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GDP 6% to 16%

—Mathematical Reasoning of Economic Intervening Principle Based on Yin Yang Wu Xing Theory in Traditional Chinese Economics (II)

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Abstract

GDP (Gross Domestic Product) is useful in understanding economic disease. By using mathematical reasoning based on Yin Yang Wu Xing Theory in Traditional Chinese Economics (TCE), this paper demonstrates that for the GDP inflation rate of economic society, the normal range of theory is [5.8114%, 16.359%] nearly to [6%, 16%], and center is 10.208% nearly to 10%. The first or second transfer law of economic diseases changes according to the different GDP inflation rate whether in the normal range or not. The treatment principle: "Don't have economic disease cure cure non-ill" (不治已病治未病) is abiding by the first or second transfer law of economic diseases. Assume that the range of the GDP inflation rate is divided into four parts from small to large. Both second and third are for a healthy economy. The treating works are the prevention or treatment for a more serious relation economic disease which comes from the first transfer law. And both first and fourth are for an unhealthy economy. The treating works are the prevention or treatment for a more serious relation economic disease which comes from the second transfer law. Economic disease treatment should protect and maintain the balance of two incompatibility relations: the loving relationship and the killing relationship. As an application, the Chinese GDP inflation rate is used for the water system of steady multilateral system.

Keywords

Traditional Chinese Economics (TCE), Yin Yang Wu Xing Theory, Steady Multilateral Systems, Incompatibility Relations, Side Effects, Economic Intervention Resistance Problem

1. Introduction

GDP (Gross Domestic Product) is useful in understanding economic disease.

GDP is refers to in a certain period (a quarter or a year), the economy of a country or region to produce the value of all final goods and services, is often recognized as the best indicators of national economy. It not only can reflect a country's economic performance, also can reflect a country's national power and wealth.

Through the growth rate of price index to calculate the rate of inflation, prices can be respectively by the consumer price index (CPI), the producer price index (PPI), the retail price index (RPI), the gross domestic product (GDP), and the gross national product (GNP) as conversion price index. In order to examine a country's national power and wealth, general use of GDP, its formula is as follows:

$$\text{GDP} = Q_{1t}P_{1t} + Q_{2t}P_{2t} + \cdots + Q_{nt}P_{nt}, \quad (1)$$

where the type of digital and t, n is the number in the subscript, Q_* in $Q_{1t}P_{1t}, Q_{2t}P_{2t}, \cdots, Q_{nt}P_{nt}$ on behalf of the production of all kinds of the final product, P_* in $Q_{1t}P_{1t}, Q_{2t}P_{2t}, \cdots, Q_{nt}P_{nt}$ on behalf of all kinds of the price of the final product.

Both the rate of GDP inflation and the GDP are two different concepts. Calculation method of the rate of GDP inflation through the calculation of the GDP changes:

$$\begin{aligned}&\text{The rate of GDP inflation}\left(\text{price rises}\right)\\&= \frac{\text{current price level} - \text{base price level}}{\text{base price level}} \times 100\%,\end{aligned} \quad (2)$$

where the price rise level from low to high, to base the level of prices for base. One of the base period is selected one price level as a reference, so that you can put the other periods of price level with a comparison between base level to measure the current level of inflation.

Note on the type, the GDP inflation rate is not a price index, which is not a price rise, but the GDP price index to rise. In fact, what is said above is just one of the five methods (CPI, PPI, RPI, GDP, GNP) of measuring inflation index reduced living consumption laws, but it is the most commonly used for studying a country's national power and wealth, in addition to the gross national product (GNP), the consumer price index (CPI), the producer price index (PPI) and the retail price index (RPI) conversion method.

The GDP is the government measure of a country's national power and wealth inflation one of the data. Popular speaking, the GDP inflation rate is the value of all final goods and services on the market growth percentage. As an important indicator, observe the level of a country's national power and wealth inflation in China, much attention has been paid to also for such an important indicator, as a new era of youth, more objective view should be observed. First of all, let us meet the GDP. The GDP is to reflect a country's national power and wealth, related to all final goods and services calculated price, usually observed inflation as an important indicator.

Ahmed & Suliman (2011) have found that the direction of causation between real GDP and prices is uni-directional from real GDP to CPI without any feedback. The GDP plays a key role in the CPI. So the central bank can minimize the inflation by taking certain predictive measures to keep the input prices under control. Because of the causation relation between the GDP and the CPI, the normal range of the GDP inflation rate can be obtained from the normal range of the CPI inflation rate. It is found that the normal range of the CPI inflation rate is from 2% to 5%. There are a lot of evidences (e.g., experimental identification for probability and real applications) to support this viewpoint, such as, Crone et al. (2010), Pauhofova & Qineti (2002), Funke et al. (2015), Formica & Kingston (2015), Fan et al. (2009), Adams (2014), Hausman (1999), Nahm (2015), Moosa (1997), Zhao (2013), Daniel (2012), Anonymous (1999a, 1999b), and so on.

It is believed that the normal range of the GDP inflation rate is from 6% to 16%. It is because the GDP is more sensitive than the CPI, so changes in the wider range. Thus the economic social system identifies an important indicator for an economic social system health: the value of GDP inflation rate, which, under normal conditions, ranges from 6% to 16%. Outside this range (low: Yin condition; high: Yang condition), economic disease appears. Almost always, when there is economic disease, the condition of inflation rate is a Yin condition, little is a Yang condition.

In this paper, the rate of GDP inflation is considered as the wealth level rises rather than the currency quantity rises from the basic concept of GDP. It is because the GDP is the direct reflection of living standards, although the wealth level increase is difficult to be controlled directly.

The GDP is a general parameter linking together the complexity of relations between subsystem pairs of economic social system, economic social system itself, the capabilities for intervention reaction and self-protection of the economic social system as an economy and mind as a whole, related to the environment, food, health and personal history, air, water, earth, climate, season, etc. GDP is as useful in understanding economic disease as the average is in statistics, or as the expected value is in probability calculation.

The economic social system as an economy begins to activate the necessary mechanisms to restore this parameter to its appropriate range. If the economic social system as an economy is unable to restore optimal GDP levels, the economic disease may become chronic and lead to dire consequences.

Zhang (1993, 2007, 2011a, 2011b, 2012, 2013, 2020) have started a great interest and admired works for Traditional Chinese Economics (TCE), where, through mathematical reasoning, they demonstrate the presence of incompatibility relations, which are predominant in daily life, yet absent in traditional Aristotelian Western logic.

Many people as Western persons are beyond all doubt the Yin Yang Wu Xing theory is superior to the traditional true-false logic, which does not contemplate incompatibility relations, which Zhang & Zhang (2013) have expertly explained from a mathematical standpoint.

The work Zhang (1993, 2007) has started, allows many people like Western person to think of a true re-foundation of mathematical language, to make it a better suited tool for the needs of mankind economic social system and the environment. Even so, Zhang & Zhang (2013) also bring to light the difficulty of establishing the values of both the intervention reaction coefficients ρ_1, ρ_2 and the self-protection coefficient ρ_3 as parameters with due accuracy.

In this paper, the introduction of a parameter such as a GDP inflation rate will be suggested, in order to facilitate the understanding and the calculation of the values of both the intervention reaction coefficients ρ_1, ρ_2 and the self-protection coefficient ρ_3. This paper ventures to suggest this with all due to respect, because it is believed that the path Zhang & Zhang (2013) have started, in such an understandable way from the mathematical point of view, will be very useful for all mankind searching for tools to understand the mechanisms of economic social system.

The article proceeds as follows. Section 2 contains a parameter model and basic theorems, in order to explain both the intervention reaction coefficients ρ_1, ρ_2 and the self-protection coefficient ρ_3 through the introduction of a parameter model to study the normal range of a GDP inflation rate, while the first or second transfer law of economic diseases is demonstrated in Section 3, proved through the concept of both relation diseases and a relationship analysis of steady multilateral systems. Furthermore, if the range of GDP inflation rate is divided into four parts, for the economy in every part, the prevention or treatment method of economic diseases as treatment principle of TCE is given in Section 4. As an application, the Chinese GDP inflation rate is used for the water system of steady multilateral system in Section 5 and conclusions are drawn in Section 6.

2. Parameter Model and Basic Theorems

The concepts and notations in Zhang & Zhang (2013) are used still and start.

Let $\varphi = \left(\sqrt{5}-1\right)/2 = 0.61803399$ be the **gold number**. Denoted $\rho_0 = 0.5897545123$, namely **healthy number**. It is because the healthy number ρ_0 can make the healthy balance conditions $\rho_1 = \rho_3$, $\rho_2 = \rho_1\rho_3$ and $1-\rho_2\rho_3 = \rho_1 + \rho_2\rho_3$ hold if $\rho_1 = \rho_0$, $\rho_2 = \rho_0^2$ and $\rho_3 = \rho_0$. Assume that $\rho_0' = 0.68232780$, namely **balance number**. It is because under a poor self-protection ability, the balance number ρ_0' can make the poor healthy balance conditions:

$$\rho_1 - \rho_3 = \rho_3 = \rho_0'/2 = 0.34116390,$$
$$\rho_2 - \rho_1\rho_3 = \rho_1\rho_3 = \left(\rho_0'\right)^2/2 = 0.23278561$$

and $1-\rho_2\rho_3 = \rho_1 + \rho_2\rho_3$ hold if $\rho_1 = \rho_0'$, $\rho_2 = \left(\rho_0'\right)^2 = 0.46557123$ and $\rho_3 = \rho_0'/2$. Thus $\rho_0 < \varphi < \rho_0'$.

A parameter model of a GDP inflation rate in a mathematical sense based on Yin Yang Wu Xing Theory of TCE is reintroduced by using the functions $\lambda(x)$

and $\rho(x)$ of the GDP inflation rate x described as follows.

