The Regional Disparity of China's Urban Employee's Basic Endowment Insurance Fund and Labor Force Migration

Weimin ZHOU [1], Yifan YANG [2], Kexin NI [3]

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Abstract

China's urban employee's basic endowment insurance fund is an essential part of Chinese social security system. This study is based on dynamic panel data for 31 provinces in China using system-GMM estimation to analyze the relativity between the basic endowment insurance expenditure level and the influencing factors mainly as labor force migration. Both the qualitative analysis and empirical study show resident population proportion has negative effect on the expenditure level, while the payment rate has positive effect on the expenditure periodically. Population aging depicted by mortality rate has negative effect on the expenditure level. Thus in order to implement stated-centered insurance planning, based on the regional disparity of basic endowment insurance expenditure level, transfer payment mechanism should be shaped by labor force mobility.

JEL Codes: C33, D58, G28, J61

Key words: China's Urban Employee's Basic Endowment Insurance Fund, Labor Force Migration, Regional Disparity;

[1] West High-Tech Zone, Southwest Jiaotong University, 611756 Chengdu, China
School of Economics and Management, Southwest Jiaotong University
Email: *chouwm924@hotmail.com*

[2] West High-Tech Zone, Southwest Jiaotong University, 611756 Chengdu, China
Deputy Director, National Interdisciplinary Institute on Aging, Southwest Jiaotong University
Email: *yfyang@swjtu.cn*

[3] Woltersgade 5a, 3tv, Copenhagen S, 2300 Copenhagen, Denmark
Department of Political Science, University of Copenhagen
Email: *nikexin2014@163.com*

1. INTRODUCTION

China's urban employee's basic endowment insurance fund is the most important part of social security system, it is a complicated system that inextricably interweaves with various aspects of the society as well. In the Eighteenth National Congress of the Communist Party of China held in 2012, clear request was made on China's social insurance system, which includes enhancing its fairness, suiting mobility and ensuring sustainability. Nowadays china's urban employee's basic endowment insurance fund has basically embraced full coverage itself, which marks the new stage for the development of endowment insurance system that China has already stepped into, and this urgently requires new thinking and scheme for stated-centered basic endowment insurance, therefore a more reliable system can be made. As for the social pooling account guaranteed by finance, the distinct difference between regions and between urban and rural areas is the direct cause of the poor sustainable development capacity. Considering different historical debts, maintenance rate, economic development level and the space distribution together with the aggregation condition of labor force migration, the regional imbalance and difference of china's urban employee's basic endowment insurance fund, and it is in fact the financing and payment problems brought about by the divergence and mobility of labor market. The movement of population is trans-regional, the poor transference between pension systems in distinguished areas is of great significance to cause imbalance in regional pension system. To solve the present problem urges not merely to raise the payment rate along with compliance rate and the retirement age, reforming basic endowment insurance system needs narrowing the gap between different treatments of basic endowment plan and making improvement on various classifications and regions. More attention should be paid onto exterior factors like improving current treatment of labor mobility. The trans-regional and trans-sectional and trans-vocational movement of migrant workers and even newly graduated college students become increasingly frequent, the basic endowment insurance systems cannot be applicable to informal employers, those impacts came from the movement of labor market are bound to influence Chinese endowment and fund management directly. Nevertheless, the expenditure level of endowment insurance is an important index to measuring its developing level, thus within the constraints of influencing factors like different economic developmental level in different regions, using Chinese endowment insurance expenditure level as a starting point and plunging into the original difference of china's urban employee's basic endowment insurance fund among regions are vital to adjust the overall direction for stated-centered basic endowment insurance in the future. Therefore, it is far more important to take labor movement as an important factor to judge the sources of difference of endowment insurance expenditure level among regions.

In figure 1, the labor mobility rate is positively related to basic endowment insurance expenditure level for every Chinese province in 2010, Those developed provinces in east part of China are the main target for labor movement and their endowment insurance expenditure levels are much higher yet those labor-exporting provinces which are mainly in Midwest part of China

own lower basic endowment insurance expenditure level correspondingly.

