each circulation region, and sort the results by the order from small to large, wherein the smaller the value is, the higher the circulation probability is.

Table 4 sample numbers and related info.

Sample village	teams	number	households
1st (D)	1	D_1	45
	2	D_2	57
	3	D_3	52
	4	D_4	85
	5	D_5	34
	6	D_6	56
2nd (L)	1	L_1	38
	2	L_2	40
	3	L_3	38
	4	L_4	46
	5	L_5	21
	6	L_6	28
	7	L_7	26

AN EMPIRICAL STUDY

(1) Circulation probability calculation for samples

For the 1st sample village, randomly select groups of villagers to conduct research, separate them into 6 teams, 330

households including 991 persons; the 2nd sample village, randomly choose 7 villager teams for the research, 225 households including 759 persons. In order to achieve more accurate calculation result of the circulation probability of the two villages, we take the villager teams as the minimum unit to conduct the decision-making analysis and finalize the circulation probability for each village, please refer to the follow table 4 for details

Analyze the all the indexes of the two samples based on the homesteads circulation social decision-making index system built in the chapter 6, and make the judgment regarding the homesteads circulation decisions. According to the site research and the data gathered on field, these two sample villages have some similar index features, but also show the differences with regards to some key aspects. Samples with the above characteristics are more efficient for comparability, and able to better reflect the real decision-making process, which is more meaningful to the circulation decision-making judgment. For similar characteristics indexes, obtain the comparative results through related intuitive data gathered from the site research, and analyze the differential indexes in terms of the calculation model. Please refer to the follow contents for the specific analysis on the two sample villages.

(1) Total population X1 and total households X2
Sample 1, total households is 643, and total population is 1557; Sample 2, total households is 878, and total population is 1993. From the numbers it is very easy to observe that the 1st sample is smaller than the 2nd one, so the circulation probability of the 1st sample is bigger.

(2) Per capita annual income from the contracting land X7
From the interviews to the village cadres, more than half of the contracted lands of the two sample villages have been transferred to being under operation by the rural cooperative, it has begun to take shape of large-scale operation, and the revenue from contracted land is not a family's main income source. From the research, the 1st sample has total contracted land area 382.4 Mu, and the household average is 1.16 Mu; the 2nd sample's total contracted land is 711.69 Mu, and the average is 3.47 Mu. In general, this index doesn't affect the circulation results of the two villages too much.

(3)Social security participants' population X8
Take a look at the statistics of 2010 from Qingcun Town, the participants proportion of the total residents is 36%. Based on the conversation with the village cadres, the policy of the two sample villages is the same, all the residents are involved by the rural security policy, and farmers start to pay insurance each year when becoming adults. Take the standard in 2008 for instance, each one need to pay 500 per year, and will be paid with 260 to 280 RMB per month after retirement. Those who have their land acquired by other organization shall attend the town security insurance, also refer to the standard of 2008, people can get 670 RMB per month after retirement. So the impact on the circulation result from this index is not very obvious either.

(4)Household average income per year X6, Per capita bonus per year X9, Collective construction land use right transfer proportion X19
Both of the sample villages have some town-owned enterprises, 32 for the sample 1 and 16 for the sample 2 (refer to table 7-13), and most of the villagers work for those enterprises, the household average income per year is around 9000 to 10000 RMB. Since the plants located on collective construction land normally will operate for a very long term, and the rental contracts were signed in early years, so the rent is low, normally it is only 1000-2000rmb per square meter per year, and the payment is made once every 10 years. The per capita bonus per year in the two villages is relatively low and there are no too much differences between the two sample villages. So these three indexes also don't play important roles regarding the circulation result.

(5) Distance from commercial service center X11
Look at the relative positions of the two villages (table 7-4); sample 1 is nearer from the downtown than sample 2. So for this index, the 1st sample is smaller than the 2nd one, then, the circulation probability of sample 1 is bigger.

(6) Total area occupied by the village X18
According to the collective lands distribution situation of the two sample villages (table 7-11 and 7-12), the 2nd sample village has more lands located at the area out of the scope of the "two plans into one". So from this index, we can see that the 1st sample's circulation probability is bigger.

(7) Landform X10 and pollution degree X21, whether to be an area where natural disaster usually happen or not X22and Expected new added ecological green land X20
Because the locations of the two villages are close to each other, so there is no too much differences in terms of these four indexes, and will not affect the circulation result too much.

Based on the above analysis towards those following indexes, X1, X2, X6, X7, X8, X9, X10, X11, X18, X19, X20, X22, X21, we can draw the conclusion that the circulation probability of sample 1 is bigger than sample 2.

For the homesteads circulation social decision-making index system built in this article, there are some other indexes need to be finalized by further analysis through calculation, they are listed as bellow:

Non-agricultural employment rate X3, Population urbanization proportion X4, Farmers' needs to divide and live apart X5, Average building time X12, Average household homestead area X13, Average household living area X14, Unoccupied house rate X15, House Lease rate X16, Average household contracting land area X17.

Those indexes above can be calculated by adopting the decision-making model mentioned in chapter 6.3.2, evaluated on the basis of prospect theory, also with the introduction of the gray relational method to eliminate the impact among these indexes, and apply the entropy method to calculate the level 2 index weights. Take the arithmetic mean value of each team to be the index value, please refer to the following table 5for details.