Let $x \in (-0.11, 0.81)$ be a GDP inflation rate, where the values −0.11 and 0.81 are the minimum and maximum acceptable the GDP inflation rate. Denoted the value 0.10208 is the target as the expectation of the GDP inflation rate. Define a function $\lambda(x)$ of the GDP inflation rate x in below:

$$\lambda(x) = \frac{|x-0.10208|}{(0.81-x)(x+0.11)}, \forall x \in (-0.11, 0.81)$$
$$= \begin{cases} \dfrac{x-0.10208}{(0.81-x)(x+0.11)}, & 0.81 > x \geq 0.10208; \\ \dfrac{0.10208-x}{(0.81-x)(x+0.11)}, & -0.11 < x < 0.10208. \end{cases} \quad (3)$$

A parameter model is considered as

$$\rho(x) = \frac{1/2}{\lambda(x)+1/2}, \forall x \in (-0.11, 0.81). \quad (4)$$

Theorem 2.1 *Under model* (4), *the following statements hold.*

1) *The one that* $0 < \rho(x) = \frac{1/2}{\lambda(x)+1/2} \leq 1$ *is equivalent to the other that*

$$0 \leq \lambda(x) = \frac{1-\rho(x)}{2\rho(x)} < +\infty,$$

where $\lambda(x)$ *is a monotone decreasing function of* x *if* $x \in (-0.11, 0.10208)$ *or a monotone increasing function of* x *if* $x \in [0.10208, 0.81)$; *and* $\rho(x)$ *is a monotone decreasing function of* $\lambda(x)$ *if* $\lambda(x) \in [0, +\infty)$; *and* $\lambda(x)$ *is a monotone decreasing function of* $\rho(x)$ *if* $\rho(x) \in (0, 1]$.

2) *If* $1 \geq \rho(x) \geq \rho_0$, *then* $\lambda(x) = \frac{1-\rho(x)}{2\rho(x)} \leq \frac{1-\rho_0}{2\rho_0} = \rho_0^2 \leq \rho(x)^2 \leq 1$;

$\frac{\lambda(x)}{\rho(x)} = \frac{1-\rho(x)}{2\rho(x)^2} \leq \frac{1-\rho_0}{2\rho_0^2} = \rho_0 \leq \rho(x) \leq 1$; *and* $\frac{\lambda(x)}{\rho(x)^2} = \frac{1-\rho(x)}{2\rho(x)^3} \leq \frac{1-\rho_0}{2\rho_0^3} = 1$.

3) *If* $0 < \rho(x) < \rho_0$, *then* $\lambda(x) = \frac{1-\rho(x)}{2\rho(x)} > \frac{1-\rho_0}{2\rho_0} = \rho_0^2 > \rho(x)^2 > 0$;

$\frac{\lambda(x)}{\rho(x)} = \frac{1-\rho(x)}{2\rho(x)^2} > \frac{1-\rho_0}{2\rho_0^2} = \rho_0 > \rho(x) > 0$; *and* $\frac{\lambda(x)}{\rho(x)^2} = \frac{1-\rho(x)}{2\rho(x)^3} > \frac{1-\rho_0}{2\rho_0^3} = 1$.

4) *Taking* $0 < \rho_1 = \rho(x) < \rho_0, \rho_2 = \rho(x)^2$ *and* $\rho_3 = c\rho(x)$ *where* $0 \leq c \leq 1$, *there are* $\rho_1 - \rho_3 = \rho(x)(1-c) \geq 0$, $\rho_2 - \rho_1\rho_3 = \rho(x)^2(1-c) \geq 0$, *and*

$$(\rho_1 + \rho_2\rho_3) = \rho(x) + c\rho(x)^3 < 1 - \rho_2\rho_3 = 1 - c\rho(x)^3,$$

where $|(\rho_1 + \rho_2\rho_3) - (1-\rho_2\rho_3)| > 2(1-c)\rho_0^3 = (1-c)0.41024$.

5) *Taking* $1 \geq \rho_1 = \rho(x) \geq \rho_0$, $\rho_2 = \rho(x)^2$ *and* $\rho_3 = c\rho(x)$ *where* $0 \leq c \leq 1$, *there are*

Firstly, $\rho_1 - \rho_3 = \rho(x)(1-c) \geq 0$, $\rho_2 - \rho_1\rho_3 = \rho(x)^2(1-c) \geq 0$ *and* $(\rho_1 + \rho_2\rho_3) = \rho(x) + c\rho(x)^3 \geq 1 - \rho_2\rho_3 = 1 - c\rho(x)^3$ *if* $1 \geq c \geq \frac{1-\rho(x)}{2\rho(x)^3} = \frac{\lambda(x)}{\rho(x)^2} \geq 0$;

Secondly, $\rho_1-\rho_3=\rho(x)(1-c)>\rho(x)/2$, $\rho_2-\rho_1\rho_3=\rho(x)^2(1-c)>\rho(x)^2/2$ *and* $(\rho_1+\rho_2\rho_3)=\rho(x)+c\rho(x)^3<1-\rho_2\rho_3=1-c\rho(x)^3$ *where* $|(\rho_1+\rho_2\rho_3)-(1-\rho_2\rho_3)|\le(\rho_0')^3=0.31767$ *if* $0\le c<\frac{1-\rho(x)}{2\rho(x)^3}=\frac{\lambda(x)}{\rho(x)^2}\le\frac{1}{2}$ *in which* $1>\rho(x)\ge\rho_0'$;

Thirdly, $\rho_1-\rho_3=\rho(x)(1-c)\ge\rho(x)/2$, $\rho_2-\rho_1\rho_3=\rho(x)^2(1-c)\ge\rho(x)^2/2$ *and* $(\rho_1+\rho_2\rho_3)=\rho(x)+c\rho(x)^3<1-\rho_2\rho_3=1-c\rho(x)^3$ *where* $|(\rho_1+\rho_2\rho_3)-(1-\rho_2\rho_3)|\le 2\rho_0^3=0.41024$ *if* $0\le c\le\frac{1}{2}<\frac{1-\rho(x)}{2\rho(x)^3}=\frac{\lambda(x)}{\rho(x)^2}\le 1$ *in which* $\rho_0\le\rho(x)<\rho_0'$;

Finally, $\rho_1-\rho_3=\rho(x)(1-c)<\rho(x)/2$, $\rho_2-\rho_1\rho_3=\rho(x)^2(1-c)<\rho(x)^2/2$ *and* $(\rho_1+\rho_2\rho_3)=\rho(x)+c\rho(x)^3<1-\rho_2\rho_3=1-c\rho(x)^3$ *where* $|(\rho_1+\rho_2\rho_3)-(1-\rho_2\rho_3)|<(\rho_0')^3=0.31767$ *if* $\frac{1}{2}<c<\frac{1-\rho(x)}{2\rho(x)^3}=\frac{\lambda(x)}{\rho(x)^2}\le 1$ *in which* $\rho_0\le\rho(x)<\rho_0'$.

In particular, when c is nearly to 1/2, *there are* $\rho_1-\rho_3=\rho(x)(1-c)\to\rho(x)/2$, $\rho_2-\rho_1\rho_3=\rho(x)^2(1-c)\to\rho(x)^2/2$ and *the following statements hold.*

a) *The absolute value* $|(\rho_1+\rho_2\rho_3)-(1-\rho_2\rho_3)|$ *is nearly to* 0 *if* $0<c<\frac{1-\rho(x)}{2\rho(x)^3}=\frac{\lambda(x)}{\rho(x)^2}\le\frac{1}{2}$ *in which* $1>\rho(x)\ge\rho_0'$.

b) *The value* $[(\rho_1+\rho_2\rho_3)-(1-\rho_2\rho_3)]$ *is included in the interval* $[-\rho_0^3=-0.20512,0)$ *if* $0<c\le\frac{1}{2}<\frac{1-\rho(x)}{2\rho(x)^3}=\frac{\lambda(x)}{\rho(x)^2}\le 1$ *in which* $\rho_0\le\rho(x)<\rho_0'$.

c) *The value* $[(\rho_1+\rho_2\rho_3)-(1-\rho_2\rho_3)]$ *is included in the interval* $[-\rho_0^3=-0.20512,0)$ *if* $\frac{1}{2}<c<\frac{1-\rho(x)}{2\rho(x)^3}=\frac{\lambda(x)}{\rho(x)^2}\le 1$ *in which* $\rho_0\le\rho(x)<\rho_0'$. #

Corollary 2.1 *Under model* (2.2), *the following statements hold.*

1) *For any* $0<d<1$, *there is an unique solution* $u\in(-0.11,0.10208)$ *and there is also an unique solution* $v\in(0.10208,0.81)$, *such that*

$$\lambda(0.10208)=0\le\lambda(x)=\frac{1-\rho(x)}{2\rho(x)}\le\lambda(u)=\lambda(v)=(1-d)/(2d),$$

$$\rho(u)=\rho(v)=d\le\rho(x)=\frac{1/2}{\lambda(x)+1/2}\le 1=\rho(0.10208).$$

2) *The condition* $x\in[0.06,0.16]$ *is equivalent to each of the following conditions*:

$$\lambda(0.10208)=0\le\lambda(x)=\frac{1-\rho(x)}{2\rho(x)}\le\lambda(0.06)=\lambda(0.16)=0.33003,$$

$$\rho(0.06)=\rho(0.16)=0.60239\le\rho(x)=\frac{1/2}{\lambda(x)+1/2}\le 1=\rho(0.10208).$$

3) *The condition* $x \in [0.062274, 0.15581]$ *is equivalent to each of the following conditions*:

$$\lambda(0.10208) = 0 \le \lambda(x) = \frac{1-\rho(x)}{2\rho(x)} \le \lambda(0.062274)$$

$$= \lambda(0.15581) = \frac{1-\varphi}{2\varphi} = 0.30902,$$

$$\rho(0.062274) = \rho(0.15581) = \varphi \le \rho(x) = \frac{1/2}{\lambda(x)+1/2} \le 1 = \rho(0.10208).$$

4) *The condition* $x \in [5.8114\%, 16.359\%]$ *is equivalent to each of the following conditions*:

$$\lambda(10.208\%) = 0 \le \lambda(x) = \frac{1-\rho(x)}{2\rho(x)} \le \lambda(5.8114\%)$$

$$= \lambda(16.359\%) = \rho_0^2 = 0.34781,$$

$$\rho(5.8114\%) = \rho(16.359\%) = \rho_0 \le \rho(x) = \frac{1/2}{\lambda(x)+1/2} \le 1 = \rho(10.208\%).$$

5) *The condition* $x \in [0.070949, 0.14119]$ *is equivalent to each of the following conditions*:

$$\lambda(0.10208) = 0 \le \lambda(x) \le \lambda(0.070949) = \lambda(0.14119) = (\rho_0')^2/2 = 0.23279,$$

$$\rho(0.070949) = \rho(0.14119) = \rho_0' \le \rho(x) = \frac{1/2}{\lambda(x)+1/2} \le 1 = \rho(0.10208). \quad \#$$

Remark 1. In west, through experiment or through practice observation, by using the Granger causality relation between the GDP and the CPI, many researchers can obtain the normal range of the GDP inflation rate as $x \in [6\%, 16\%]$ from the normal range of the CPI as $x \in [0.02, 0.05]$. But in TCE, from Yin Yang Wu Xing Theory, Zhang & Zhang (2013) have already determined: $\rho_0 \le \rho_1 \le 1$ for the normal range of a healthy economy. Assume that $\rho_1 = \rho(x)$, $\rho_2 = \rho(x)^2$ and $\rho_3 = c\rho(x)$ where $0 \le c \le 1$ for an economic society which has the capabilities of both intervention reaction and self-protection. From Corollary **2.1**, the condition $\rho_0 \le \rho_1 \le 1$ is equivalent to that $x \in [5.8114\%, 16.359\%]$. In other words, in Theory of TCE, the normal range of the GDP inflation rate is considered as $x \in [5.8114\%, 16.359\%]$, nearly to $x \in [6\%, 16\%]$, and center is 10.208 % nearly to 10%. Of course, little difference of the two intervals which makes the diagnosis of disease as a result, there may be no much difference as a suspect. In fact, TCE uses the rule $\rho_0 \le \rho_1 \le 1$ from Yin Yang Wu Xing Theory instead of the normal range of a GDP inflation rate. The equivalence of Corollary **2.1** shows that TCE is The scientific which is from TCM (Traditional Chinese Medicine).