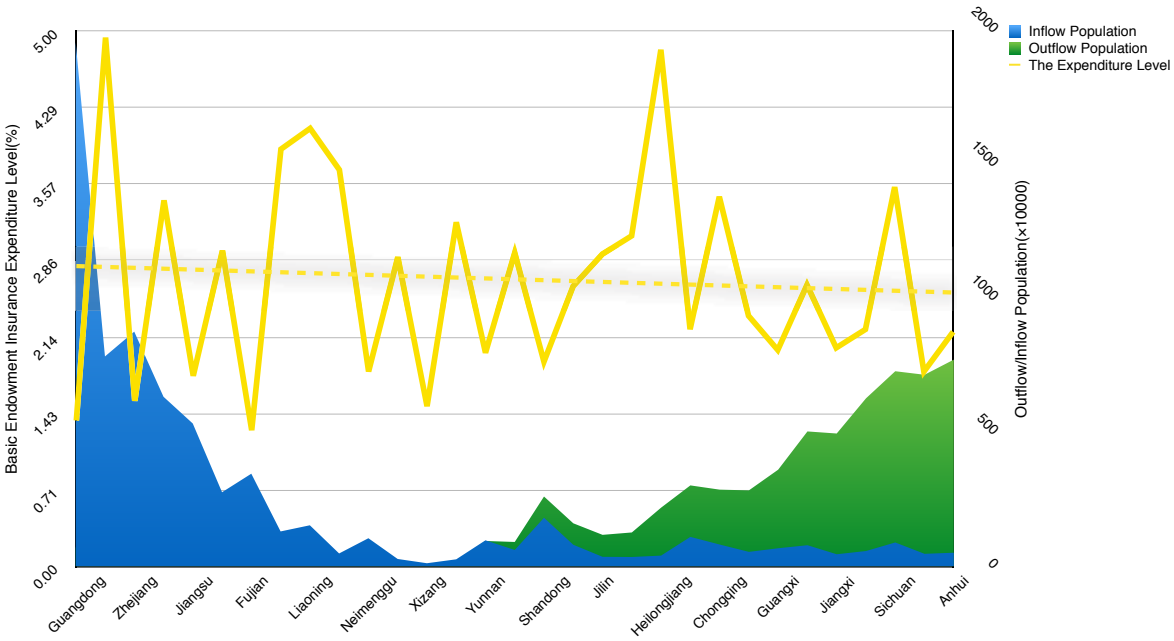
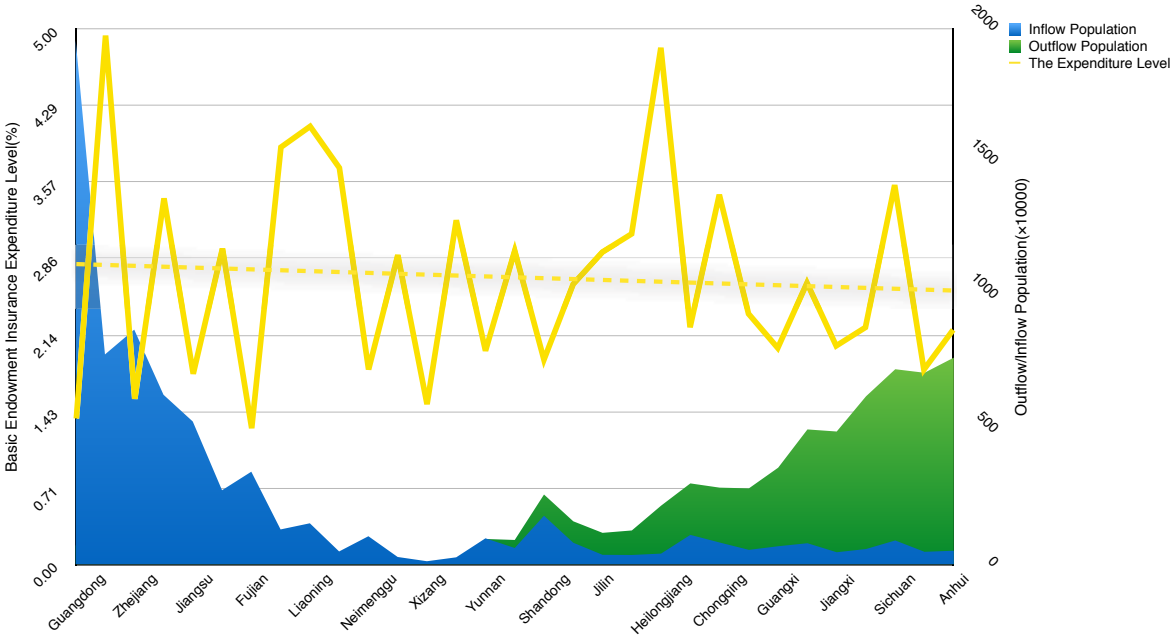


Figure 1. The expenditure level and labor migrates in 2010. Sources from <Tabulation On The 2010 Population Census Of The People's Republic Of China>

Zhou Xiaochuan (1994) proposes that social equity should be taken into consideration during the transition of reshaping social security system, and the inequity of treatment in different regions is a vital matter that needs handling with. Lu Quan (2008) believes that there are problems about foundation default and multiple segmentation default in present endowment insurance system, the labor mobility that is at the cost of damaging people's endowment right is not content with the rule of most optimum distribution of resources. Yin Baoming (2014) studies the dividend of basic endowment for urban areas through urban migration and recognizes the contribution that rural and urban labor migration made to urban endowment system. Chen Qin (2013) discusses the sustainability of endowment balance through population movement. Xue Xindong (2012) uses endowment spending level as dependent variable with the applying of GMM system to estimate many related factors and their relationships, but the result is rather ambiguous and not convincing enough. Li Hui (2014) takes the degree of aging as kernel variable to do regression analysis and realizes that it will make the expenditure level much worse.

The above studies develop the analysis of relationships between regional endowment expenditure level and its related variables, but it does not build a theoretical model of the endogenous relationships and does not consider the importance of how trans-province labor movement influences the balance of social security systems. Concerning the social phenomenon as large labor movement and its requirement of better social security systems, in spite of the lack of efficient explanation and resolution, making progress in these areas is important. Another innovative character of this paper is that we construct panel data model, which is widely used for

own lower basic endowment insurance expenditure level correspondingly.



