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On the Insufficiency of Government Medical and Health Care Expenditure of China: A Stochastic Frontier Analysis Based on Provincial Panel Data

Wang An and Hong Liyang
School of Economics, Xiamen University, Xiamen 361005, China

Abstract: This study sets up a deterministic model of the optimal government medical and health care expenditure amount and then adopts the provincial panel data of China from 1999-2009 to study the insufficiency problem of government medical and health care expenditure with the help of stochastic frontier analysis (hereinafter referred as SFA) technique. Our result indicates that judging from both provincial level and national average level, although it has been alleviated during these years, there is still a huge gap between actual government expenditure and its optimal amount. We also find that the higher the degree of fiscal decentralization, the closer is the medical and health care expenditure to its optimal level. In addition, urbanization in China aggravates the insufficiency problem.

Keywords: Fiscal decentralization, insufficiency, medical and health care expenditure, stochastic frontier analysis, urbanization

INTRODUCTION

From the perspective of public goods theory, medical and health care services belong to the quasi-public goods in public goods. Its characteristics determine that government has the necessity to participate in medical and health care services. However, as is calculated from the data of 2011, the medical and health care expenditure of China is RMB 636.7 billion Yuan, only 1.35% of GDP, which is lower that most of the countries in the world. Usually, the health care expenditure ratio of GDP in developed country government is 6~8%, while the counterpart of developing countries is usually 2~6%. This current situation indicates that although the medical and health care expenditure in China's finance is experiencing a rapid growth, government medical and health care expenditure is still in low level.

Presently, the concerns from the society on China's governmental medical and health care expenditure are mainly focused on two aspects:

- The insufficiency degree of medical and health care expenditure
- The unfairness degree of medical and health care expenditure between regions and between urban and rural areas

Till now, scholars have performed a large amount of studies on the second question, such as Chen (2009) and Li (2011), etc. On the contrary, the theory circle has not performed many researches on the first question, but just gives descriptive statement on the current situation. One bundle of similar research is the studies on the influence factors of governmental medical and health care expenditure, such as the studies of Tifu and Xiaojun (2010). However, they just judge the influence directions of the factors on medical and health care expenditure without distinguish whether the factors influence the reasonable scale of medical and health care expenditure or influence the match degree of governmental expenditure policies and residents' demands (which affects the actual expenditure level indirectly). Meanwhile, it is a pity that these researches do not positively answer how insufficient China's governmental medical and health care expenditure is.

The present study proposes to perform the following work:

- Building a deterministic model of optimal medical and health care expenditure amount and concluding the reasons for the insufficiency of medical and health care expenditure based on the above
- Adopting the provincial panel data of China from 1999-2009, using SFA technique to estimate the optimal amount function and insufficiency degree function of medical and health care expenditure
- Discussing the influence degree of relevant factors to optimal medical and health care expenditure amount, assessing the insufficiency of China's medical and health care expenditure and analyzing the effect of each factor on medical and health care expenditure insufficiency

Based on the above process, this study tries to give a clear frame of the current situation and influence

Corresponding Author: Wang An, School of Economics, Xiamen University, Xiamen 361005, China

factors of China's medical and health care expenditure insufficiency.

The remaining parts of the study are arranged as follows: the second part is the building of model, via theoretical analysis, we will construct an econometric model fit for SFA; the third part is the empirical study, we adopt the provincial panel date of China from 1999-2009 to estimate the optimal amount function and insufficiency function of medical and health care expenditure, analyze the influence direction of fiscal decentralization, urbanization and the like factors on medical and health care insufficiency degree; and the fourth part is the conclusions.