Zhang & Zhang (2013) have already determined: an economy is said a healthy mathematical complex system when the intervention reaction coefficient ρ_1 satisfies $1 \ge \rho_1 \ge \rho_0$. In logic and practice, it's reasonable that $\rho_1 + \rho_2$ is near to 1 if the input and output in a complex system is balanced, since a mathematical output subsystem is absolutely necessary other subsystems of all consumption. In case: $\rho_1+\rho_2=1$, all the energy for intervening mathematical complex subsystem can transmit to other mathematical complex subsystems which have neighboring relations or alternate relations with the intervening mathematical complex subsystem. The condition $\rho_1 \ge \rho_0$ can be satisfied when $\rho_2=\rho_1\rho_3$ and $\rho_3=\rho_1$ for a mathematical complex system since $\rho_1+\rho_2=1$ implies $\rho_1=\varphi\approx 0.61803\ge\rho_0$. In this case, $\rho_2=\varphi^2\approx 0.38197\ge\rho_0^2$. If this assumptions is set up, then the intervening principle: "Real disease with a healthy economy is to rush down his son and virtual disease with a healthy economy is to fill his mother" based on "Yin Yang Wu Xing" theory in image mathematics by Zhang & Shao (2012), is quite reasonable. But, in general, the ability of self-protection often is insufficient for an usual mathematical complex system, i.e., ρ_3 is small. A common standard is $\rho_3=\dfrac{1-\rho_1}{2\rho_2}\approx\dfrac{1}{2}$ which comes from the balance condition $(1-\rho_2\rho_3)=(\rho_1+\rho_2\rho_3)$ of the loving relationship if $\rho_1+\rho_2\approx 1$. In other words, there is a principle which all losses are bear in mathematical complex system. Thus the general condition is often $\rho_1\approx 0.61803\ge\rho_3\approx 0.5\ge\rho_2\approx 0.38197$. Interestingly, they are all near to the golden numbers. It is the idea to consider the unhealthy balance number $\rho_0'=0.68232780$ since the poor condition of self-protection ability $\rho_3=\rho_1/2=\rho_0'/2=0.34116390$ can make that the unhealthy balance conditions hold: $\rho_1-\rho_3=\rho_3=\rho_0'/2=0.34116390$, $\rho_2-\rho_1\rho_3=\rho_1\rho_3=(\rho_0')^2/2=0.23278561$, and $(1-\rho_2\rho_3)=(\rho_1+\rho_2\rho_3)$ of the loving relationship if $\rho_1=\rho_0'$ and $\rho_2=(\rho_0')^2=0.46557123$.

By Theorem **2.1** and Corollary **2.1**, the interval $x\in[0.06,0.16]$ implies the following condition

$$1\ge\rho_1=\rho(x)\ge 0.60239=\rho(0.06)=\rho(0.16);$$

and the interval $x\in[0.062274,0.15581]$ implies the following condition

$$1\ge\rho_1=\rho(x)\ge\varphi=\rho(0.062274)=\rho(0.15581);$$

and the interval $x\in[5.8114\%,16.359\%]$ implies the following condition

$$1\ge\rho_1=\rho(x)\ge\rho_0=\rho(5.8114\%)=\rho(16.359\%),$$

where $\lambda(5.8114\%)=\lambda(16.359\%)=\dfrac{1-\rho_0}{2\rho_0}=\rho_0^2$ since $(1-\rho_0^3)=(\rho_0+\rho_0^3)$;

and the interval $x\in[0.070949,0.14119]$ implies the following condition

$$1\ge\rho_1=\rho(x)\ge\rho_0'=\rho(0.070949)=\rho(0.14119),$$

where $\lambda(0.070949)=\lambda(0.14119)=\dfrac{1-\rho_0'}{2\rho_0'}=\dfrac{(\rho_0')^2}{2}$ since $(\rho_0')^3=(1-\rho_0')$.

The last one is the healthy interval in an economic society's self-protection ability poor conditions. The interval range than the normal economic society health requirements is too strict, only the first three interval ranges are considered as a normal economic society health ranges. If keep two decimal places, then first three intervals are the same as $x \in [6\%, 16\%]$. This shows that range $x \in [6\%, 16\%]$ is stable. The interval as the normal range of a GDP inflation rate may be also appropriate. To conservative estimates, the length of the largest of the first three interval ranges, i.e., $x \in [5.8114\%, 16.359\%]$, is used as our theoretical analysis of the normal range. In fact, the range $x \in [5.8114\%, 16.359\%]$ is better than the range $x \in [0.06, 0.16]$ because both $\rho_0 = \rho(5.8114\%) = \rho(16.359\%)$ and

$$\lambda(5.8114\%) = \lambda(16.359\%) = \frac{1-\rho_0}{2\rho_0} = \rho_0^2$$

satisfy the healthy balance conditions: $\rho_1 = \rho_3$, $\rho_2 = \rho_1\rho_3$ and $(1-\rho_2\rho_3) = (\rho_1 + \rho_2\rho_3)$ at the same time if $\rho_1 = \rho_0$, $\rho_2 = \rho_0^2$ and $\rho_3 = c\rho_0$ where $c \to 1$. In other words, the parameter $\rho_1 = \rho(x) \ge \rho_0$ or the range $x \in [5.8114\%, 16.359\%]$ is the healthy condition of both the killing relationship and the loving relation at the same time. But neither are the others. The GDP inflation rate must be precise calculation to keep at least 6 decimal places can ensure correct because of its sensitivity to the diagnosis of disease. #

Remark 2. Western Economics is different from TCE because the TCE has a concept of *Chi or Qi* as a form of energy. From the energy concept, that one organ or subsystem of the economic society is **not running properly** (or **disease**, **abnormal**), is that the energy deviation from the average of the organ is too large, the high (**real disease**) or the low (**virtual disease**). For the normal range of a GDP inflation rate of some economic society as $x \in [5.8114\%, 16.359\%]$, in TCE, if $x > 16.359\%$, the economy is considered as a real disease since the GDP inflation rate is too high; if $x < 5.8114\%$, the economy is considered as a virtual disease since the GDP inflation rate is too low. Thus TCE identifies an important indicator for an economic society's health: the value of the GDP inflation rate, which, under normal conditions, ranges from 5.8114% to 16.359%. Outside this range (too low: Yin condition; too high: Yang condition), disease appears. Almost always absolutely, when there is a virtual disease, the condition of the GDP inflation rate is a Yin condition; when there is a real disease, the condition of the GDP inflation rate is a Yang condition. But there do not exist these concepts of both real diseases and virtual diseases in Western Economics. #

Remark 3. Obviously, when applying the hypothesis of Theorem **2.1** and Corollary **2.1** to other fields rather than economic society's health, it is necessary to identify a global parameter in each field. It is able to yield a general Yin or Yang condition in relation to the average behavior of the studied phenomenon, and it maintains the equations at a sufficiently simple level of writing and application. In fact, let $x \in (\min, \max)$ where the values min and max are the minimum and maximum acceptable the index x. Denoted the value t_0 is the target as the expectation of the index x such that $\rho(t_0) = 1$. In Equations (3) and (4), replace $-0.11, 0.81, 0.10208$ by $\min, \max, t_0$, respectively. The equivalent condition of a healthy economy $\rho_0 \le \rho_1 = \rho(x) \le 1$ can be obtained as $x \in [u, v]$, $\min < u < t_0 < v < \max$, where

$$\rho(u)=\rho(v)=\rho_0\le\rho_1=\rho(x)=(1/2)/[\lambda(x)+1/2]\le\rho(t_0)=1$$

and

$$\lambda(t_0)=0\le\lambda(x)=(1-\rho(x))/(2\rho(x))\le\rho_0^2=\lambda(u)=\lambda(v)$$
$$=\rho(u)^2=\rho(v)^2\le\rho_2=\rho(x)^2\le\rho_1=\rho(x)\le 1.\#$$

3. Relationship Analysis of Steady Multilateral Systems

3.1. Energy Changes of a Steady Multilateral System

In order to apply the reasoning to other fields rather than society economy's health, Zhang & Zhang (2013) have started a steady multilateral system imitating a society economy. A most basic steady multilateral system is as follows:

Theorem 3.1 (Zhang & Shao, 2012) *For each element x in a steady multilateral system V with two incompatibility relations, there exist five equivalence classes below*:

$$X=\{y\in V\mid y\sim x\},X_S=\{y\in V\mid x\to y\},X_K=\{y\in V\mid x\Rightarrow y\},$$
$$K_X=\{y\in V\mid y\Rightarrow x\},S_X=\{y\in V\mid y\to x\},$$

which the five equivalence classes have relations in Figure 1. #

It can be proved by Theorem **3.2** below that the steady multilateral system in Theorem **3.1** is the reasoning model of Yin Yang Wu Xing in TCE if there is an energy function $\varphi(*)$ satisfying

$$\frac{\Delta\varphi(X)}{\Delta}\to\frac{\mathrm{d}\varphi(X)}{\mathrm{d}X}=(1-\rho_2\rho_3)=\left(1-c\rho(x)^3\right)>0;$$
$$\frac{\Delta\varphi(X_S)}{\Delta}\to\frac{\mathrm{d}\varphi(X_S)}{\mathrm{d}X}=(\rho_1+\rho_2\rho_3)=\rho(x)\left(1+c\rho(x)^2\right)>0;$$
$$\frac{\Delta\varphi(X_K)}{\Delta}\to\frac{\mathrm{d}\varphi(X_K)}{\mathrm{d}X}=-(\rho_1-\rho_3)=-\rho(x)(1-c)<0;$$
$$\frac{\Delta\varphi(K_X)}{\Delta}\to\frac{\mathrm{d}\varphi(K_X)}{\mathrm{d}X}=-(\rho_2-\rho_1\rho_3)=-\rho(x)^2(1-c)<0;$$
$$\frac{\Delta\varphi(S_X)}{\Delta}\to\frac{\mathrm{d}\varphi(S_X)}{\mathrm{d}X}=(\rho_2-\rho_1\rho_3)=\rho(x)^2(1-c)>0,$$

if increase the energy of $X(\forall\Delta\varphi(X)=\Delta>0)$, where $\rho_1=\rho(x)$, $\rho_2=\rho(x)^2$, $\rho_3=c\rho(x)$, $0<\rho(x)<1$, $0\le c\le 1$.