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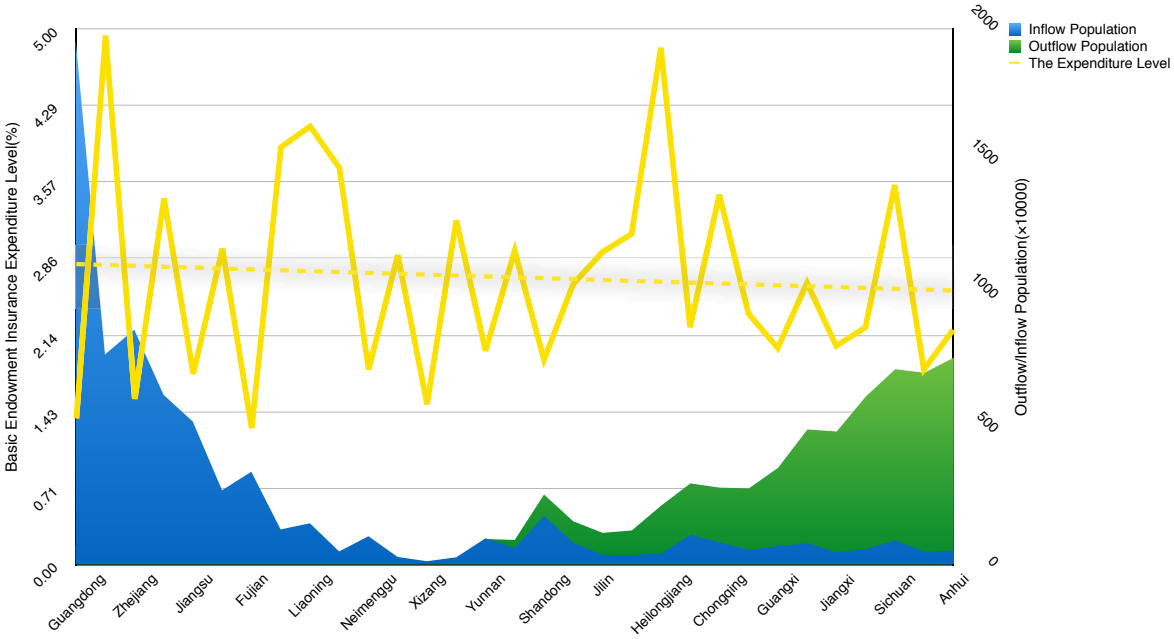

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household consumption and research on economic growth and convergence. One reason for using this model is that the present basic endowment fund is still under provinces' overall arranging step thus the difference of expenditure level and the convergence study would provide with policy suggestions, the other is that this could help reduce errors for other measurement model caused by the lack of data.

As in figure 2, provinces are divided into two categories by nationwide labor inflow and outflow: large labor inflow and high expenditure level in coastal areas in Eastern China and large labor outflow and lower expenditure level in Midwest part of China.

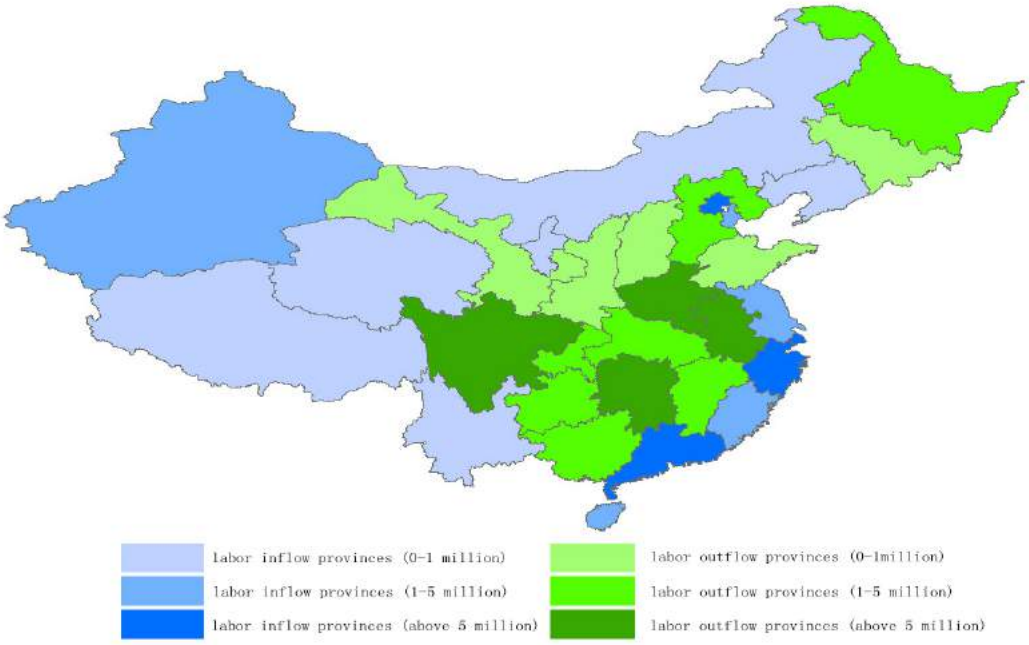

Figure 2. Overall Labor Outflow/Inflow in different province. Sources from: <Tabulation On The 2010 Population Census Of The People's Republic Of China>; GIS data is provided by http://gadm.org/

Labor mobility brings bonus to developed provinces in Eastern China yet leads to the lower level of many provinces in middle part of China. Besides, lots of migrant labors are outside of basic endowment insurance or choose to surrender in. This causes their loss of deserved pension. We want to know what effect this population movement among provinces may have on basic endowment expenditure level. This paper is based on extended overlapping generation model, to discuss the effects of migration proportion, average payment rate and aging level on basic endowment insurance expenditure level. Besides, it may help give advice and suggestions for narrowing the gap of the transference of basic endowment among provinces, and for stated-centered insurance.

