

VALUE, OBJECTIVES, AND MANIPULATION METHODS OF THE NATIONAL HEALTH INSURANCE IN TAIWAN

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Abstract

The National Health Insurance (NHI) of Taiwan should create benefits for society by maintaining the national health status at a high level. The country has an annual objective of achieving a specific value of the national health index. Taiwan should promote the NHI through health insurance taxation, creating easy access to medical resources, and manipulating medical resources to ensure they are used effectively. Methods are currently subordinate to objectives in hospitals, which can be shown using a Chinese character 正 (pronounced “jheng”), which comprises two other characters, — and 止 (pronounced “yi” and “jih”). The character — denotes integrate, and is used to leadership citizens; 止 denotes the implementation of the NHI. The core problem of the NHI’s implementation is how to design a management mechanism that achieves a natural operation and a balance between income and expenditure and in the doctor–patient relationship. On the basis of pictograms and knowing, this problem can be depicted using the Chinese character 道 (pronounced “dao”) that means road. First, the two upper right marks in 道 can depict the rela-

tionship between the income and expenditure of the NHI or between the effectiveness and efficiency of diagnosis and treatments (an opposite and integrated relationship). Second, the horizontal line under the two marks in 道 indicates that balance must be achieved. Third, the 自 (pronounced “zih”) on the lower right of 道 denotes nature, and the 是 (“chuo”) on the left side of 道 denotes operation; the combination of these two characters illustrates a mechanism of natural operation. Accordingly, 正 and 道 indicate the NHI’s self-balance and operation. This paper focuses on the self-balanced and operational mechanism of the NHI, uses analyses of the shapes of 正 and 道 to explain the current management of Taiwan’s NHI, and proposes practical recommendations. (Figure 1.) (Figure 2.)

Keywords: National Health Insurance (NHI), Second Generation Health Insurance, Global Budget System (GBS), Financial Management

Research Background

Taiwan has been actively working on development of its health care system since 1970, with the Ministry of Health and Welfare established in 1971. The National Health Insurance (NHI) program was initiated in 1995 and had an insurance rates of 4.25%; since then, NHI has strongly influenced the medical care system in Taiwan (Taiwan Ministry of Health and Welfare, R.O.C., 2012). Taiwan’s global budget system (GBS) for dentistry was implemented in July 1998, that for Chinese medicine clinics in July 2000, that for Western medicine in July 2001, and that for hospitals in July 2002. Since their introduction, GBSs have been used universally in Taiwan’s NHI system. Implementation of the GBS for hospitals has resulted in an increase of the NHI insurance rate from 4.25% to 4.55% (Yang, 2005; Taiwan Ministry of Health and Welfare, R.O.C., 2007). Taiwan’s NHI has undergone ongoing modifications for 20 years. It provides

Taiwanese people with high-standard medical care and contributes to the high quality of human resources in Taiwan. Paul R. Krugman, an American scholar awarded the Nobel Prize in Economic Sciences in 2008, described Taiwan’s NHI as a global paradigm in the paper *Pride, Prejudice, Insurance of The New Youk Times (U.S.A.)* (Paul R. Krugman, 2005). However, Taiwan’s NHI is considered subject to severe financial imbalances, and such financial deficit problems have also been a challenge in other countries.

To increase funding for its NHI, Taiwan has been encouraging different sectors to recommend methods of improvement, and the government has also proposed various reforms to the NHI. For example, the government has strengthened the review process of health insurance reimbursements, adjusted the list of medicines that require partial payment from patients (copayments), increased the NHI’s insurance rate, implemented a diagnosis-related

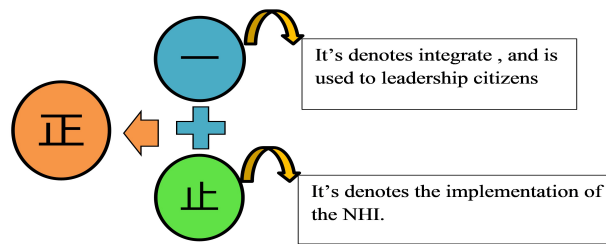


Figure 1. Meaning of the Chinese character 正.