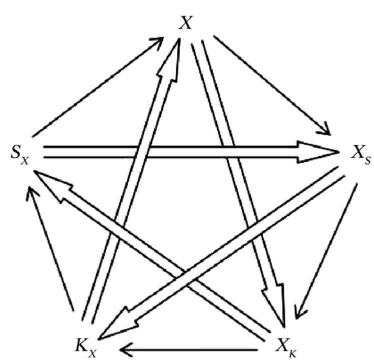

Figure 1. Finding Yin Yang Wu Xing model.

It is called the Yin Yang Wu Xing model, denoted by V^5.

The Yin Yang Wu Xing model can be written as follows:

Define

$$V_0 = X, V_1 = X_S, V_2 = X_K, V_3 = K_X, V_4 = S_X,$$

corresponding to wood, fire, earth, metal, water, respectively, and assume

$$V = V_0 + V_1 + V_2 + V_3 + V_4 \text{ where } V_i \cap V_j = \varnothing, \forall i \neq j.$$

And take $\Re = \{R_0, R_1, \cdots, R_4\}$ satisfying

$$R_r = \sum_{i=0}^{4} V_i \times V_{mod(i+r,5)}, r \in \{0,1,\cdots,4\}, R_i * R_j \subseteq R_{mod(i+j,5)},$$

where $V_i \times V_j = \{(x,y): x \in V_i, y \in V_j\}$ is the Descartes product in set theory and $R_i * R_j = \{(x,y): \exists u \in V \text{ such that } (x,u) \in R_i, (u,y) \in R_j\}$ is the multiplication relation operation. The relation multiplication of * is isomorphic to the addition of module 5. Then V^5 is a steady multilateral system with one equivalent relation R_0 and two incompatibility relations $R_1 = R_4^{-1}$ and $R_2 = R_3^{-1}$ where the inverse relation operation is $R_i^{-1} = \{(x,y): (y,x) \in R_i\}, \forall i \in \{1,2,3,4\}$. The Yin and Yang means the two incompatibility relations and the Wu Xing means the collection of five disjoint classifications of $V = V_0 + V_1 + V_2 + V_3 + V_4$.

Figure 1 in Theorem **3.1** is the Figure of Yin Yang Wu Xing theory in Ancient China. The steady multilateral system V with two incompatibility relations is equivalent to the logic architecture of reasoning model of Yin Yang Wu Xing theory in Ancient China. What describes the general method of complex systems can be used in economic society complex systems.

By non-authigenic logic of TCE, i.e., a logic which is similar to a group has nothing to do with the research object by Zhang & Shao (2012), in order to ensure the reproducibility such that the analysis conclusion can be applicable to any a complex system, a logical analysis model which has nothing to do with the object of study should be chosen. The *Tao* model of Yin and Yang is a generalized one which means that two is basic. But the *Tao* model of Yin Yang is simple in which there is not incompatibility relation. The analysis conclusion of *Tao* model of Yin Yang cannot be applied to an incompatibility relation model. Thus the Yin Yang Wu Xing model with two incompatibility relations of Theorem **3.1** will be selected as the logic analysis model in this paper.

Western Economy is different from TCE because the TCE has a concept of *Chi or Qi* (气) as a form of energy of steady multilateral systems. It is believed that this energy exists in all things of steady multilateral systems (living and non-living) including air, water, food and sunlight. *Chi* is said to be the unseen vital force that nourishes steady multilateral systems' body and sustains steady multilateral systems' life. It is also believed that an individual is born with an original amount of *Chi* at the beginning of steady multilateral systems' life and as a steady multilateral system grows and lives, the steady multilateral system acquires or attains *Chi* or energy from "eating" and "drinking", from "breathing" the surrounding "air" and also from living in its environment. The steady multilateral system having an energy is called **the anatomy system** or **the first physiological system**. And the first physiological system also affords *Chi* or energy for the steady multilateral system's meridian system (*Jing-Luo* (经络) *or Zang Xiang* (藏象)) which forms a parasitic system of the steady multilateral system, called **the second physiological system** of the steady multilateral system. The second physiological system of the steady multilateral system controls the first physiological system of the steady multilateral system. A steady multilateral system would become ill or dies if the *Chi* or energy in the steady multilateral system is imbalanced or exhausted, which means that $\rho_1 = \rho(x) \to 0$, $\rho_2 = \rho(x)^2 \to 0$ and $\rho_3 = c\rho(x) \to 0$.

For example, in TCE, a society economy as the first physiological system of the steady multilateral system following the Yin Yang Wu Xing theory was classified into five equivalence classes by Zhang & Zhang (2013) as follows:

$$\begin{aligned}\text{wood}(X) = \{&\text{industry as liver, goods as bravery; PPI (the Producer Price Index)}\\ &\text{or RPI (Retail Price Index); soul, ribs, sour, east, spring, birth}\};\end{aligned}$$

$$\begin{aligned}\text{xiang-fire}(X_S^x) = \{&\text{agriculture as pericardium; money as triple energizer;}\\ &\text{AAF(the total output value of Agriculture forestry Animal}\\ &\text{husbandry and Fishery); nerve, blood vessel, bitter taste,}\\ &\text{the south, summer, growth}\};\end{aligned}$$

$$\begin{aligned}\text{earth}(X_K) = \{&\text{commerce or business as spleen; exchange as stomach;}\\ &\text{CPI(the Consumer Price Index); willing, meat, sweetness,}\\ &\text{center, long summer, combined}\};\end{aligned}$$

$$\begin{aligned}\text{metal}(K_X) = \{&\text{science or education as lung; public facilities as large intestine;}\\ &\text{GBR(the General Budget Revenue); boldness, fur, spicy,}\\ &\text{west, autumn, accept}\};\end{aligned}$$

$$\begin{aligned}\text{water}(S_X) = \{&\text{army as kidney; economics as bladder;}\\ &\text{GDP(the Gross Domestic Product); ambition, bone,}\\ &\text{salty, the north, winter, hiding}\};\end{aligned}$$

$$\begin{aligned}\text{jun-fire}(X_S^j) = \{&\text{President or Governor as heart; government as small intestine;}\\ &\text{Finance(right of making money), brain,}\\ &\text{making blood or whole body, seriousness bitter taste,}\\ &\text{whole direction, throughout the year, overall growth}\};\end{aligned}$$

$$\text{fire}(X_S) = \text{xiang-fire}(X_S^x) \cup \text{jun-fire}(X_S^j).$$

There is only one of both loving and killing relations between every two classes. General close is loving, alternate is killing.

In every category of internal, think that they are with an equivalent relationship, between each two of their elements there is a force of similar material accumulation of each other. It is because their pursuit of the goal is the same, i.e., follows the same "Axiom system". It can increase the energy of the class at low cost near to zero if they accumulate together. Any nature material activity follows the principle of maximizing so energy or minimizing the cost. It means that "the same energy attracted to each other" (同气相招).

In general, the size of the force of similar material accumulation of each other is smaller than the size of the loving force or the killing force in a stable complex system. The stability of any a complex system first needs to maintain the equilibrium of the killing force and the loving force. The key is the killing force. For a stable complex system, if the killing force is large, i.e., $\rho_3 = c\rho(x)$ becomes larger by Theorem **3.3** below, which needs positive **exercise**, then the loving force is also large such that the force of similar material accumulation of each other is also large. They can make the complex system more stable. If the killing force is small, i.e., $\rho_3 = c\rho(x)$ becomes smaller by Theorem **3.3** below, which means little **exercise**, then the loving force is also small such that the force of similar material accumulation of each other is also small. They can make the complex system becoming unstable.

The second physiological system of the steady multilateral system controls the first physiological system of the steady multilateral system, abiding by the following rules.

Attaining Rule: *The second physiological system of the steady multilateral system will work by using Attaining Rule, if the first physiological system of the steady multilateral system runs normally. The work is in order to attain the Chi or energy from the first physiological system of the steady multilateral system by mainly utilizing the balance of the loving relationship of the first physiological system.*

In mathematics, suppose that the sub-economy of X is healthy. If X is intervened, then the second physiological system will attain the *Chi* or energy from X directly.

Suppose that the sub-economy of X is unhealthy. If X is intervened, then the second physiological system will attain the *Chi* or energy from X indirectly. If virtual X is intervened, it will attain the *Chi* or energy (Yang energy) from the son X_S of X. If real X is intervened, it will attain the *Chi* or energy (Yin energy) from the mother S_X of X. #

Affording Rule: *The second physiological system of the steady multilateral system will work by using Affording Rule, if the first physiological system of the steady multilateral system runs hardly. The work is in order to afford the Chi or energy for the first physiological system of the steady multilateral system, by mainly protecting or maintaining the balance of the killing relationship of the steady multilateral system, to drive the first physiological systems will begin to run normally.*

In mathematics, suppose that the sub-economy of X is healthy. The second physiological system doesn't afford any *Chi* or energy for the first physiological system.

Suppose that the economy of X is unhealthy and the capability of self-protection is lack, i.e., $\rho_3 = c\rho(x) \to 0$ and $0 < \rho_1 = \rho(x) < \rho_0$. The second physiological system will afford the *Chi* or energy for X directly, at the same time, affording the *Chi* or energy for other subsystem, in order to protect or maintain the balance of the killing relationship, abiding by the intervening principle of "Strong inhibition of the same time, support the weak", such that the capability of self-protection is restored, i.e., $\rho_3 = c\rho(x) > 0$ and $1 \ge \rho_1 = \rho(x) \ge \rho_0$, to drive the first physiological system beginning to work.#

The *Chi* or energy is also called the food hereafter for simply. In order to get the food, by Attaining Rule, the second physiological system must make the first physiological system intervened, namely **exercise**. It is because only by intervention on the first physiological system, the second physiological system is able to get food.