2. MODEL

2.1 Demographics

Besides, there`re two kinds of people in the society: ①They are permanent resident population, who are involved in China's urban employee's basic endowment insurance and their proportion of the total population is α. ②They are floating population, who are not involved in basic endowment insurance and their proportion of the total population is $1-\alpha$. Individuals are assumed to be identical across cohorts, and to live for periods: as adults and elderly, respectively. The equation begins from work period because people have no jobs and incomes and savings before. The growth rate of population is n.

$$L_{t+1} = (1+n)L_t \tag{1}$$

2.2 Technology and Resources

Output, Y_t, is assumed to be produced by firms with a Cobb-Douglas technology in terms of capital and labor. Meanwhile assuming that each agent has one unit labor input and the labor supply is non-elastic:

$$Y_t = K_t^{\sigma} L_t^{1-\sigma} \tag{2}$$

$$y_t = k_t^{\sigma} \tag{3}$$

In which, Y_t, K_t and L_t are aggregate social output, capital, and labor respectively. And y_t, k_t are output labor ratio and capital labor ratio. On account of the complete competition of market, the return to capital and the wage rate are standard and defined by:

$$r_t = \frac{\partial Y_t}{\partial K_t} = f'(k_t) = \sigma k_t^{\sigma-1} \tag{4}$$

$$w_t = \frac{\partial Y_t}{\partial L_t} = f\ \ (k_t) - k_t f'(k_t) = (1-\sigma)k_t^{\sigma} \tag{5}$$

In which, w_t is the social average wage, r_t is the average interest rate. In addition, on the assumption that there is difference between two kinds of people, $W_t^u = \Omega W_t^r$ (W_t^u and W_t^r are the average income of permanent resident population and floating population). At the same time, it satisfy the following identity:

$$W_t L_t = W_t^u \alpha L_t + W_t^r (1-\alpha) L_t \tag{6}$$

2.3 Households

We adopt log-utility function involving death rate and discount rate,

$$U_t = ln(c_t^Y) + \beta\phi ln(c_{t+1}^O) \tag{7}$$

Which β is the discount rate, assuming the death rate is zero during adults period, the elderly people after retirement face the uncertainty of fraction survivingϕ, it represents the degree of aging (Evangelos, 2007). Assuming that the current basic endowment insurance keeps separate

account management partly, the social planning section reaches the balance between its income and expenditure by itself. Therefore, the money that young people paid to basic endowment will be given into retired people, elderly who are permanent residential gain the pension. But people who are floating population cannot gain it. Thus the consumption budget constraint for former people is:

$$c_t^Y = (1 - \tau - s_t)W_t \tag{8}$$

$$\phi c_t^{u,O} = (1 + r_{t+1})s_t W_t^u + P_{t+1} \tag{9}$$

By combining (8) and (9) together, the budget constraint is:

$$c_t^Y + \frac{\emptyset c_t^{u,O}}{(1+r_{t+1})} = (1 - \tau)W_t^u + \frac{P_{t+1}}{(1+r_{t+1})} \tag{10}$$

And the budget constraint for second kind adults can be written into:

$$c_t^Y + \frac{\emptyset c_t^{r,O}}{(1+r_{t+1})} = (1 - \tau)W_t^r \tag{11}$$

τ is the payment rate per person, P_{t+1} is the pension paid to elderly. By yielding Lagrangian function, we maximize lifetime utility:

$$c_t^Y = \frac{1}{1+\beta\phi}[(1 - \tau)W_t + \frac{P_{t+1}}{(1+r_{t+1})}] \tag{12}$$

$$c_t^{u,O} = \frac{\beta\phi}{1+\beta\phi}[(1 + r_{t+1})(1 - \tau)W_t^u + P_{t+1}] \tag{13}$$

Equations (12) and (13) denote that, W_t increases the consumption of two periods, β increases the consumption of the first period but reduce it in the second period, meanwhile the first-order condition for the first kind of people is under the following equation.

$$-\frac{1}{c_t^Y} + \beta\phi(1 + r_{t+1})\frac{1}{c_{t+1}^{u,O}} = 0 \tag{14}$$

Equation (14) shows that the utility of one unit consumption in first period is equivalent to utility in elderly with adding $(1 + r_{t+1})$ to the probability $\beta\phi$.