MODEL BUILDING

Supposing the population of an area is n, the utility level of each resident is the concave function of Disposable Personal Income (DPI) and the quantity of the m public goods consumed by the resident (here the study just suppose the k*th* kind of the public goods is medical and health care service):

$$U = u(y_d) + \sum_{i=1}^{m} \alpha_i v(q_i) \tag{1}$$

where,

y_d = Disposable Personal Income (DPI)
q_i = The quantity of the public goods
α_i = The preference degree of the public goods

Following the classical assumption of Borcherding and Deacon (1972) and Bergstrom and Goodman (1973), when the expenditure of government on the public goods is Q_i, the quantity of the public goods that each resident can actually consume is:

$$q_i = Q_i/n^{\lambda} \tag{2}$$

When $\lambda_i = 0$, public goods i is pure public goods; when $\lambda_i = 1$, public goods i is private goods. λ reflects the "congestion degree" of one public goods in consumption. As is often the case, the value of λ ranges from 0 to 1 and the larger λ is, the more elastic of q_i is to population n. The objective of government is to maximize the utility of residents by selecting the ratio of local financial revenue in economy and the expenditure Q_i of public goods with the restriction of budget balance:

$$\text{Max } u\left[(1-\tau)y\right] + \sum \alpha_i v(q_i)$$
$$\text{St. } s = -\tau y + \sum q_i \frac{1}{n^{1-\lambda_i}}$$

where

s = The per capita financial aid from central government
y = The pre-tax income of residents
τ = The flat tax rate, thus (1- τ) y reflects the disposable income

If reducing financial burden rate (- τ) is regarded as a kind of public goods that can increase residents' utility, then its price is y. If a unit of -τ is purchased, the available financial fund will be decreased by ny and then the consumption quantity of q_i will be decreased by $yn^{1-\lambda_i}$. Hence, if the price of - τ is standardized as 1, the relative price of q_i will be $1/yn^{1-\lambda_i}$ and the "income" after standardization is s/y.

Via solving the above questions, one can get the following two groups of first order conditions:

$$\alpha_i v'(q_i) = u' \cdot \frac{1}{n^{1-\lambda_i}} \tag{3}$$

$$n^{-\lambda_i} \alpha_i v'(q_i) = n^{-\lambda_j} \alpha_j v'(q_j) \tag{4}$$

The combination of the above two groups of first order conditions and budget constraint determines the optimal levels of τ and q_i. Take the k*th* type as the major discussion object. As is easy to see, the optimal solution of q_k is a function of the standardized "income", the relative price of goods k, the relative price of other public goods and α_i. Namely:

$$q_k^* = q_k\left(\alpha_1, ..., \alpha_m, \frac{s}{y}, p_1, ..., p_m\right) \tag{5}$$

Suppose that the forms of $u(.)$ and $v(.)$ can guarantee the expression of q^*_k has the following exponential form:

$$q_k^* = cA(\alpha_1, ..., \alpha_m) \prod_i \left(\frac{1}{yn^{1-\lambda_i}}\right)^{\varepsilon_i} \left(\frac{s}{y}\right)^{\eta} \tag{6}$$

where, η is the income elasticity of medical and health care service. ε_i represents the price elasticity (when i = k) or cross price elasticity (when i $\neq$k). From Eq. (3) and (4), ceteris paribus, the stronger the preference degree α_k of medical and health care service is, the larger the optimal quantity of q_k ; the stronger the preference degree α_k of other public goods is, for the expenditure scale of medical and health care service will be squeezed, the smaller the optimal quantity of q_k. Take Eq. (2) into (6), change the form to natural logarithm and then add v, which subjects to the normal distribution with a mean value of 0 and a variance of σ^2_v, to represent the unexpected exogenous shock, the following equation can be gained.

$$\ln Q_k^* = \ln cA + \eta \ln s - (\eta + \sum \varepsilon_i) \ln y + \left[\lambda_k - \sum \varepsilon_i (1-\lambda_i)\right] \ln n + v \tag{7}$$

In actual situation, the medical and health care expenditure amount of local government is usually lower than its due level, but Eq. (7) cannot give a reasonable explanation for this phenomenon. We ascribe the reasons for gap between actual level In Q_k and optimal level In Q^*_k to that the preference level α_k adopted when the government makes policies is lower that real level, or $\alpha_i (i \neq k)$ is higher than real level. The driving factors caused the results can be summarized from objective and subjective perspectives: objective factors refer to that α_k and α_i that government observes have deviation from the real levels as a result of information asymmetry, inadequate information quantity and the like factors; subjective factors refer to that the importance degree ranking of various public goods in the opinion of government is different from that of the residents in the area, so when making public goods expenditure policies, government adds its own subjective factors and thus the preference levels deviated from the actual values are formed.