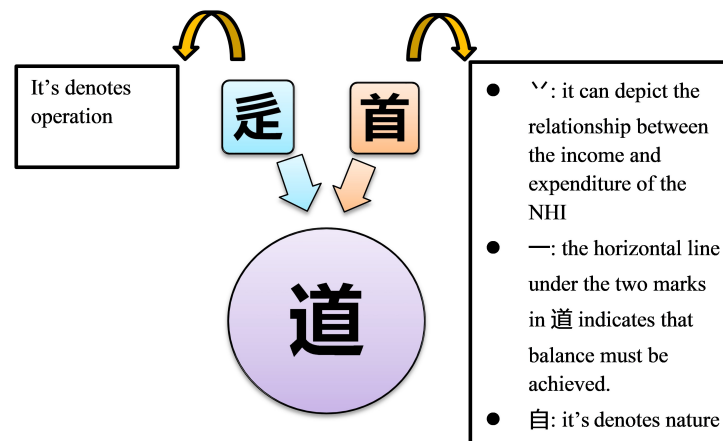


Figure 2. Meaning of the Chinese character 道.

group (DRG) payment system (Ministry of Health and Welfare, R.O.C., 2017), and levied a second-generation NHI supplementary premium. Despite these actions, however, the financial deficit of Taiwan's NHI continues to increase. The NHI provides solutions to health problems, but its financial deficit problem also requires a solution. This paper proposes two solutions, which are named a 正 (a Chinese

character pronounced "jheng")-shaped solution and 道 (a Chinese character pronounced "dao")-shaped solution, for alleviating the problems with the NHI. The 正-shaped solution can be used to solve the NHI's income problem, whereas the 道-shaped solution can be used to solve the NHI's expense problem.

Research Method

Two methods involved in the 正- and 道-shaped solutions are presented separately as follows. (1) Regarding the 正-shaped solution (Shiu Shen, 1998a), this paper discusses how the solution's value and method can counterweight or complement each other; in particular, we use the two Chinese characters that form 正, namely 一 and 止 (pronounced as "yi" and "jih"), to represent the ideas behind the solution's value and method, respectively. The solution involves a deduction with the following two starting points: (1) How can we understand the NHI benefits allocation among the people in Taiwan? (2) Regarding the 道-shaped solution (Shiu Shen, 1998b), this paper discusses how to achieve balance in the NHI's operational mechanism, namely a balance between mutual rivalry and total integration, which are represented by the two marks in the upper right of 道. This solution involves a systematic analysis method.

正-Shaped Solution

That the Taiwanese government began levying the second-generation NHI supplementary premium (Ministry of Health and Welfare, R.O.C., 2007; Liang & Zheng, 2015) indicates its inability to manage the financial deficit of the NHI. Among all the types of income of the NHI, that from second-generation NHI supplementary premiums has the most debatable legiti-

macy because it involves a levy on various items unrelated to health insurance. For example, one of its rules specifies that an individual conducting any economic activities that entail a transaction amount of more than NT\$5000 are required to pay a fixed proportion of the transaction amount to supplement the NHI's income. This levy is not essentially related to the NHI itself. To evade this levy, some people split their transactions (those more than NT\$5000) into multiple smaller transactions despite the increased transaction complexity and cost. This reluctance of people to pay tax is depicted in the Chinese character 稅 (tax, pronounced "shuei"). Two different characters, namely 稅 and 稅 (both of which mean "tax" and are pronounced "shuei"), are used to describe people's attitudes toward paying tax. The two characters have the same left side, and this part of the characters denotes the crops given to the government as a levy (crops were considered money in ancient China). However, the right side of 稅 (Shiu Shen, 1998c) depicts a person kneeling down while presenting gifts to government with both hands to show their appreciation for the government's maintenance of the condition conducive to economic benefits (Chen & Yang, 1999, 2003a, 2003b; Chen & Lu, 2012). The right side of the other character, 稅, illustrates a person kneeling down, with oblique eyebrows, presenting a sad face to the government in a plea for the levy to be waived, thus having a connotation of unpleasantness. According to these explanations, the current sec-

ond- generation NHI supplementary premium is fundamentally a second-generation health insurance tax.

Any citizen-centered government should aim to impose only taxes that people are willing to pay (稅) rather than taxes that people are reluctant to pay (稅). To achieve this, the Taiwanese government should first understand where the value of NHI lies (Shiu & Huang, 2002). For example, defining the NHI's value as its overall benefit value for the population, which is a result of Taiwan's national health status, leads to issues such as how this benefit value can be evaluated. The income of each individual and company for a particular year is generally considered to be strongly related to the society's human resource condition in the same year. Therefore, the health status of the population, which Taiwan's NHI aims to maintain at a high level, is an insufficient but necessary factor affecting individual income. When the national human resource health status and national annual income have a regression correlation coefficient of r (Lin & Chen, 2007), the ideal health insurance taxation might be a flat tax rate of r on individuals' incomes (noncapital gains). A reason for this is that individual's annual comprehensive income (Question and answer on the payment system of the total health insurance medical expenses, 2005) generally comprises capital gains and noncapital gains; in particular, an individual's annual gains derived from the individual's accumulated wealth are strongly affected by chance and the investment environment; therefore, based on benefit-

sharing principles, the government should adopt progressive tax rates on such gains to reduce economic inequality.