Energy concept is an important concept in Physics. Zhang & Zhang (2013) introduce this concept to the steady multilateral systems imitating economy. And the image mathematics by Zhang & Shao (2012) uses these concepts to deal with the steady multilateral system diseases (mathematical index too high or too low). In mathematics, a steady multilateral system is said to have **Energy** (or **Dynamic**) if there is a non-negative function $\varphi(*)$ which makes every subsystem meaningful of the steady multilateral system. Similarly to Zhang & Zhang (2013), unless stated otherwise, any equivalence relation is the liking relation, any neighboring relation is the loving relation, and any alternate relation is the killing relationship.

Suppose that V is a steady multilateral system having an energy, then V in the steady multilateral system during a normal operation, its energy function for any subsystem of the steady multilateral system has an **average** (or **expected value** in Statistics), this state is called as **normal** when the energy function is nearly to the average. Normal state is the better state.

That a subsystem of the steady multilateral system is **not running properly** (or **disease**, **abnormal**) is that the energy deviation from the average of the subsystems is too large, the high (**real disease**) or the low (**virtual disease**).

In addition to study these real or virtual diseases, TCE is also often considered a kind of **relation diseases**. The relation disease is defined as the relation of two sick subsystems. In general, a relation disease is **less serious** if the relation satisfies one of both the loving relationship and the killing relationship of the steady multilateral system. In this case, in general, the GDP inflation rate $x \in [5.8114\%, 16.359\%]$ which means $\rho_0 \le \rho_1 = \rho(x) \le 1$. This relation disease is less serious because this relation disease can not undermine the loving order or the killing order of the steady multilateral system. The less serious relation disease can make the intervention increasing the sizes of both the intervention reaction coefficients ρ_1, ρ_2 and the self-protection coefficient ρ_3.

But the relation disease is **more serious** if the relation not only doesn't satisfy the killing relationship of the steady multilateral system, but also can destroy the killing order, i.e., there is an incest order. In this case, in general, the GDP inflation rate $x \notin [5.8114\%, 16.359\%]$ which means $0 < \rho_1 = \rho(x) < \rho_0$. This relation disease is more serious because the relation disease can destroy the killing order of the steady multilateral system if the disease continues to develop. The more serious relation disease can make both the intervention reaction coefficients ρ_1, ρ_2 and the self-protection coefficient ρ_3 decreasing response to intervention.

There are also many relation diseases which cannot destroy the loving order or the killing order of the steady multilateral system although the relation doesn't satisfy strictly the loving relationship or the killing relationship of the steady multilateral system, i.e., there is not an incest order. These relation diseases are called **rare** since they are hardly occurrence for a healthy economy.

The purpose of intervention is to make the steady multilateral system return to normal state. The method of intervention is to increase or decrease the energy of a subsystem.

What kind of intervening should follow the principle to treat it? Western economics emphasizes directly mathematical treatments on the sick subsystem after the disease of subsystem has occurred, but the indirect intervening of oriental economics of TCE is required before the disease of subsystem will occur. In mathematics, which is more reasonable?

Based on this idea, many issues are worth further discussion. For example, if an intervening has been implemented to a disease subsystem before the disease of subsystem will occur, what relation disease will be less serious which does not need to be intervened? what relation disease will be more serious which needs to be intervened?

3.2. Kinds of Relation Disease of Steady Multilateral Systems

For a steady multilateral system V imitating an economy with two incompatibility relations, suppose that the subsystems X, X_S, X_K, K_X, S_X are the same as those defined in Theorem **3.1**. Then the relation diseases can be decomposed into the following classes:

Definition 3.1 (involving in (相及) **and infringing upon** (相犯)**)** *Suppose that both X and X_S having the loving relationship fall ill. Consider a relation disease occurred between X and X_S.*

*The relation disease between X and X_S is called **less serious** if X is a virtual disease and so is X_S at the same time. The less serious relation disease between virtual X and virtual X_S is also called a mother's disease **involving in** her son. The mother is the cause of disease.*

*The relation disease between X and X_S is also called **less serious** if X is a real disease and so is X_S at the same time. The less serious relation disease between real X and real X_S is also called a son's disease **infringing upon** his mother. The son is the cause of disease.*

*The relation disease between X and X_S is called **rare** if X is a real disease but X_S*

is a virtual disease at the same time, or if X is a virtual disease but X_S is a real disease at the same time. The rare relation disease implies that they cannot destroy the loving order although real X cannot love virtual X_S or virtual X cannot love real X_S. #

Definition 3.2 (multiplying (相乘) **and insulting** (相侮)**)** *Suppose that both X and X_K having the killing relationship fall ill. Consider a relation disease occurred between X and X_K.*

The relation disease between X and X_K is called ***less serious*** *if X is a real disease and X_K is a virtual disease at the same time. The less serious relation disease between X and X_K is also called a* ***multiplying*** *relation.*

The relation disease between X and X_K is called ***more serious*** *if X is a virtual disease but X_K is a real disease at the same time. The more serious relation disease between X and X_K is also called an* ***insulting*** *relation. It means that X has been harmed by X_K through the method of incest.*

The relation disease between X and X_K is called ***rare*** *if X is a real disease and so is X_K at the same time, or if X is a virtual disease and so is X_K at the same time. The rare relation disease implies that they cannot destroy the killing order from X to X_K although real X cannot kill real X_K or virtual X cannot kill virtual X_K.*

The relation disease between X, X_K and K_X is called ***more serious*** *if X is a real disease, and X_K is a virtual disease but K_X is also a virtual disease at same time, i.e., not only real X multiplies in virtual X_K, but also insults virtual K_X by using the method of incest. It is because the energy of real X is too high. The more serious relation disease between X, X_K, and K_X is also called a* ***multiplying-insulting*** *(乘侮) relation.*

The relation disease between X, X_K, and S_X is called ***more serious*** *if X is a real disease, and X_K is a virtual disease but S_X is also real disease at same time, i.e., not only real X multiplies in virtual X_K, but also real S_X insults virtual X_K by using the method of incest. It is because the energy of virtual X_K is too low. The more serious relation disease between X, X_K, and S_X is also called a* ***multiplying-insulting*** *(乘侮) relation.*

Only the ***more serious*** *relation disease can destroy the killing relationship order of the Yin Yang Wu Xing system. All the therapeutic principles need to prevent the more serious relation disease occurrence in the first place.* #

The disease of multiplying-insulting relation will result in more than three subsystems falling-ill. Generally, three or more subsystems falling-ill, it will be difficult to treat. Therefore, the multiplying-insulting relation disease should be avoided as much as possible. In Chinese words, it is that "Again and again, don't allow to the repeated to four" (只有再一再二，没有再三再四)-Allow one or two subsystems falling ill, but Don't allow three or four subsystems falling ill.

3.3. First Transfer Law of Diseases of Steady Multilateral Systems with a healthy Economy

Suppose that a steady multilateral system V imitating an economy having energy function $\varphi(*)$ is normal or healthy. Let x be the GDP inflation rate of V. Assume that $\rho_1 = \rho(x)$, $\rho_2 = \rho(x)^2$, and $\rho_3 = c\rho(x)$ where $0 \le c \le 1$ and $\rho(x)$ is defined in Equations (3) and (4). The healthy economy means that the conditions $\rho_0 \le \rho(x) \le 1$ and $0 < c \le 1$ hold, which is equivalent to the normal range $x \in [5.8114\%, 16.359\%]$ or the healthy condition $\rho_1 + \rho_2\rho_3 \ge 1 - \rho_2\rho_3$. That $c \to 0$ implies that the body is without the ability of self-protection, i.e., $\rho_3 = c\rho(x) \to 0$. Of course, the body cannot be healthy. It is because for any $x \ne 0.10208$, when $c \to 0$, there is

$$\rho_1 + \rho_2\rho_3 = \rho(x) + c\rho(x)^3 \to \rho(x) < 1 \leftarrow 1 - c\rho(x)^3 = 1 - \rho_2\rho_3,$$

such that the healthy condition $\rho_1 + \rho_2\rho_3 \ge 1 - \rho_2\rho_3$ cannot hold.

By using Corollary **2.1** and Theorems **2.1** and **3.1**, the following Theorem **3.2** can be obtained as the first transfer law of occurrence and change of diseases with a healthy economy.

Theorem 3.2 *Suppose that a subsystem X of a steady multilateral system V falls a disease. Let the GDP inflation rate $x \in [5.8114\%, 16.359\%]$ which is equivalent to the conditions $\rho_0 \le \rho_1 = \rho(x) \le 1$ and $0 < c \le 1$.*

In this case, almost always, the less serious relation disease will occur and change. If the disease continues to develop, the change can make a more serious relation disease occur.

The occurrence and change of diseases with a healthy economy has its transfer law: The first occurrence and change of the loving relationship and the killing relationship after the loving relationship disease. In other words, the following statements are true.

If a subsystem X of a steady multilateral system V falls a virtual disease, the transfer law is the first occurrence of the virtual disease of the mother S_X of X with a less serious relation disease between virtual S_X and virtual X, and secondly the real disease of the bane K_X of X after the virtual disease of S_X with a less serious relation disease between real K_X and virtual X, and thirdly the real disease of the prisoner X_K of X ***with a more serious relation disease between virtual*** *X* ***and real*** *X_K, and fourthly the virtual disease of the son X_S of X with a less serious relation disease between virtual X and virtual X_S, and finally the new remission virtual disease of the subsystem X itself, and for the next round of disease transmission, until disease rehabilitation.*

If a subsystem X of a steady multilateral system V encounters a real disease, the transfer law is the first occurrence of the real disease of the son X_S of X with a less serious relation disease between real X and real X_S, and secondly the virtual disease of the prisoner X_K of X after the real disease of X_S with a less serious relation disease between real X and virtual X_K, and thirdly the virtual disease of the bane K_X of X ***with a more serious relation disease between virtual*** *K_X* ***and real*** *X, and fourthly the real disease of the mother S_X of X with a less serious relation disease between real S_X and real X, and finally the new abated real disease of the subsystem X itself, and for the next round of disease transmission, until disease rehabilitation.*

All first transfer laws of diseases with a healthy complex system are summed up as Figure 2 and Figure 3. #

Remark 4. Theorem **3.2** is called the transfer law of occurrence and change of diseases with a healthy economy, simply, **the first transfer law**. For a real disease, the first transfer law is along the loving relationship order transmission as follows:

$$\text{real } X \xrightarrow{\text{less}} \text{real } X_S \xrightarrow{\text{rare}} \text{virtual } X_K$$
$$\xrightarrow{\text{more}} \text{virtual } K_X \xrightarrow{\text{rare}} \text{real } S_X \xrightarrow{\text{less}} \text{real } X.$$

For a virtual disease, the first transfer law is against the loving relationship order transmission as follows:

$$\text{virtual } X \xleftarrow{\text{less}} \text{virtual } S_X \xleftarrow{\text{rare}} \text{real } K_X$$
$$\xleftarrow{\text{more}} \text{real } X_K \xleftarrow{\text{rare}} \text{virtual } X_S \xleftarrow{\text{less}} \text{virtual } X.$$

The transfer relation of the first transfer law running is the loving relationship, denoted by $\to$. The running condition of the first transfer law is both
$(\rho_1 + \rho_2\rho_3) \ge (1 - \rho_2\rho_3)$ and $\rho_3 = c\rho(x) > 0$.