Let the function value A(.)corresponding to actual preference level be expressed as A* and the one corresponding to the preference level with deviation be expressed as $\varphi A^*(\varphi<1)$, we can get the deterministic equation of actual medical and health care expenditure amount:

$$\ln Q_k = \ln cA^* + \eta \ln s - \left(\eta + \sum \varepsilon_i\right) \ln y + \left[\lambda_k - \sum \varepsilon_i \left(1 - \lambda_i\right)\right] \ln n + v - u \quad (8)$$

where, in–u = In φis negative. We make further assumption on the distribution of u that it satisfies the normal distribution with a mean value of $Z\delta$, a variance of $\sigma^2{}_u$ and intercepted at 0. Wherein, Z is a row vector of the factor which influences the insufficiency degree of medical and health care expenditure and δ is the column vector of the coefficients. So far, the SFA model of medical and health care expenditure amount is thus formed.

EMPIRICAL ANALYSIS

The selection of variables and data sources: This study adopts the panel data of 30 provinces, autonomous regions and municipalities (Tibet is not included for the lack of data for many years) in mainland China from 1999-2009, with the expectation of analyzing the insufficiency of China's medical and health care expenditure amount from the empirical perspective.

- **The function of optimal medical and health care expenditure amount:** The dependent variable In G_{it} is the natural logarithm of the medical and health care expenditure of province i in period t. The independent variable In s_{it} is the per capita central government financial aid. Due to the lack of per capita income data, the study adopts the natural logarithm of per capita GDP as the proxy variable of In y_{it}. In addition, we divide the above variables by CPI (that of 1999 = 1) to erase the influence of inflation. Im n_{it} is the population of province i in the period t. To distinguish the difference of the medical and health care expenditure patterns between different regions of China, we take the middle region as the benchmark category and introduce two dummy variables and into the optimal medical and health care expenditure amount equation.
- **The function of medical and health care expenditure insufficiency degree:** As can be seen from Eq. (1), what u_{it} measures is the gap between the actual medical and health care expenditure and its optimal amount, namely the insufficiency degree of medical and health care expenditure. It centrally reflects the behavioral deviation or distortion of government during providing medical and health care services. Therefore, we select the variables that have impact on the supply pattern and incentives of government public goods as the influence factors of u_{it}, namely Z_{it}. Based on China's economic and social development stylized facts and the research achievements of relevant fields, the study introduces the following variables into the equation of u_{it}.

Fiscal decentralization: Classical fiscal decentralization theory holds that, since local government is closer to local residents and has more information of the preference of residents, decentralization model is superior to centralization model on providing public gods when a series of assumptions are met (Oates, 1999). From this point, the first influence of fiscal decentralization on medical and health care expenditure insufficiency is that the increase of decentralization degree will make the local government give full play to its information advantages, thus the insufficiency degree of medical and health care expenditure can be alleviated because the value of φ will be closer to 1.

Meanwhile, one of the characteristics of China's fiscal decentralization is that it is built under the premise of political centralization. Local government officials are selected by their superiors but not voted by the residents, thus a local government incentive based on superiors' evaluation is formed. Decentralization endows local government greater disposal rights of the fiscal resources in the area, which provides convenience for the officials to make full use of the financial resources to pursue the maximum promotion chances. Presently, the influence of medical and health care service on the promotion of the officials is far below that of other projects such as infrastructure construction. Therefore, a second influence of fiscal decentralization on medical and health care expenditure insufficiency is that the increase of decentralization

Table 1: The definitions and the descriptive statistics of each variable in empirical analysis