2.4 Government

Government sector is aim to keep budget of basic endowment insurance balance. Every year the government gives P_t as the pension for elderly. The income of the government comes from the payment of basic endowment while the payment rate is τ. Its balancing equation is stated as following.

$$\alpha L_{t-1} P_t = \tau W_t L_t \tag{15}$$

2.5 Capital Market

The supply of labor market is not flexible, so only the balancing of capital market needs to be taken into consideration. Assuming that capital stock is complete depreciation per period, thus the capital is all from the past savings:

$$K_{t+1} = s_t W_t L_t \quad \text{`(16)}$$

According to Blanchard and Fischer (1988), (16) can be rewritten into:

$$k_{t+1} = \frac{s_t w_t}{(1+n)} \quad (17)$$

2.6 Dynamic Equilibrium

When satisfying the above equation condition, the whole economy is competitive equilibrium. Put the equation (4), (5), (8), (9), (15), (17) into the equation (14), then the system of dynamic equilibrium can be described by the following difference equation:

$$k_{t+1} = g(k_t) = \frac{1}{(1+n)(1+\beta\phi)}[(\beta\phi + \tau)(1-\sigma)k_t^{\sigma} - \frac{\tau(1+n)(1-\sigma)k_{t+1}^{\sigma}}{\alpha(1+\sigma k_{t+1}^{\sigma-1})}] \quad (18)$$

Thus it can prove that only when dynamic equilibrium (18) at the steady state k satisfies $0 < dk_{t+1}/dk_t < 1$, will equation (18) own the unique, stable and non-shakable dynamic equilibrium. However, given migrants made contributions to social insurance, but lost their own benefits at the same time, in order to take the common interests of these two groups into consideration, then it should be considered to maximize the overall social welfare, and add utility discount of all generations' agents to define social welfare function.

$$V = \beta\phi ln c_t^O + \sum_{i=0}^{\infty} \theta^i (ln c_{t+i}^Y + ln c_{t+i+1}^O) \quad (19)$$

$$S.T. k_i + f(k_i) = (1+n)k_{i+1} + c_{t+i}^Y + \beta\phi \frac{c_{t+i}^O}{1+n} \quad (20)$$

Among which, $\theta \in (0,1)$ is social discount factor that can reflect policy-makers' focus and how much they pay attention to the utility of each substitution, the constraint condition is given, and initial capital condition $k_0$is given as well. Social planners choose two-period consumption and capital stock level of next stage to maximize overall social welfare. After constructing $Lagrangian$ function, the first-order conditions are:

$$(1+n)c_t^{Y,*} = \theta c_t^{O,*} \quad (21)$$

$$1 + f'(k^*) = \frac{1+n}{\theta} \quad (22)$$

By rearranging equation (22), the capital equation under needed equilibrium state can be figured out:

$$k^* = (\frac{1+n-\theta}{\sigma\theta})^{\frac{1}{\sigma-1}} \tag{23}$$

In order to make the constant state of market economy reach the social optimal state, policy parameter τ should be adjusted, so the fixed capital and labor ration of market economy is the evaluation of the social optimal constant state, that is $k_{t+1} = k_t = k^*$. Taking the equation (23) to the dynamic equilibrium system described in the equation (18), we have:

$$\theta\sigma(1+n)(1+\beta\phi) = (1-\sigma)(1+n-\theta)[(\beta\phi+\tau)-\tau\theta] \tag{24}$$

While the expenditure level of basic pension insurance can be evaluated by the following equation:

$$\frac{P}{k} = \frac{\tau(1+n)^2(1+\beta\phi)}{\alpha(\beta\phi+\tau-\tau\theta)} \tag{25}$$

Taking the partial derivative of the related variables, we can get:

$$\partial(\frac{P}{k})/\partial\alpha < 0 \tag{26}$$

$$\partial(\frac{P}{k})/\partial\tau > 0 \tag{27}$$

$$\partial(\frac{P}{k})/\partial\phi < 0 \tag{28}$$

Equation (26) denotes permanent resident population ratio has negative effects on the expenditure level of basic pension insurance. With such ratio increasing, the insured retired personnel increase, the expenditure level of pension will hence be lowered. In fact, when considering the migrant population, the positive contributions that migrant population has made will be transited into an improvement of the benefit of pension insurance. This can be seen from the following empirical study. Equation (27) shows that payment rate has negative effects on the expenditure level of basic pension insurance, and the main reason of it is that the current payment rate per person decides the current level of the treatment of basic pension insurance. According to related theory, the higher payment rate is, the higher level of treatment is, and the risk of financial imbalance is lowered, which is consistent with the results of Hu Qiuming (2011). However, in reality, some provinces will increase the payment rate when facing treasury overdraft. The equation (28) shows that the lower mortality rate is, the higher degree of population aging is, which has a positive influence on the

regional expenditure level of pension. Because of the uncertain effects of some endogenous variables, the effect in each period may lay deviation, so empirical approach will be adopted to evaluate the influence of the policy variables and other controlled variables on the expenditure level of pension.

3 Empirical Analyses

To validate the theory conclusion, and further investigate the expenditure level of basic pension insurance and its regional differences in operation, based on the basis of analysis mentioned above, we are going to conduct quantitative analysis. We take logarithmic econometric model to reflect elasticity between each variable:

$$lnY_{it} = \beta_0 + \beta_1 ln\alpha_{it} + \beta_2 ln\tau_{it} + \beta_3 lnage_{it} + \beta_4 ln\Psi_{it} + \mu_{it} \quad (29)$$

Dependent variable lnY_{it} represents the log value of the ratio of expenditure level on GDP, which reflects the overall level of the endowment insurance (Mulligan and Sala-i-Martin, 1999; Tabellini, 2000). Explanatory variables are: payment ratio of endowment insurance per person, permanent resident population ratio among overall population and log value of population aging degree. Ψ_{it} is a set of controlled variables, and μ_{it} represents random disturbance term.