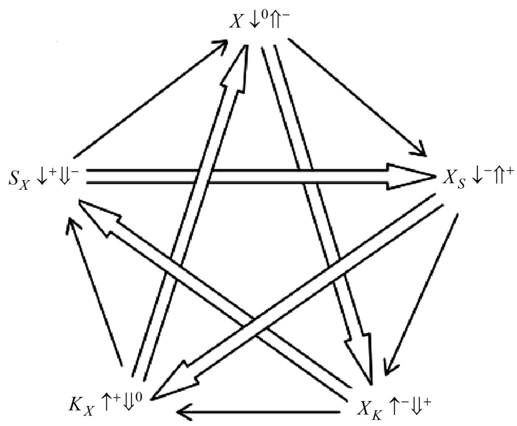

Figure 2. Transfer law of virtual disease with a healthy economy.

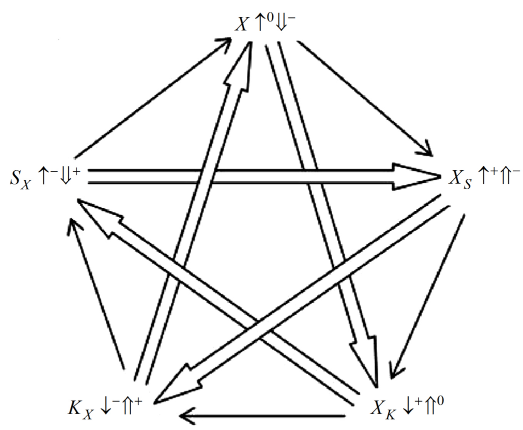

Figure 3. Transfer law of real disease with a healthy economy.

By Theorem **2.1** and Corollary **2.1**, the running condition is nearly equivalent to both $\rho_0 \le \rho_1 = \rho(x) \le 1$ and $0 < c \le 1$. The best-state condition of the first transfer law is $\rho_3 = c\rho(x)$ where $c \to 1$ which is the best state of ρ_3 for a healthy economy. To follow or utilize the running of the first transfer law is equivalent to the following method. For dong so, it is in order to protect or maintain the loving relationship. The method can strengthen both the value $(\rho_1 + \rho_2\rho_3) = \left(\rho(x) + c\rho(x)^3\right)$ tending to be large and the value $(1 - \rho_2\rho_3) = \left(1 - c\rho(x)^3\right)$ tending to be small at the same time. In other words, the way can make all of both $\rho(x)$ and c tending to be large. It is because the running condition of the loving relationship $(\rho_1 + \rho_2\rho_3) \ge (1 - \rho_2\rho_3)$ is the stronger the use, which dues to $\rho_1 = \rho(x)$ the greater the use. In other words again, if the treatment principle of the loving relationship disease is to use continuously abiding by the first transfer law, then all of both the intervention reaction coefficients $\rho_1 = \rho(x), \rho_2 = \rho(x)^2$ and the coefficient of self-protection $\rho_3 = c\rho(x) > 0$ where $0 < c \le 1$ will tend to be the best state, i.e., $\rho(x) \to 1$ and $0 < c \to 1$.

Side effects of treating problems were the question: in the treating process, destroyed the balance of the normal subsystems which are not sick or intervened systems. The energy change of the intervened system is not the true side effects issue. The energy change is called the pseudo or non-true side effects issue since it is just the food of the second physiological system of the steady multilateral system for a healthy economy. The best state of the self-protection coefficient, $\rho_3 = c\rho(x) \to \rho(x) = \rho_1$, where $c \to 1$, implies the non-existence of any side effects issue if the treatment principle of TCE is used. Therefore any disease that causes side effects issue occurrence in the first place dues to the non-best state of self-protection ability, i.e., $\rho_3 = c\rho(x) < \rho(x) = \rho_1$. To follow or utilize the running of the first transfer law can make both $\rho(x) \to 1$ and $0 < c \to 1$. At this point, the paper advocates to follow or utilize the first transfer law. It is in order to avoid the side effects issue occurrence for the healthy economy. #

3.4. Second Transfer Law of Diseases of Steady Multilateral Systems with an Unhealthy Economy

Suppose that a steady multilateral system V imitating an economy having energy function $\varphi(*)$ is abnormal or unhealthy. Let x be the GDP inflation rate of V. Assume that $\rho_1 = \rho(x), \rho_2 = \rho(x)^2$ and $\rho_3 = c\rho(x)$ where $0 \le c \le 1$, and $\rho(x)$ is defined in Equations (3) and (4). The unhealthy economy means that the conditions $\rho_0 > \rho_1 = \rho(x) > 0$ and $0 \le c \le 1$ hold, which is equivalent to the abnormal range $x \notin [5.8114\%, 16.359\%]$.

From Zhang & Shao (2012), by using Corollary **2.1** and Theorems **2.1** and **3.1**, the following Theorem **3.3** can be obtained as the second transfer law of occurrence and change of diseases with an unhealthy economy.

Theorem 3.3 *Suppose that a subsystem* X *of a steady multilateral system* V *falls a disease. Let the GDP inflation rate* $x \notin [5.8114\%, 16.359\%]$ *which is* *equivalent to the conditions* $\rho_0 > \rho_1 = \rho(x) > 0$ *and* $0 \le c \le 1$.

In this case, almost always, the rare relation disease will occur and change. If the disease continues to develop, the change can make a more serious relation disease occur.

The transfer of disease with an unhealthy economy has its transfer law: Only there is the transfer of the killing relationship. In other words, the following statements are true.

If a subsystem X of a steady multilateral system V falls a virtual disease, then the disease comes from the son X_S *of X. The transfer law is the first occurrence of the virtual disease of the prisoner* X_K *of X with a rare relation disease between virtual X and virtual* X_K*, and secondly the virtual disease of the mother* S_X *of X after the virtual disease of* X_K *with a rare relation disease between virtual* X_K *and virtual* S_X*, and thirdly the virtual disease of the son* X_S *of X with a rare relation disease between virtual* S_X *and virtual* X_S*, and fourthly the real disease of the bane* K_X *of X* ***with a more serious relation disease between virtual*** X_S ***and real*** K_X*, and finally the new remission virtual disease of the subsystem X itself with a less serious relation disease between real* K_X *and virtual X, and for the next round of disease transmission, until disease rehabilitation.*

If a subsystem X of a steady multilateral system V falls a real disease, then the disease comes from the mother S_X *of X. The transfer law is the first occurrence of the real disease of the bane* K_X *of X with a rare relation disease between real* K_X *and real X, and secondly the real disease of the son* X_S *of X after the real disease of the bane* K_X *of X with a rare relation disease between real* X_S *and real* K_X*, and thirdly the real disease of the mother* S_X *of X with a rare relation disease between real* S_X *and real* X_S*, and fourthly the virtual disease of the prisoner* X_K *of X* ***with a more serious relation disease between virtual*** X_K ***and real*** S_X*, and finally the new abated real disease of the subsystem X itself with a less serious relation disease between real X and virtual* X_K*, and for the next round of disease transmission, until disease rehabilitation.*

All second transfer laws of diseases with a healthy economy are summed up as ***Figure*** 4 *and* ***Figure*** 5. #

Remark 5. Transfer law of Theorem **3.3** is called transfer law of occurrence and change of diseases with an unhealthy economy, simply, **the second transfer law**. For a virtual disease, the second transfer law is along the killing relationship order transmission as follows:

$$\text{virtual } X \overset{\text{rare}}{\Rightarrow} \text{virtual } X_K \overset{\text{rare}}{\Rightarrow} \text{virtual } S_X$$
$$\overset{\text{rare}}{\Rightarrow} \text{virtual } X_S \overset{\text{more}}{\Rightarrow} \text{real } K_X \overset{\text{less}}{\Rightarrow} \text{virtual } X.$$

For a real disease, the second transfer law is against the killing relationship order transmission as follows:

$$\text{real } X \overset{\text{rare}}{\Leftarrow} \text{real } K_X \overset{\text{rare}}{\Leftarrow} \text{real } X_S$$
$$\overset{\text{rare}}{\Leftarrow} \text{real } S_X \overset{\text{more}}{\Leftarrow} \text{virtual } X_K \overset{\text{less}}{\Leftarrow} \text{real } X.$$

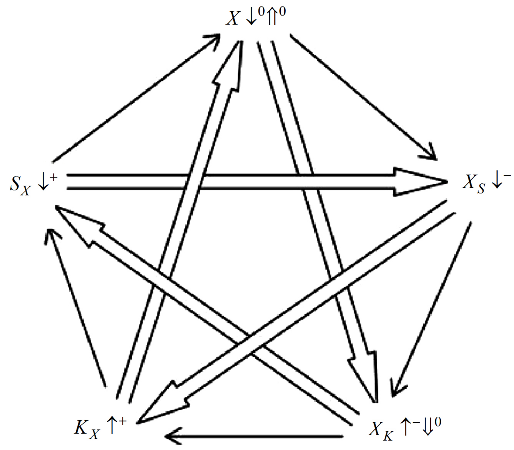

Figure 4. Transfer law of virtual diseases with an unhealthy economy.