Variable	Definition	Sample No.	Average value		Minimum	Maximum
Ln G	In(Medical and Health Care Expenditure/CPI (1999 = 1)	330	21.691	0.920	19.110	23.770
Ln s	In(Central Government Financial Aid/ Population/ CPI(1999 = 1)	330	6.726	0.690	5.228	8.699
Ln y	In(PGDP/CPI(1999 = 1)	330	9.361	0.648	7.842	11.094
Ln n	In(Population Scale of a Province)	330	17.330	0.775	15.445	18.434
DC	Per Capital Financial Expenditure of a Province/Per Capital Financial Expenditure of a Province + Center Per Capita Financial Expenditure	330	0.733	0.091	0.519	0.928
UR	Urban Employed Population /Total Employed Population	330	0.310	0.156	0.115	0.809

degree will make the local government pay more attention to the projects with more promotion chances, thus the insufficiency degree of medical and health care expenditure will be more serious because the value of φ will be smaller.

The above two influences coexist, so the actual influence directions of fiscal decentralization shall be judged via empirical analysis. Following the same thought of existing researches, we try to describe the free configuration rights of local government on fiscal resources from the perspective of fiscal expenditure. That is, Fiscal decentralization (DC) = per capita provincial fiscal expenditure/(per capita provincial fiscal expenditure + per capita central fiscal expenditure).

Urbanization: Some scholars hold that with the transition from industrialization to urbanization, the work objectives of government will gradually change from economic construction to paying attention to people's livelihood and thus expenditure on providing public goods will be increased (Chen, 2009). From this point, urbanization process may be favorable to alleviate the insufficiency of medical and health care expenditure. However, the improvement of urbanization degree also means the improvement of people's living standard and the increase of medical and health care service demand (if medical and health care service is normal goods). Although the expenditure on medical and health care is increased, if the increase range can not make up the increase of residents' health care service demand, urbanization will aggravate the insufficiency of medical and health care expenditure. Furthermore, the process of urbanization is usually accompanied with the emerging of a series of social contradictions and the production of new types of public goods demand, such as the employment and social security problems of original rural residents, the care for disadvantaged groups, social public security risks, which all make the government change the priority of providing various public goods.

In conclusion, it is difficult to judge whether urbanization makes the value of φ get bigger or smaller. Therefore, the actual influence direction of urbanization degree on the insufficiency of medical and health care expenditure shall also be judged via empirical analysis. We use the proportion of the urban employed population in total employed population of a province to reflect the degree of urbanization.

Table 2: Main estimation results (1)

Optimal medical and health care expenditure amount equation			
Variable	Model 1	Model 2	Model 3
Central financial aid	0.474	0.478	0.469
	(11.939)***	(12.027)***	(7.714)***
Per capita GDP	0.580	0.596	0.561
	(8.943)***	(10.999)***	(4.810)***
Population scale	1.093	1.050	1.041
	(35.109)***	(32.668)***	(22.471)***
East region	0.140	0.097	0.072
	(2.724)***	(2.443)**	(1.356)
West region	0.276	0.219	0.188
	(6.301)***	(5.173)***	(2.855)***
Cons	-4.840	-4.274	-4.076
	(-6.409)***	(-11.267)***	(-5.495)***
Parameters of residual error item			
σ^2	0.069	0.068	0.054
	(9.641)***	(12.834)***	(7.827)***
γ	1.000	1.000	1.000
	(3.792)***	(503.107)***	(20.969)***

1: The numerical value in the brackets is the t statistic of coefficients. 2: *** means the significance level is at least 1%; **: means the significance level is 1~5%; *: means the significance level is 5~10%

The data is originated from "Finance Year Book of China, China Statistical Yearbook and CEIC" and some individual missing data are made up with the arithmetic averages of the last and following years. The following table lists the descriptive statistics amounts of each variable. Table 1 shows the Definitions and the Descriptive Statistics of Each Variable in Empirical Analysis.