3.1 Variable Selection

This paper chooses 31 Chinese provinces' provincial panel data from 2000 to 2013, and these data are selected from China Statistical Yearbook and Almanac of China's Population; the supplement of maintenance rate's missing date is based on Zheng Bingwen (2012). Setting the log value of the expenditure level of pension insurance as explained variable, we have log value of payment ratio per person, permanent resident population rate, population aging degree as a set of controlled variables, and among which:

Permanent resident population ratio is the ratio that the permanent resident people's account among the overall resident population after resident population divided into migrant people and permanent resident people. First, we assume demographic structure at one period as a first-order Markov process, which is:

$$P_t^{n,s} = (1 - m_t^{n,s})P_{t-1}^{n,s} + NI_t^{n,s} \quad (30)$$

$P_t^{n,s}$ denotes the number of persons in gender s ($s = 0$ or 1, represents male or female respectively)、age a, $m_t^{n,s}$is mortality rate of each gender and age, $m_t^{0,s}$is the mortality rate of infants, $NI_t^{n,s}$represents the net number of migration. Based on equation (30), given the data from tabulation on the 2010 and 2000 population census of the people's republic of china, we can get the net number of migration from 2000 to 2013.

Payment ratio per person is the ratio that compares payment per person with last year's wage base and its calculation formula is: payment ratio per person= (current year's collection of total income/current year's population of insured urban employees)/ last year's average income of urban employees. During the calculation, the population of insured workers at the end of current year represents current period's population of the insured.

According to Liu Qiongzhi (2013）, the population aging degree uses the mortality to substitute the ratio of population aged 65 or above among the overall population. The lower the mortality is, the much serious the population aging degree is;

The wage ratio is the ratio of current year's average wage of urban workers compared to last year's;

The substitution rate index uses last year average wage of urban employees as the wage base before their retirement. The substitution rate can evaluate the pension level per person of elderly compared to last year's urban employees' average wage ratio. Its calculation formula is: the substitution rate = pension expenditure per person/ last year's urban employees' average wage = (current pension fund expenditure/ current period's retired population) / (last year's urban employees' average wage;

Urbanization rate is the rate of urban population out of overall population.

To reflect the elastic relation between each variable and expenditure level, we will figure out the pair value of each variable, and their feature descriptions are showed below.

Table 1. Descriptive Statistics of Variables

Brief Description	Type	Obs	Average	St.D	Maximum	Minimum
Log Value of Expenditure Level of Pension Funds	lnY_{it}	*434*	*0.888*	*0.351*	*2.308*	*-0.199*
Log Value of Permanent Resident Population Proportion	$ln\alpha_{it}$	*434*	*4.591*	*0.012*	*4.656*	*4.543*
Log Value of Payment Rate per person	$ln\tau_{it}$	*434*	*3.153*	*0.273*	*3.745*	*2.309*
Log Value of Population Ageing Degree	$lnage_{it}$	*434*	*2.123*	*0.223*	*2.796*	*1.448*
Log Value of Wage Ratio	$lnWR_{it}$	*434*	*0.132*	*0.049*	*0.375*	*-0.066*
Log Value of Urbanization Rate	$lnURBR_{it}$	*434*	*3.681*	*0.643*	*4.696*	*-0.779*
Log Value of Substitution Rate	$lnSR_{it}$	*434*	*4.112*	*0.206*	*4.750*	*3.621*

Note: price unit is calculated after discounted to 2000 year's yuan.

3.2 Static Panel Estimates

We first induce static panel data model to estimate. $Hausman$ tests are in the following chart, in that the differences can be ignored between fixed effects model and random effects model, besides, China's provincial development has large distance, to avoid the unobservable heterogeneity between each province, we choose fixed effects model.

Table 2. Static Panel Estimates

Dependent Variable: lnY_{it}

GLS	(1)	(2)	(3)	(4)	(5)	(5)
	All				Outflow Provinces	Inflow Provinces
$ln\alpha_{it}$	-0.478 (0.862)	-0.301 (0.857)	-0.315 (0.815)	-0.158 （0.810）	-1.738^{**} （0.909）	2.330^{***} (1.058)
$ln\tau_{it}$		0.147^{***} (0.064)		0.060 （0.064）	0.171^{**} （0.091）	-0.095 (0.090)
$lnage_{it}$		2.243^{***} (0.711)		0.262 （0.072）	0.352^{***} (0.117)	0.108 (0.086)
$lnWR_{it}$			-0.761^{***} (0.165)	-0.780^{***} （0.165）	-0.993^{***} (0.217)	-0.613^{***} (0.244)
$lnURBR_{it}$			0.091^{***} (0.015)	0.085^{***} （0.015）	0.041^{***} (0.017)	0.148^{***} (0.026)
$lnSR_{it}$			0.154^{***} (0.051)	$0.267^{* **}$ （0.015）	0.084 (0.093)	0.505^{***} (0.088)
常数项	3.084 (3.959)	1.612 (3.933)	1.467 (3.756)	-0.440 （3.744）	7.191^{**} (4.241)	-12.242^{***} (4.816)
R^2	0.007	0.824	0.109	0.844	0.788	0.226
Hausman test	0.232	0.005	0.596	0.001	0.000	0.998