However, an individual's annual noncapital gains, such as annual salary income, reflect the individual's contribution to a society, and thus the government should adopt a flat tax rate on individual noncapital gains. Moreover, because human resources (e.g., the population's health status) are a necessary factor contributing to individual noncapital gains, the government can legitimately use a flat tax rate on individual annual noncapital income to act as a health insurance tax.

The health insurance tax received by the government immediately becomes a governmental fund (i.e., the government property resources), and the government can determine how the money is allocated, such as by providing medical subsidies for the disadvantaged. The government should consider and discuss NHI taxation and expense allocation separately. The $\bar{I}E$ -shaped solution focuses on NHI taxation. In particular, this paper examines the connection point of the value of this solution (represented by \bar{I} , which is a component of $\bar{I}E$) with its method (represented by $\bar{I}E$). An advantage of the $\bar{I}E$ -shaped solution is that the government would be prioritizing national health status over health insurance taxation and the health insurance tax income would become part of the government's funds. Another advantage of the solution is that it would facilitate

counterweight or complementary effects between national health status and NHI tax income. This is possibly because, with all other factors remaining constant (e.g., disregarding the aging of human resources), healthier people are associated with more sufficient human resources and thus higher national income. An increased national income, subject to a fixed tax rate of r , results in higher NHI tax income. This income can then be used to provide more health care services for citizens and thus improve their health status. Accordingly, a virtuous cycle is created between receiving NHI tax income and improving national health, the most valuable outcome of the 正-shaped solution.

道-Shaped Solution

The 道-shaped solution is focused on NHI expenditure. NHI expenditure mainly comprises (1) health care expenditure (e.g., costs of health care services, medicines, and medical materials and devices) and (2) the costs of physician examinations. Statistics on medicine costs—provided by the National Health Insurance Administration (NHIA), Ministry of Health and Welfare—reveal that medicine expenditure has increased recently; household expenditure on medicines has been markedly higher than that of the NHI over the last few years, except for 2013 (Taiwan Ministry of Health and Welfare, R.O.C., 2013). The increasing health expenditure of Taiwan reveals the poor management of health expenditure; moreover, a lack of appropriate strategies has led to a large financial

deficit for the NHI.

道-Shaped Solution for Health Care Expenditure Control

Taiwan's NHI employs three mechanisms for controlling NHI expenditure: the income–expenditure balance mechanism of the hospital GBS, the integration mechanism of the DRG system, and the balance mechanism between treatment effectiveness and efficiency.

Income–Expenditure Balance Mechanism of the Hospital GBS

The GBS provides an estimated, fixed amount of money for all hospitals' reimbursements, namely a total annual budget for the NHI. The examinations performed by physicians are counted in points; theoretically, each point indicates NT\$1 paid to hospitals, but this is usually cut to less than NT\$1. For example, assume that NT\$500,000 is budgeted for a hospital, namely an allowance of 500,000 points; the hospital's reimbursement of 550,000 points results in only NT\$0.9 paid for each point (NT\$550,000 is cut to NT\$500,000). This is a preliminary means of control over the global budget. An advanced means of control over the global budget is that hospitals requesting reimbursement of a relatively large amount of money must undergo annual assessment. Subsequently, the size of annual budget they can be reimbursed for is determined by the hospital level they are classified as belonging to according to their assessment results. The outcome of the NHI's GBS for the period after July

2002 (Lin, n.d) showed that the average annual growth rate of health care expenditure was 6.58% before the GBS was implemented but reduced to 4.23% afterward, indicating that NHI costs were controlled by the GBS. However, the GBS has also caused problems. For example, to offset the insufficient funds paid by the hospital GBS, some hospitals have refused patients with life-threatening diseases and limited the number of patients they receive each day, opening hours, and the use of expensive medicines. Patients have also been expected to self-pay for more treatments. Some hospitals have divided patients into self-pay and insurant-pay patients according to their case histories and then provided unequal medical services. Accordingly, the hospital GBS has led to inconsistency in hospital operations and varying doctor–patient relationships. Moreover, the over-reporting and fraudulent behaviors of hospitals when applying for reimbursements have been exposed by news media (Drug Price Black Hole Related Report, 2018).