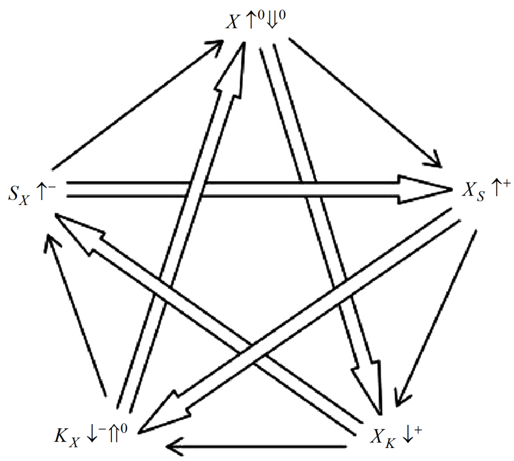

Figure 5. Transfer law of real disease with an unhealthy economy.

The transfer relationship of the second transfer law running is the killing relationship, denoted by $\Rightarrow$.

The running condition of the second transfer law is both

$$(\rho_1+\rho_2\rho_3)<(1-\rho_2\rho_3) \text{ and } \rho_3=c\rho(x)\geq 0.$$

By Theorem **2.1** and Corollary **2.1**, the running condition is equivalent to both $\rho_0>\rho_1=\rho(x)>0$ and $1\geq c\geq 0$. That $\rho_3=c\rho(x)\to 0$ means the lack of capability of self-protection. Of course, it is the basis condition of running the second transfer law.

The stopping condition of the second transfer law is both $(\rho_1+\rho_2\rho_3)\geq(1-\rho_2\rho_3)$ and $\rho_3=c\rho(x)>0$, which is the running condition of the first transfer law, or, the existence condition of capabilities of both intervention reaction and self-protection. To follow or utilize the running of the second transfer law is equivalent to the following method. For doing so, it is to protect and maintain the killing relationship of the steady multilateral system. The method can strengthen all of both $\rho_1 - \rho_3 = \rho(x)(1-c)$ and $\rho_2 - \rho_1\rho_3 = \rho(x)^2(1-c)$ tending to be small at the same time. In other words, using the method can make c tends to be large for a fixed $\rho(x) > 0$. It is because the transferring condition of the killing relation disease $(\rho_1 + \rho_2\rho_3) < (1 - \rho_2\rho_3)$ is the weaker the use, which dues to $\rho_3 = c\rho(x)$ is the greater the use. The transferring way can make both $\rho_1 - \rho_3 = \rho(x)(1-c) \to 0$ and $\rho_2 - \rho_1\rho_3 = \rho(x)^2(1-c) \to 0$ at the same time such that the killing relation disease cannot be transferred. In other words again, if the treatment principle of the killing relationship diseases is to use continuously abiding by the second transfer law, then the coefficient of self-protection will tend to be the occurrence state, i.e., $\rho_3 = c\rho(x) > 0$ where $1 \ge c \ge \frac{1-\rho(x)}{2\rho(x)^3} \ge 0$, and the coefficients of intervention reaction also will tend to the healthy state, i.e., $\rho_0 \le \rho_1 = \rho(x) \le 1$, such that $(\rho_1 + \rho_2\rho_3) \ge (1 - \rho_2\rho_3)$.

Economic intervention resistance problem is that such a question: beginning more appropriate economic intervention treatment, but is no longer valid after a period. In the state

$$\rho_1 - \rho_3 = \rho(x)(1-c) \to 0, \quad \rho_2 - \rho_1\rho_3 = \rho(x)^2(1-c) \to 0,$$

by Theorem **3.2**, any economic intervention resistance problem is non-existence if the treatment principle of TCE is used. But in the state

$$\rho_1 - \rho_3 = \rho(x)(1-c) \to \rho(x), \quad \rho_2 - \rho_1\rho_3 = \rho(x)^2(1-c) \to \rho(x)^2,$$

by Theorem **3.3**, the economic intervention resistance problem is always existence, even if the treatment principle of TCE has been used. In other words, the lack of capability of self-protection, i.e., $\rho_3 = c\rho(x) \to 0$, implies the possible existence of an economic intervention resistance problem, although the treatment principle of TCE has been used. At this point, the paper advocates to follow or utilize the second transfer law. It is in order to prevent and avoid the economic intervention resistance problem occurrence for the unhealthy economy. #

4. Treatment Principle of TCE

In order to explain treatment principle of TCE, the changes in the GDP inflation rate range can be divided into four parts from small to large.

From Zhang & Shao (2012), by Corollary **2.1** and Theorems **2.1**, **3.2** and **3.3**, it can be easily proved that the following Theorem **4.1** is true.

Theorem 4.1 *Suppose that a subsystem* X *of a steady multilateral system* V *falls a disease. Let* x *be the GDP inflation rate of the steady multilateral system. Denoted the parameters of the normal range as follows* $a = 5.8114\%$, $b = 16.359\%$, $t_0 = 10.208\%$. *Then the following statements are true.*

1) *Suppose that* $x < a$ *as* ***virtual****, in which* X *falls a virtual disease with an unhealthy economy. The primary treatment is to increase the energy of the subsystem* X *directly. And the secondary treatment is to increase the energy of the son* X_S *of* X, *and at the same time, to decrease the energy of the prisoner*

K_X *of* X_S.

2) *Suppose that* $x \in [a, t_0)$ *as* ***virtual-normal****, in which X will fall an expected virtual disease with a healthy economy. The primary treatment is to increase the energy of the mother subsystem* S_X *of X which is an indirect treating for X. And the secondary treatment is to increase the energy of X itself, and at the same time, to decrease the energy of the prisoner* X_K *of X.*

3) *Suppose that* $x \in [t_0, b]$ *as* ***real-normal****, in which X will encounter an expected real disease with a healthy economy. The primary treatment is to decrease the energy of the son subsystem* X_S *of X which is an indirect treating for X. And the secondary treatment is to decrease the energy of X itself, and at the same time, to increase the energy of the bane* K_X *of X.*

4) *Suppose that* $x > b$ *as* ***real****, in which X encounters a real disease with an unhealthy economy. The primary treatment is to decrease the energy of the subsystem X directly. And the secondary treatment is to decrease the energy of the mother* S_X *of X, and at the same time, to increase the energy of the bane* X_K *of* S_X. #

Remark 6. Treatment principle of Theorem **4.1** based on ranges of the GDP inflation rate is called **the treatment principle of TCE**, since it is in order to protect and maintain the balance of two incompatibility relations: the loving relationship and the killing relationship.

For the unhealthy economy where $x < a$ or $x > b$, the treatment principle is the method for doing so in the following:

The primary treatment is to increase or decrease the energy of X directly corresponding to $x < a$ *or* $x > b$ *respectively, and the secondary treatment is to increase the energy of* X_S *or* X_K *while to decrease the energy of* K_X *or* S_X*, corresponding to virtual X or real X, respectively.* #

The primary treatment is in order to protect and maintain the loving relationship, abiding by TCE's ideas "Virtual disease with an unhealthy economy is to fill itself" and "Real disease with an unhealthy economy is to rush down itself". It is because the method for dong so is not only greatly to cure economic diseases of their own, but also provides the pseudo side effects as the food for the second physiological system. The method is to promote the first physiological system running since the second physiological system controls the first physiological system. And it is also to improve the loving relationship to develop since the loving relationship mainly comes from the first physiological system. The loving relationship to develop can strengthen both that $\rho_1 + \rho_2\rho_3 = \rho(x) + c\rho(x)^3$ tends to be large and that $1 - \rho_2\rho_3 = 1 - c\rho(x)^3$ tends to be small at the same time. In other words, the way can make all of both $\rho(x)$ and c tending to be large, at least, c greater than zero for an unhealthy economy, such that the economy is from unhealthy to healthy, or the first physiological system works, or, the occurrence of capability of self-protection, or, the running of the first transfer law, or, the stopping of the second transfer law.

The secondary treatment is in order to protect or maintain the killing relationship, abiding by TCE's ideas "Don't have disease cure cure non-ill" and

"Strong inhibition of the same time, support the weak". By the second transfer law in Theorem **3.3**, the more serious relation disease is the relation disease between virtual X_S and real K_X, or between virtual X_K and real S_X corresponding to virtual X or real X, respectively.

Abiding by TCE's idea "Don't have disease cure cure non-ill", it must be done to prevent or avoid the more serious relation disease between virtual X_S and real K_X, or between virtual X_K and real S_X occurrence, corresponding to virtual X or real X, respectively.

Abiding by TCE's idea "Strong inhibition of the same time, support the weak", it must be done to increase the energy of X_S or X_K while to decrease the energy of K_X, or S_X corresponding to virtual X or real X, respectively.

The method for doing so can improve the killing relationship to develop since real X_S or real X_K can kill virtual K_X, or virtual S_X corresponding to virtual X or real X, respectively. The killing relationship to develop means that both $\rho_1 - \rho_3 = \rho(x)(1-c)$ and $\rho_2 - \rho_1\rho_3 = \rho(x)^2(1-c)$ tend to be small at the same time. In other words, the way can make, for fixed $\rho(x)$, c tending to be large, at least, greater than zero for an unhealthy economy, such that the economy from unhealthy to healthy, or the first physiological system works, or, the occurrence of capability of self-protection, or, the running of the first transfer law, or, the stopping of the second transfer law.

For the healthy economy where $x \in [a, t_0)$ or $x \in [t_0, b]$, the treatment principle is the method for doing so in the following:

The primary treatment is to increase or decrease the energy of S_X or X_S corresponding to $x \in [a, t_0)$ or $x \in [t_0, b]$ respectively, and the secondary treatment to increase the energy of X or K_X while to decrease the energy of X_K or X, corresponding to virtual-normal X or real-normal X, respectively. #

The primary treatment is in order to protect and maintain the loving relationship, abiding by TCE's ideas "Virtual disease with a healthy economy is to fill mother" and "Real disease with a healthy economy is to rush down his son". It is because the method for dong so is not only greatly to cure diseases of their own, but also provides the pseudo side effects as the food for the second physiological system. The method is to promote the first physiological system running since the second physiological system controls the first physiological system. And it is also to improve the loving relationship developing since the loving relationship mainly comes from the first physiological system. The loving relationship developing can strengthen both that $\rho_1 + \rho_2\rho_3 = \rho(x) + c\rho(x)^3$ tends to be large and that $1 - \rho_2\rho_3 = 1 - c\rho(x)^3$ tends to be small at the same time. In other words, using the way can make all of both $\rho(x)$ and $0 < c$ tending to be large, the best, all equal to 1 for a healthy economy, such that the capability of self-protection is in the best state, or, the non-existence of side effects issue, or, the non-existence of economic intervention resistance problem.