Note: The numbers inside parentheses are standard deviation. *** *represents significance at 5% level,* ** *represents significance at 10% level,* * *represents significance at 15% level.*

Regression (1) tells a result of a negative effect of permanent resident proportion on expenditure level of basic endowment insurance funds. Regression (2) finds permanent resident proportion, payment rate per person and population-aging degree can explain 82.4% of this model, and their coefficients fit theoretic expectation. In regression (3), the wage ratio, urbanization rate and substitution rate are introduced inside the model, negative effect of permanent resident proportion remains significantly. Considering all variables, in regression (4), we can briefly tell a negative effect of wage ratio on expenditure level, although pension adjustment is according to employees' wages, after population migration is endogenous, increases in wage not only denotes economic development, but also attract floating population. Under current related policy, floating population must enjoy pension treatment after returning their registered residence, which makes expenditure level decrease in many provinces; urbanization rate lays a significant positive effect on expenditure level; growing substitution rate directly implies high expenditure level, which means local retirement population enjoys high treatment. However, we confuse the difference between labor inflow provinces and labor outflow provinces, and because of the ignorant of endogenous population, regression results of permanent resident proportion seem insignificant. In regression (5) and (6), we put provinces into two parts. Payment rate in labor inflow provinces is negative, as stated before, it is the extra bonus for developed provinces so that they don't need to increase payment rate to sustain the system. Noted that the coefficients of $ln\alpha_{it}$ are opposite which leads a result that in most labor outflow provinces, increasing permanent resident proportion makes system maintenance burden, and local government has to choose broad coverage but low-level system, which causes pension for each person is scarce. On the contrary, as for labor inflow provinces, because migrator population in model also pays the bills for overall social planning without receiving pension in the second period, with improvement of living conditions and elimination of barriers on provincial system transferring. Increased population mostly consists of technical talents and intellectuals who devote great contributions, this undoubtedly has positive effect on expenditure level. This also indicates unfair for pension insurance funds of migrator population, which is caused by China's household registration system.

3.3 Dynamic Panel Estimates

As the existence of rigidity of expenditure level, it may be affected by lagged value of itself. To test if the regression results are robust, we construct dynamic panel data model and use system-GMM (System Moments of Methods) to estimate in table 3.

Table 3. Dynamic Panel Estimates

Dependent Variable: lnY_{it}

Sys-GMM	(1)	(2)	(3)	(4)	(5)	(6)
	All				Outflow Provinces	Inflow Provinces
$lnY_{i,t-1}$	0.984^{***} (0.002)	1.003^{***} (0.019)	0.862^{***} (0.016)	0.730^{***} (0.069)	0.612^{***} (0.094)	0.297 (0.237)
$ln\alpha_{it}$	-0.526^{***} (0.183)	-1.412^{***} (0.052)	-1.138^{***} (0.050)	-1.616^{***} (0.187)	-2.327^{**} (1.205)	9.614^{***} (3.762)
$ln\tau_{it}$		0.100^{***} (0.009)		0.023 (0.041)	0.131 (0.166)	-0.528^{***} (0.194)
$lnage_{it}$		0.208^{***} (0.010)		0.321^{***} (0.037)	0.544^{***} (0.229)	0.426^{***} (0.125)
$lnWR_{it}$			-0.822^{***} (0.020)	-0.928^{***} (0.079)	-2.330^{***} (0.281)	-1.435^{***} (0.205)
$lnURBR_{it}$			0.122^{***} (0.004)	0.176^{***} (0.027)	0.446^{***} (0.090)	0.364 (0.285)
$lnSR_{it}$			0.188^{***} (0.013)	0.471^{***} (0.040)	0.846^{***} (0.111)	1.472^{***} (0.454)
Arellano-Bond Test						
First difference AR(1)	0.020	0.006	0.004	0.111	0.086	0.240
First difference AR(2)	0.652	0.530	0.776	0.710	0.849	0.955
Sargan Test	0.365	0.241	0.192	0.338	0.318	0.331
Observations	372	372	372	372	176	180

*Note: all sys-GMM estimations in this paper are obtained from command "xtabond2" in Stata13.0. The numbers inside parentheses are standard deviation. *** represents significance at 5% level, ** represents significance at 10% level, * represents significance at 15% level. Instrument variables are 2 lags value of each independent variable; probabilities of Sargan test show the efficiency of instruments on all regressions are valid; probabilities*

of Arellano-Bond test for both AR(1) and AR(2) show the residuals in each equation don't exist autocorrelation after first difference.