Integration and Specialization Mechanism of the DRG System

The purpose of implementing a DRG system was to ensure the conformity of health care resource allocation according to patients' disease conditions. Additionally, the DRG system, accompanied by hospital categorization and classification, was expected to achieve ideal specialization among hospitals; specifically, larger hospitals should be responsible for life-threatening diseases, whereas smaller hospitals should be responsible for non-

life-threatening diseases. A relevant study can be referred to for further information on this specialization (Fetter, 1991).

Balance Mechanism Between Treatment Effectiveness and Efficiency

Treatment effectiveness refers to the conformity between a physician's treatment method for a patient and the patient's disease condition. Treatment efficiency is the time required for a physician to perform an examination. Treatment effectiveness indicates the preciseness of a physician's diagnosis; therefore, physicians emphasizing treatment effectiveness usually use treatments focused on the causes of patients' diseases (hereafter referred to as cause-focused treatment). Treatment efficiency indicates the time required for physicians' diagnoses and treatments; thus, physicians emphasizing treatment efficiency usually use treatments focused on the illnesses that have been caused by patients' diseases (hereafter referred to as illness-focused treatment). For example, in Chinese medicine treatment, constipation in younger people is considered to be often caused by lack of sleep—which is a symptom commonly known as high circulation of qi and blood—or dietary habits. Therefore, cooling medicines are used to improve the constipation symptoms. However, constipation in older adults is usually caused by slow bowel peristalsis, and thus warming medicines can be used to improve their symptoms. As an illness, constipation has various causes and thus requires different medicine types. This example suggests the insufficiency of illness-focused treatment and that cause-fo-

cused treatment is more appropriate. Nonetheless, cause-focused treatment is not appropriate in all situations, for the following reason. When patients expect to be 100% cured after a physician's diagnosis and treatment, the physician must use cause-focused treatment, which involves premedication physical examinations, imaging tests, and laboratory tests. However, using these procedures could reduce the number of people examined by the physician and even reduce the income received from physician consultation fees. Therefore, the physician's cause-focused treatments may be unfavorable.

Accordingly, the dilemma between the use of the two treatment approaches is whether providing equal care for all patients is more crucial than providing care for certain patients requiring closer monitoring. In practice, hospitals have to achieve a balance between treatment efficiency (time required) and treatment effectiveness (preciseness). As shown in Table 1, the Ministry of Health and Welfare in Taiwan has developed a budget system for primary care clinics to regulate the number of patients they receive each day. This system standardizes the regulations and thus achieves a balance between treatment effectiveness and efficiency. The core concept of the system is that the number of reimbursable points of a clinic is reduced by increases in the number of patients examined by each physician when the number exceeds a certain threshold. For example, assume the number of reimbursable points for a clinic's first 30 patients is m ; the number of reimbursable points for the 31st to 40th pa-

tients is n ; and that for the 41st to 60th patients is k . The following inequality equation must then be satisfied: $m < n < k$.

The high effectiveness of the three budget control mechanisms is the main reason Taiwan's NHI has received international recognition. However, the high performance of the three control mechanisms has not compensated for the increased quality of medical services of hospitals together with the NHI's increased medical expenditure. Moreover, the demographics of Taiwan show that the population is aging, and not growing; therefore, the annual NHI expenditure per capita is increasing (Table 2) (Health Care Expenditure Statistics; Taiwan's Demographic Structure).

道-Shaped Solution for Health Care Expenditure Control

Despite implementing the hospital GBS, the financial status of the NHI has worsened, which was unexpected. The possible causes of this are as follows. First, newly added budget items, such as medicines for special treatments, are usually expensive because their manufacturers have a monopoly. Second, more people are receiving vaccinations, including pregnant women, children, and infants rather than only older adults. Third, expenditure on special diseases has increased; for example, expenditure on AIDS is not limited by the GBS. Fourth, expenditure on medical treatment for serious accidents has increased, such as the accidental dust

Table 1. Quotas Of Patients For Primary Care Clinics Of Western Medicine
(Daily Quota For Each Stage)