Estimation method and empirical results: For the model built in the study, the traditional estimation method is a two-step approach: first, estimate u_{it} by adopting SFA method; then take u_{it} as dependent variable, adopt tobit Regression to estimate the insufficiency degree function. However, the approach also has some problems: it is easy to gain biased results and contradicted with some regression assumptions. The way to solve the above problem is to adopt the one-step Maximum Likelihood Estimation (MLE) approach. Via conducting Monte-Carlo simulation, Wang and Schmidt (2002) demonstrate that the one-step estimation approach is more efficient than the two-step

approach. Hence, here we will use one-step MLE approach to estimate the model.

The main results of estimation are listed in Table 2 to 4. Row 2 and 3 of Table 2 adopt the data of 30 provinces, autonomous regions and municipalities, Row 4 adopts the data excluding Beijing, Tianjin, Shanghai and Chongqing Municipalities, which are used to observe whether the special situations of municipalities will influence the estimation results; in estimating the insufficiency degree equation, Row 2 only considers fiscal decentralization variable, which is used to verify the sensitivity of the estimation results to the change of variables. Wherein, Row 3 (Model 2) is the benchmark model in the study.

From the estimation results of Table 2, the coefficient signs of Models 1, 2 and 2 are the same and the coefficient estimation values are very similar, which illustrates that the increase or decrease of the variable and the removal of municipality samples do not influence the results of estimation and that regression is quite stable, so the study will mainly perform analysis based on Model 2. Besides, the estimation results of the residual error items show that the values of γ is basically close to 1 and are highly significant and this shows that the fluctuation of China's medical and health care expenditure during the sample period is mainly caused by u but has no close connection stochastic disturbance terms. Meanwhile, the highly significance of γ also shows that the provinces indeed have insufficiency of medical and health care expenditure, so it is reasonable that the study adopts SFA to perform estimation.

From the estimation results of the optimal medical and health care expenditure equation, if central financial aid is increased by extra 1%, the optimal medical and health care expenditure will increase about 0.478% (which is the value of η); if per capita GDP is increased by 1%, the optimal medical and health care expenditure will increase about 0.596%; if the population scale of a province is increased by 1%, the optimal medical and health care expenditure will increase about 1.05%. As we cannot solve several unknown numbers from only three equations, it is unable to make further judgment on the congestion effects of medical and health care expenditure and its price/cross price elasticity. Besides, from the dummy variables of east and west regions, if the other conditions are kept the same, the optimal medical and health care expenditure log values of the west region is

Table 3: Main estimation results (2)