Table 5 argument values of each sample

Sample	team	X_3	X_4	X_5	X_{12}	X_{13}	X_{14}	X_{15}	X_{16}	X_{17}
D	D1	0.321	0.000	0.157	1988.311	155.911	114.378	0.067	0.289	1.322
	D2	0.387	0.000	0.220	1986.877	175.018	127.649	0.131	0.431	1.632
	D3	0.393	0.000	0.187	1983.769	163.231	119.692	0.033	0.481	1.337
	D4	0.355	0.000	0.202	1987.663	175.209	131.861	0.104	0.471	1.400
	D5	0.400	0.000	0.230	1989.029	177.706	128.412	0.000	0.343	1.176
	D6	0.415	0.000	0.197	1996.268	172.214	129.214	0.059	0.333	0.000
L	L1	0.408	0.367	0.095	1984.763	244.000	275.737	0.007	0.026	2.754
	L2	0.345	0.150	0.124	1986.459	238.946	270.676	0.009	0.162	3.265
	L3	0.366	0.653	0.109	1988.964	215.286	251.786	0.020	0.036	2.695
	L4	0.340	0.152	0.095	1987.196	210.696	236.000	0.000	0.128	3.250
	L5	0.373	0.209	0.045	1983.952	247.810	292.952	0.000	0.095	3.794
	L6	0.313	0.656	0.052	1987.679	236.714	269.929	0.000	0.357	2.537
	L7	0.329	0.188	0.094	1987.577	339.539	261.769	0.000	0.038	4.306

Substitute all the index values in the above table into the mathematic model built in chapter 6.3.2, and then conduct the quantitative analysis on these 13 sample teams and 9 arguments, furthermore, calculate the final circulation probability on the basis of the arithmetic average of each team, refer to the table 6. The calculation result is listed as follows:

The final prospect value of sample 1(D) is 2.535, and sample 2(L) is 2.700, obviously the value of the 1st sample is smaller than the second one, so the circulation probability of sample 1 is bigger than the sample 2.

Table 6 prospect values calculation results for each sample

Sample village	Result value	Sample team	Sum +	Sum -	Sum
Sample 1 (D)	2.535	D_1	2.262	0.545	2.807
		D_2	1.602	0.760	2.362
		D_3	1.854	0.686	2.539
		D_4	1.806	0.736	2.542
		D_5	1.923	0.640	2.563
		D_6	1.760	0.637	2.396
Sample 2 (L)	2.700	L_1	1.927	0.730	2.657
		L_2	2.161	0.736	2.897
		L_3	1.892	0.741	2.634
		L_4	2.333	0.642	2.975
		L_5	2.048	0.624	2.672
		L_6	1.774	0.675	2.449
		L_7	2.058	0.561	2.619

Therefore, based on the 22 indexes covered inside the homesteads circulation social decision-making index system built in this article and the model calculation results, we conclude that from the point view of homesteads circulation social decision-making, the circulation probability of sample 1 is bigger than the sample 2.

CONCLUSION

From the research of this article, using the Homesteads transference social decision-making model built in this

article together with the Prospect Theory value judgment measures to calculate the Homesteads transference probability of sample 1&2 from the point view of social decision-making, the result indicates the probability of sample #1 is bigger than the 2nd, and the local government planning situation conforms to the result concluded from this article. So it demonstrates that the local government Homesteads transference decision making policy is basically in accordance with the judgment made in this article regarding the sample 1.

The effectiveness In addition, according to the application of the social decision-making index system structured in this article, due to the multiple influencing factors from various areas and different situation, when applying the system to different areas in practice based on the research of this article, targeted and specific selection becomes very important and necessary.

Last but certainly not the least, in order to fulfill the effectiveness of the Homesteads transference social decision-making activity, it is imperative to make continuous improvements and innovation towards the related policy and regulations of the Homesteads transference, and in the meantime to take political, legal, administrative and economic measures to insure the sound operation of the Homesteads usage, thus to realize the sustainable utilization of resources, and ensure that the land development and utilization meet the demand of the long-run social economy development, to reach the best social resource environment and maximum economy benefit, thereby truly fulfilling the goal of the social decision-making activities.

REFERENCES

[1] Tian Ke-ming *Anhui Agriculture Sciences*. P37-41,39,**2011**
[2] Gu Xiao-kun, Chen Bai-ming : *Natural Resource Journal* p701-708, 22(5),**2007**
[3] Zhang Zheng-fen, Wang De: *Planner*, p45-47,June **2009**
[4] Zhang He-yun, Lv Yin-jie : *Rural Economy* ;p50-55;(9)**2008**
[5] Lv Ping, Zhi Xiao-juan:Collective Construction Land Transference Effect and Obstacle Factors Analysis ;*Issues in Agriculture Economy* p12-18;Feb.**2008**
[6] Ning Tao, Yang Qing-yuan: *Journal of Southwest Ocean University*,p51-57 Feb.**2012**
[7] Wu Ming-fa, Ou Ming-hao: *Journal of Guangdong Ocean University*,p20-24 April **2012**
[8] Xu-Hengzhou,Qu Fu-tian: *Resources and Environment in the Yangtze Basin* ;p68-72,Jan.**2011**
[9] Gerhard K.Heilig, Xiubin Li. *Land Use Policy*,p 141–153,(24) **2007**
[10] Hui W, Ran T, Lanlan W &Fubing S, *Habitat International*, Vol. 12(4): 1~10 ,**2009**
[11] JiemingZhu. *Urban Studies*, Vol.41(7):1249–1267,**2004**
[12] Songqing Jin, Klaus Deininger. *Journal of Comparative Economics* , p629–646 (37)**2009**