	Original system (operating days = the number of operating days of the current month when operating for 25 days or more)			New system (operating days = 25 days when operating for 25 days or more)		
	Quotas for all stages		Points	Quotas for all stages		Points
Stage 1	1-25	25 patients	320	1-30	30 patients	320
Stage 2	26-30	5 patients	250	31-40	10 patients	250
Stage 3	31-50	20 patients	220	41-60	20 patients	220
Stage 4	51-70	20 patients	160	61-80	20 patients	160
Stage 5	71-150	80 patients	90	81-150	70 patients	70
Stage 6	> 150	> 80	50	> 150	> 70	50

Source: Taiwan Medical Association (The National Federation of Chinese Medical Doctors Association)

Table 2. Population Growth Rate And NHI Expenditure Per Capita (NT\$)
In Taiwan In 2005–2018

Years	Expenditure per capita (NT\$)	Population growth rates (0/00)	Population (per-sons)
2005	30,741	3.58	22,770,383
2006	31,725	4.66	22,876,527
2007	33,025	3.58	22,958,360
2008	33,625	3.43	23,037,031
2009	34,973	3.59	23,119,772
2010	35,690	1.83	23,162,123
2011	36,559	2.71	23,224,912
2012	37,714	3.91	23,315,822
2013	39,131	2.47	23,373,517
2014	40,701	2.58	23,433,753
2015	42,078	2.49	23,492,074
2016	43,719	2.03	23,539,816
2017	45,442	1.33	23,571,227
2018	47,482	0.75	23,588,932

explosion at the Formosa Fun Coast Park in Taiwan. The medical services provided by Taiwan's NHI have increased in both quality and quantity. Because reducing the quality and number of medical services back to a previous standard is undesirable in Taiwan, which has a citizen-centered government, the NHI's financial deficit can be managed only by controlling its pharmaceutical expenditure, and the NHI has demonstrated an ability to do this.

The NHI's approaches to pharmaceutical expenditure control are as follows. Providing annual financial reports to the NHIA is a necessary condition for a pharmaceutical company's medicine to be licensed by NHIA. Subsequently, the NHIA assesses the new medicine's price according to the company's financial report and negotiates with other pharmaceutical companies that provide medicines with the same pharmacological effects as the new medicine; the result of this negotiation serves as a reference for future adjustments in the new medicine's price.

However, because the NHIA does not regulate the procurement methods and prices of medicines between hospitals and pharmaceutical companies, hospitals (or physicians) may be able to make a profit from the price difference and could lead to mismatch between physicians' use of medicines and the disease conditions of their patients. This situation might also result in physicians, for their own benefit, tending to buy from pharmaceutical companies that sell the cheapest medicines with effects similar to

what is expected for making a profit; the focus in this scenario is not on patient care. Therefore, if the NHIA does not develop a strategy for tackling the problem of medicine price differences, this paper proposes the following, namely the r -rate, 道-shaped solution for pharmaceutical expenditure control, where r is a fixed number between 0 and 1. Assume that a patient visits a hospital for examination, and the total fee is $x + y$, where x denotes the patient's self-pay fee (registration fee and partial treatment fee) and y is the reimbursable amount of money that this patient can request from the NHIA.

Based on the current NHI regulation, the self-pay fee (x) is paid by the patient to the hospital on their visit, and the reimbursable fee (y) is requested by the hospital from the NHIA afterwards. However, in the proposed r -rate, 道-shaped solution, each reimbursable fee is multiplied by r , namely adjusted as ry , which is paid by each patient, except low-income or disadvantaged patients, on their visit to a hospital. Specifically, each patient is required to pay an amount of $x + ry$ on their visit to a hospital; the payment is recorded with other patients' payments in the same month. Each hospital subsequently reports these recorded payments to the NHIA and is reimbursed for an amount $(1 - r)y$ monthly for each patient that has visited during the month. Because ry is paid by each patient in advance and is reimbursable, this amount (reimbursed by the NHIA) is received with the patient's next lodged individual tax return (Hyman, 2007).

However, low-income patients should pay according to the current payment regulation; that is, the patient pays a lower amount (z) to their visiting hospital, and the rest of the cost for their medical treatment ($x + y - z$) is reimbursed to the hospital on a monthly basis by the NHIA. Each local government should budget for the NHIA to reduce the NHI's financial burden, which is caused by paying for medical treatments for patients including those with catastrophic illness certificate, with low income, undergoing hemodialysis, and with rare diseases. The r in the r -rate pharmaceutical expenditure control denotes the proportion of reimbursable fee paid in advance by patients. When $r = 0$, the r -rate control approach is equal to the current pharmaceutical expenditure control approach. Comparing these two control approaches, the r -rate pharmaceutical expenditure control approach has the following advantages over the current control approach.