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Beijing	0.497	0.592	0.543	0.582	0.634	0.593	0.675	0.772	0.917	1.000	0.916
Tianjin	0.343	0.302	0.304	0.308	0.344	0.340	0.313	0.333	0.402	0.417	0.446
Hebei	0.261	0.233	0.241	0.233	0.285	0.231	0.252	0.231	0.289	0.369	0.451
Shanxi	0.395	0.344	0.353	0.335	0.375	0.319	0.350	0.368	0.429	0.479	0.583
Inner Mongolia	0.321	0.282	0.269	0.253	0.317	0.237	0.237	0.260	0.307	0.333	0.440
Liaoning	0.200	0.194	0.174	0.181	0.203	0.181	0.209	0.225	0.287	0.297	0.480
Jilin	0.287	0.250	0.252	0.253	0.271	0.240	0.246	0.276	0.335	0.382	0.573
Heilongjiang	0.270	0.242	0.247	0.237	0.291	0.231	0.236	0.264	0.340	0.348	0.583
Shanghai	0.394	0.377	0.387	0.288	0.292	0.296	0.334	0.353	0.446	0.555	0.520
Jiangsu	0.306	0.291	0.305	0.286	0.324	0.287	0.319	0.317	0.350	0.377	0.401
Zhejiang	0.333	0.336	0.372	0.322	0.330	0.301	0.370	0.416	0.473	0.517	0.528
Anhui	0.277	0.253	0.219	0.222	0.232	0.246	0.246	0.275	0.403	0.511	0.668
Fujian	0.352	0.348	0.333	0.303	0.300	0.275	0.290	0.313	0.386	0.450	0.446
Jiangxi	0.322	0.319	0.295	0.271	0.282	0.259	0.271	0.295	0.469	0.497	0.624
Shandong	0.276	0.271	0.266	0.236	0.235	0.212	0.218	0.238	0.272	0.312	0.346
Henan	0.251	0.239	0.226	0.216	0.254	0.222	0.227	0.267	0.335	0.394	0.510
Hubei	0.358	0.316	0.303	0.292	0.286	0.248	0.252	0.287	0.338	0.384	0.461
Hunan	0.235	0.211	0.195	0.180	0.187	0.167	0.190	0.219	0.294	0.347	0.513
Guangdong	0.382	0.361	0.369	0.334	0.327	0.263	0.286	0.312	0.364	0.448	0.456
Guangxi	0.318	0.303	0.320	0.317	0.335	0.279	0.285	0.297	0.342	0.425	0.536
Hainan	0.374	0.327	0.288	0.276	0.316	0.310	0.329	0.326	0.415	0.464	0.622
Chongqing	0.232	0.226	0.203	0.179	0.196	0.180	0.198	0.234	0.304	0.367	0.414
Sichuan	0.297	0.263	0.240	0.212	0.244	0.211	0.264	0.251	0.334	0.324	0.411
Guizhou	0.409	0.399	0.391	0.386	0.395	0.357	0.408	0.409	0.507	0.543	0.680
Yunnan	0.411	0.403	0.391	0.415	0.423	0.390	0.434	0.471	0.501	0.554	0.661
Shaanxi	0.262	0.185	0.214	0.238	0.250	0.205	0.212	0.232	0.311	0.379	0.492
Gansu	0.301	0.284	0.291	0.352	0.275	0.246	0.287	0.307	0.431	0.468	0.629
Qinghai	0.335	0.322	0.343	0.329	0.369	0.347	0.407	0.446	0.589	0.579	0.630
Ningxia	0.278	0.266	0.343	0.276	0.326	0.244	0.257	0.284	0.347	0.417	0.433
Xinjiang	0.364	0.326	0.322	0.327	0.330	0.295	0.326	0.296	0.386	0.404	0.501
Average value	0.321	0.302	0.300	0.288	0.308	0.274	0.298	0.319	0.397	0.445	0.532
East region	0.336	0.328	0.325	0.305	0.327	0.297	0.323	0.344	0.412	0.469	0.512
Middle region	0.302	0.273	0.262	0.251	0.277	0.241	0.251	0.279	0.361	0.408	0.551
West region	0.321	0.297	0.304	0.302	0.312	0.275	0.310	0.326	0.412	0.448	0.539
Standard deviation	0.065	0.079	0.077	0.081	0.084	0.081	0.096	0.108	0.124	0.131	0.115

about 0.219 higher than that of the middle region and that of the east region is about 0.097 higher than that of the middle region. This illustrates that the built-in demand for optimal medical and health care expenditure of west region is the largest, followed by that of the east region and that of the middle region is the least.

According to Eq. (8) and the definition of φ, by calculating the values of φ_{it}, one can get the ratio of the actual medical and health care expenditure amount of a province to its optimal amount. We name the ratio as the "satisfaction degree" of medical and health care expenditure. Table 3 lists the calculation results of φ_{it}.

From Table 3, it can be seen that:

- From the variation trend, the satisfaction degree of each province shows a trend of rise in fluctuation during 1999-2009; the rising satisfaction degree of each province is also reflected on the increase of national average level -- from 0.321 of 1999 to 0.532 of 2009, increases by about 66%, which illustrates that the insufficiency problem of the medical and health care expenditure becomes better.
- In the cross comparison of different regions, as can be seen, except the reversal situation in 2009, the basic conditions of the satisfaction degree of east, middle and west regions in the other years are: The degree of east region is the highest, followed by west region and that of the middle region is the lowest.
- Viewing from the absolute values of the satisfaction degree, it shall be noticed that the satisfaction degrees of the provincial areas except Beijing are still in low level, which means that the insufficiency problem of medical and health care expenditure is still quite serious.
- Finally, the last row data in Table 3 indicates that the standard deviation of satisfaction degree shows a rise trend by year from 1999 to 2008 and only falls in 2009, which demonstrates that the differentiation level of the satisfaction degree of the provinces are increased gradually.