Regression (1), (2), (3), (4) show the similar results with the one in static panel estimates, permanent migrator proportion restrains expenditure level of basic insurance funds, effects of payment rate per person and population-aging degree are positive on expenditure level. Besides, coefficients of $ln\alpha_{it}$ are significant negative. Regression (5) and (6) also show similar but more significant results with the one in static panel estimates. Meanwhile, we find that in the regression of labor inflow provinces, payment rate per person has a negative effect on expenditure level. This is mainly because those provinces that have huge surplus reduce the payment rate recently, such as Guangdong Province, whose payment rates are generally below 20% in many cities. On the other hand, peasant workers choosing low and basic benchmark of pension insurance also reduces overall payment rate level. This explains that migrator population participates pension system can significantly narrow the gap between provincial expenditure levels, and in the end, set basic for planning overall stated-centered. As for labor inflow provinces, population aging and urbanization has relatively less effects on expenditure level. This is the new "demographic dividend" which lessens the negative effects of population aging.

3.4 Multiple Regression Estimates

In order to study the dynamic effect of labor migration on the difference of expenditure level, this paper also carries on multiple regression, the results are shown in table 4. Due to the nation began implementing the relevant provisions from "state council on perfecting the system of basic old-age insurance for enterprise employees of decisions" in 2006; In 2011, regions began to carry out "the ministry of finance of the town enterprise professional basic endowment insurance relationship transferring interim measures" which was put out by the human resources and social security ministry. We did regression analysis on period 2000-2005, 2006-2010, 2011-2013 respectively. As can be seen from table 4, after the publishing of some related regulations in 2011, the effects of permanent residents proportion on expenditure level change negative to positive. While effects of payment rate on expenditure level have no significant change. With floating population gradually participated local pension fund, population-aging degree has a decreasing effect on expenditure level which indicates the new "Demographic Dividend".

Table 4: Multiple Regression Estimate

Dependent Variable: lnY_{it}

Sys-GMM	(1)	(2)	(3)	(4)
	2000-2013	2000-2005	2006-2010	2011-2013
$lnY_{i,t-1}$	0.730^{***} (0.069)	0.194^{***} (0.022)	0.810^{***} (0.055)	0.778^{***} (0.088)
$ln\alpha_{it}$	-1.616^{***} (0.187)	-0.395^{***} (0.190)	-1.315^{***} (0.440)	2.126^{***} (0.710)
$ln\tau_{it}$	0.023 (0.041)	0.398^{***} (0.061)	0.004 (0.033)	0.138 (0.084)
$lnage_{it}$	0.321^{***} (0.037)	0.406^{***} (0.082)	0.416^{***} (0.104)	0.214^{**} (0.125)
$lnWR_{it}$	-0.928^{***} (0.079)	-0.805^{***} (0.106)	-0.424^{***} (0.071)	-0.660^{***} (0.115)
$lnURBR_{it}$	0.176^{***} (0.027)	0.056 (0.034)	0.044^{***} (0.019)	0.795^{***} (0.327)
$lnSR_{it}$	0.471^{***} (0.040)	0.758^{***} (0.048)	0.272^{***} (0.084)	0.325^{***} (0.098)
Arellano-Bond Test				
First difference AR(1)	0.111	0.584	0.004	0.082
First difference AR(2)	0.710	0.497	0.474	0.875
Sargan Test	0.338	0.318	0.266	0.563
Observations	372	124	155	93

*Note: all sys-GMM estimations in this paper are obtained from command "xtabond2" in Stata13.0. The numbers inside parentheses are standard deviation. *** represents significance at 5% level, ** represents significance at 10% level, * represents significance at 15% level. Instrument variables are 2 lags value of each independent variable; probabilities of Sargan test show the efficiency of instruments on all regressions are valid; probabilities of Arellano-Bond test for both AR(1) and AR(2) show the residuals in each equation don't exist autocorrelation after first difference.*

4 Conclusions

This paper sets up an extended pay-as-you-go OLG economy which contains the demographics of migrators and permanent residents, we discuss the effects of provincial labor force migration on expenditure level of China's urban employees' basic endowment insurance funds, and the influence of payment rate per person, population-aging degree, and other control variables. According to theoretical study, labor migration contributes to the social pooling account, but annuities treatment after retiring is not enjoyed. The increase of the labor force migration reveals increasing expenditure levels, and payment rate per person is higher, the expenditure level is higher, accordingly population-aging degree is negatively correlated with expenditure levels. Based on China's 31 provinces' dynamic panel data, empirical study is relatively steady support of the conclusion from theoretical model, but it is interesting to note that if take the regression analysis on labor inflow and outflow provinces separately, the effects of labor force migration on expenditure level are opposite. For labor outflow provinces, the permanent resident proportion has a negative effect on expenditure level. However, as for labor inflow provinces, free contribution of migration to social pooling account drives up the local pension treatment level, in addition, labor inflow provinces are usually more developed provinces, the increase of permanent residents boosts the improvement of technology and labor productivity. In the multiple regression analysis, we also find that after 2011, the pension funds transfer for migration gradually improved, which leads more migrators participate in China's urban employees' basic insurance fund. This paper studies the labor migration influence on provincial pension expenditure levels gap, puts forward from the angle of fair advice on how to narrow the gap in pension expenditure levels between regions. This paper also argues that in the economic development level of different historical background, stated-centered urban employees' basic endowment insurance fund should base on narrowing the gap of local expenditure level, remove barriers of provincial pension transfer for migrators, promote fair and reasonable pension transfer between labor outflow and inflow provinces.

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