First, the r -rate approach requires each patient to pay r times the reimbursable fee (ry) on their visit to a hospital, and this amount is reimbursed to the patient through their next individual tax return. Using this control approach, the NHIA can save r times the half-yearly interest on its annual total budget.

Second, because this approach requires each patient to pay a greater up-front amount for visiting a hospital, namely when they receive their treatment, patients will pay more attention to whether the quality of medicines and treatments and the fees charged by hospitals conform to their needs re-

garding their disease conditions. Patients' attention will be increased because the cost of hoarding medicines will increase, and patients will be less likely to misuse prescription medicines (such as selling them or gifting them to relatives and friends living abroad). A larger r value will cause a larger change in patient behavior. Moreover, this control approach engages patients more in monitoring the effectiveness of medicine use, such as whether the medicines approved by hospitals are of high quality and whether pharmaceutical manufacturers cut corners on their medicine production processes.

Conclusion

Every input–output system involves an exchange relationship mechanism and a source of power for the mechanism. For example, companies input materials and human resources and manipulate the mechanism to output products, which are sold on markets and thus serve as an exchange for income, indicating that manipulation and exchange are crucial attributes of input–output systems. A system involving exchange behaviors that are created by manipulation of a mechanism and automatically drive subsequent manipulation is known as a real-being system designed from nothing and brought into existence. A real-being system automatically produces power, which improves the system's operation. Specifically, real-being systems operate and develop continually without external force. For example, a person plants a tree with the objective of carbon dioxide reduction (i.e., the person is manipulating); subsequently, nondoing leads to an

automatic increase in the effectiveness of carbon dioxide reduction because the tree grows larger, grows saplings, and thus has greater photosynthesis. This study analyzed the characters of 正 and 道 to explore the financial problems in Taiwan's NHI. To solve these problems, this paper proposes a 正-shaped solution that will enable the NHIA to achieve a balance between NHI tax income and the quality of health care. These two variables have an input-output relationship and grow mutually. Accordingly, the 正-shaped solution is a real-being system, and thus the solution will be applicable for a long period.

Problems in the NHI's expenditure can be divided into two main categories, namely problems of physician examination expenditure and health care expenditure. The current regulation of expenditure on physician examinations is performing well; therefore, this regulation should remain the same. However, regarding expenditure on health care, this paper proposes an r-rate, 道-shaped solution for health care expenditure control. The rivalry and total integration represented by the two upper right marks in the character 道 indicate the rivalry and integration derived from the NHIA and patients' preferences regarding r value. A larger r value yields stronger pharmaceutical expenditure control and reduces the NHIA's expenditure to a larger extent; the NHIA may thus prefer a larger r value.

However, a higher r value re-

sults in higher pharmaceutical costs for patients in the short term, suggesting that patients will prefer a smaller r value. However, in the long term, patients may become more careful in their medicine use, and the overall costs of medication for patients may thus decrease, which is to patients' benefit. Accordingly, when considering r as a variable determined by supply and demand in the medical market, the r-rate, 道-shaped solution for pharmaceutical expenditure control is a real-being system. This indicates that changing Taiwan NHI's pharmaceutical expenditure control system from an $r = 0$ system to one with an equilibrium r value—which will be determined by the supply and demand of the medical market—would be mutually beneficial for the NHIA and patients.

The current pharmaceutical expenditure control system of the NHI is not a real-being system because the NHIA controls the system by supervising physician behaviors in prescribing medicines and supervising the production processes of pharmaceutical manufacturers. Under this approach, the effectiveness of pharmaceutical expenditure control is determined by the quality of the supervisors. An increase (reduction) in the performance of these supervisors leads to an increase (reduction) in the effectiveness of pharmaceutical expenditure control, indicating that supervisors not doing their job result in ineffective control. Because the number of people that the NHIA can afford to hire is so much smaller than the population of Taiwan, it is crucial that the NHI's pharmaceutical expenditure control system have

the characteristics of a real-being system.

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Notes

Article 18 of the National Health Insurance Law states: the insurance premiums of the first to third types of insured and their dependents are calculated based on the insured's insured amount and insurance premium rate; the insurance premium rate is capped at 6%.

The population growth rate refers to the ratio of the population increase to the beginning population in a given period.

Comprehensive income refers to the sum of individual annual consumption expenditure and its net increase in a given year.