The remaining question is how do fiscal decentralization and urbanization influence the insufficiency degree of medical and health care expenditure? Table 4 lists relevant estimation results.

First, the estimation results show that the coefficient signs of fiscal decentralization in each model are negative and the significance levels are at least 1%. Take Model 2 as the example, if the degree of fiscal decentralization is increased by 0.1, u_{it} will be decreased by 0.2512 (or the satisfaction degree will be increased by about 29%). As is previously stated, fiscal decentralization has two opposite influence directions on the insufficiency degree of medical and health care expenditure. The empirical results of the study shows

Table 4: Main estimation results (3)

Variable	Model 1	Model 2	Model 3
Fiscal decentralization	-2.097 (-3.833)***	-2.512 (-4.420)***	-3.091 (-3.030)***
Urbanization	-	0.483 (2.546)**	1.427 (6.439)***
Cons	2.717 (4.087)***	2.812 (9.528)***	2.606 (4.426)***
Log likelihood function value	-30.879	-24.845	17.520

1. The numerical values in the table are reserved to two digits after the decimal point, 2. The numerical value in the brackets is the t-statistic of coefficients, *** means the significance level is at least 1%; **: means the significance level is 1~5%; *: means the significance level is 5~10%.

that the first influence exceeds the second influence, hence the total effect of fiscal decentralization is good for alleviating the insufficiency degree of medical and health care expenditure.

What's more, the results of Table 4 show that the coefficient signs of urbanization are positive and in Model 2 significantly differ from 0 under the significance level of 5%. If the degree of urbanization is increased by 0.1, u_{it} will be increased by 0.0483 (or the satisfaction degree will be decreased by about 5%).This demonstrates that urbanization will aggravate the insufficiency of medical and health care expenditure. Although urbanization improves the government's concern on people's livelihood and is good for the increase of public goods expenditure, it is not yet the case for medical and health care expenditure. First, it changes governments' view of the priority degree sequencing of various public goods, so the relative position of medical and health care service falls; second, the expenditure increase rate caused by urbanization may not be able to compensate the rise of residents' Demands.

CONCLUSION

Based on the provincial panel data of China from 1999 to 2009, this study adopts SFA technique to estimate the optimal amount equation and insufficiency degree equation of the medical and health care expenditure of each province. Meanwhile, it calculates the satisfaction degree of the medical and health care expenditure of each province during the sample period.

The policy suggestion of the study is as follows: first, the insufficiency problem of medical and health care expenditure is still quite serious, this status quo shall be attached enough attention to. The local governments shall further enhance the attention degree to medical and health care service and increase financial input; meanwhile, the function of residents in government budgeting shall be given full play gradually to make the expenditure more conform to the preference of residents.

Besides, with the deepening of research on China's fiscal decentralization, the costs accompanied by decentralization have been discovered gradually, but

fiscal decentralization in itself is beneficial to the providing of public goods. Although decentralization causes a series of disadvantages, yet the influence brought by the imperfect institutional design matched with distribution shall be of more responsibility for the problem. To make better use of the positive effect of fiscal decentralization, the performance assessment system for China's local governments shall be improved, the assessment of local residents on the officials shall be added gradually and "from bottom to top" assessment system shall be added, which can thus reduce the behavior distortion caused by the single-faceted pursuit of GDP.

Finally, urbanization is an unavoidable trend, which means that the negative influence of urbanization on medical and health care expenditure satisfaction degree shall be changed. During the process of urbanization, governments shall be clear of their own duties and obligations and have precise control of residents' public goods comprehensive demand change and the demand structure development of various public goods. Thus, the negative influence of urbanization can be minimized and even be changed into positive influence.

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