The secondary treatment is in order to protect or maintain the killing relationship, abiding by TCE's ideas "Don't have disease cure cure non-ill" and

"Strong inhibition of the same time, support the weak". By the first transfer law, the more serious relation disease is the relation disease between virtual X and real X_K or between virtual K_X and real X corresponding to virtual-normal X or real-normal X, respectively.

Abiding by TCE's idea "Don't have disease cure cure non-ill", it must be done to prevent and avoid the more serious relation disease between virtual X and real X_K or between virtual K_X and real X occurrence corresponding to virtual-normal X or real-normal X, respectively.

Abiding by TCE's idea "Strong inhibition of the same time, support the weak", it must be done to increase the energy of X or K_X while to decrease the energy of X_K or X corresponding to virtual-normal X or real-normal X, respectively.

The method for doing so can improve the killing relationship developing since real X or real K_X can kill virtual X_K or virtual X corresponding to virtual-normal X or real-normal X, respectively. The killing relationship developing also means that both $\rho_1 - \rho_3 = \rho(x)(1-c)$ and $\rho_2 - \rho_1\rho_3 = \rho(x)^2(1-c)$ tend to be small at the same time. In other words, using the way can make, for fixed $\rho(x)$, $0 < c$ tending to be large, the best, equal to 1 for a healthy economy, such that the capability of self-protection is in the best state, or, the non-existence of side effects, or, the non-existence of economic intervention resistance issue.

5. Chinese GDP for the Water Subsystem of Steady Multilateral Systems

Suppose that M_2 as issued in the circulation of money and GDP as Gross Domestic Product in Chinese from 1990 year to 2014 year, the annual GDP can be measured in Table 1.

Watching Table 1, the state of the GDP inflation rate is: virtual-normal, real, real, real, real, virtual-normal, for 1991-1996, respectively. It means that the subsystem water(S_X) has first encountered a real economic disease with an unhealthy sub-economy. It is because the GDP belongs to "army-economic" of the subsystem water(S_X). During this period of time, large-scale goods have been made.

Also watching Table 1, the state of the GBR inflation rate is: virtual, virtual-normal, real, real-normal, real-normal, real-normal, for 1991-1996, respectively. For the GBR inflation rate of industry economic society, the normal range of theory is [8.956%, 20.07%] nearly to [9%, 20%], and the center is 13.705% nearly to 14%.

It means that the subsystem metal(K_X) of the economic social system with a healthy sub-economy encounters an expected real economic disease since the GBR inflation rate belongs to "science, education, public facilities" of metal(K_X).

But also watching Table 1, the state of the PPI inflation rate is: virtual-normal, real, real, real, real, real, for 1991-1996, respectively. For the PPI inflation rate of industry economic society, the normal range of theory is [0.7362%, 6.4920%] nearly to [1%, 6%], and the center is 3.1359% nearly to 3%.

Table 1. Inflation rates of Finance, GDP, CPI, PPI, RPI, GBR and AAF.

No.	M_2	rate	GDP	rate	Finance inflation rate	CPI (1984 = 100)	rate
1990	15,293.4	.	18,774.3	.	.	216.4	.
1991	19,349.9	0.26525	21,895.5	0.14255	0.10739	223.8	0.03307
1992	25,402.2	0.31278	27,068.3	0.19110	0.10216	238.1	0.06006
1993	34,579.8	0.36129	35,524.3	0.23803	0.09956	273.1	0.12816
1994	46,923.5	0.35696	48,459.6	0.26693	0.07106	339.0	0.19440
1995	60,750.5	0.29467	61,129.8	0.20727	0.07240	396.9	0.14588
1996	76,094.9	0.25258	71,572.3	0.14590	0.09310	429.9	0.07676
1997	90,995.3	0.19581	79,429.5	0.09892	0.08817	441.9	0.02716
1998	104,498.5	0.14839	84,883.7	0.06425	0.07906	438.4	−0.00798
1999	119,897.9	0.14736	90,187.7	0.05881	0.08364	432.2	−0.01435
2000	134,610.3	0.12271	99,776.3	0.09610	0.02427	434.0	0.00415
2001	158,301.9	0.17600	110,270.4	0.09517	0.07381	437.0	0.00686
2002	185,007.0	0.16870	121,002.0	0.08869	0.07349	433.5	−0.00807
2003	221,222.8	0.19575	136,564.6	0.11396	0.07343	438.7	0.01185
2004	254,107.0	0.14865	160,714.4	0.15027	−0.00141	455.8	0.03752
2005	298,755.7	0.17571	185,895.8	0.13546	0.03545	464.0	0.01767
2006	345,577.9	0.15672	217,656.6	0.14592	0.00943	471.0	0.01486
2007	403,442.2	0.16744	268,019.4	0.18791	−0.01723	493.6	0.04579
2008	475,166.6	0.17778	316,751.7	0.15385	0.02074	522.7	0.05567
2009	610,224.5	0.28423	345,629.2	0.08355	0.18521	519.0	−0.00713
2010	725,851.8	0.18948	408,903.0	0.15474	0.03009	536.1	0.03190
2011	851,590.9	0.17323	484,123.5	0.15537	0.01545	565.0	0.05115
2012	974,148.8	0.14392	534,123.0	0.09361	0.04600	579.7	0.02536
2013	1,106,525.0	0.13589	588,018.8	0.09166	0.04052	594.8	0.02539
2014	1,228,374.8	0.11012	635,910.0	0.07531	0.03237	606.7	0.01961

No.	PPI (1984 = 100)	rate	RPI (1984 = 100)	rate	GBR	rate	AAF	rate
1990	207.7	.	159.0	.	2937.10	.	7662.1	.
1991	213.7	0.02808	168.9	0.05861	3149.48	0.07231	8157.0	0.06459
1992	225.2	0.05107	180.4	0.06375	3483.37	0.10601	9084.7	0.11373
1993	254.9	0.11652	223.7	0.19356	4348.95	0.24849	10,995.5	0.21033
1994	310.2	0.17827	267.3	0.16311	5218.10	0.19985	15,750.5	0.43245
1995	356.1	0.12890	307.1	0.12960	6242.20	0.19626	20,340.9	0.29144
1996	377.8	0.05744	316.0	0.02816	7407.99	0.18676	22,353.7	0.09895
1997	380.8	0.00788	315.0	−0.00317	8651.14	0.16781	23,788.4	0.06418
1998	370.9	−0.02669	302.1	−0.04270	9875.95	0.14158	24,541.9	0.03168
1999	359.8	−0.03085	294.8	−0.02476	11,444.08	0.15878	24,519.1	0.00093
2000	354.4	−0.01524	303.1	0.02738	13,395.23	0.17049	24,915.8	0.01618
2001	351.6	−0.00796	299.2	−0.01303	16,386.04	0.22327	26,179.6	0.05072
2002	347.0	−0.01326	292.6	−0.02256	18,903.64	0.15364	27,390.8	0.04627
2003	346.7	−0.00087	299.3	0.02239	21,715.25	0.14873	29,691.8	0.08401
2004	356.4	0.02722	317.6	0.05762	26,396.47	0.21557	36,239.0	0.22051
2005	359.3	0.00807	333.2	0.04682	31,649.29	0.19900	39,450.9	0.08863
2006	362.9	0.00992	343.2	0.02914	38,760.20	0.22468	40,810.8	0.03447
2007	376.7	0.03663	353.8	0.02996	51,321.78	0.32408	48,893.0	0.19804
2008	398.9	0.05565	378.2	0.06452	61,330.35	0.19502	58,002.2	0.18631
2009	394.1	−0.01218	357.8	−0.05702	68,518.30	0.11720	60,361.0	0.04067
2010	406.3	0.03003	377.5	0.05219	83,101.51	0.21284	69,319.8	0.14842
2011	426.2	0.04669	400.2	0.05672	103,874.43	0.24997	81,303.9	0.17288
2012	434.7	0.01955	393.4	−0.01729	117,253.52	0.12880	89,453.0	0.10023
2013	440.8	0.01384	385.9	−0.01944	129,209.64	0.10197	96,995.3	0.08432
2014	445.2	0.00988	378.6	−0.01928	140,370.03	0.08637	102,226.1	0.05393

Assume that M_2 or M_2' as issued in the circulation of generalized money, the Gross Domestic Product (GDP) as G or G', the Consumer Price Index (CPI) as C or C', the Producer Price Index (PPI) as P or P', the Retail Price Index (RPI) as R or R', the General Budget Revenue (GBR) as G_b or G_b', and the total output value of Agriculture forestry Animal husbandry and Fishery (AAF) as A or A' for today and last year respectively, the actual need of money in real terms in the circulation $P_0 = M_2' \times (G/G')$ for last year's price level. Then the inflation rate of M_2 is $(M_2 - M_2')/M_2'$, the inflation rate of GDP is $(G - G')/G'$, the inflation rate of CPI is $(C - C')/C'$, the inflation rate of PPI is $(P - P')/P'$, the inflation rate of RPI is $(R - R')/R'$, the inflation rate of GBR is $(G_b - G_b')/G_b'$, the inflation rate of AAF is $(A - A')/A'$, and the annual Finance inflation rate can be measured by $(M_2 - P_0)/P_0$.

It means that the subsystem wood(X) of the economic social system with an unhealthy economy encounters a real economic disease since the PPI inflation rate belongs to "industry" of wood(X).

There are three subsystems water(S_X), wood(X) and metal(K_X) in which water(S_X) and wood(X) are real but metal(K_X) is real-normal. Both metal(K_X) and wood(X) have the killing relationship and others are the loving relationships. For an unhealthy economy, the key relationship is killing. By Definition **3.2**, the relation economic disease between real-normal metal(K_X) and real wood(X) is rare because real-normal metal(K_X) cannot kill real wood(X) which cannot destroy the balance of the killing relation from metal(K_X) to wood(X). If the subsystem metal(K_X) is intervened such that it is from real-normal to virtual, then there is a **more serious** disease to occur since virtual metal(K_X) cannot kill real wood(X) which can destroy the balance of the killing relation from metal(K_X) to wood(X). Thus the mainly root-cause is the real disease of the subsystem wood(X). On the other hand, by Definition **3.1**, the relation disease between real water(S_X) and real wood(X) is less serious and a son's disease **infringing upon** his mother. The son wood(X) is the cause of real disease.

So, at present the most serious problem is to treat the subsystem wood(X) falling a real disease for an unhealthy sub-economy. It is the case in (4) of Theorem **4.1** for wood(X).

By the (4) of Theorem **4.1**, the primary treatment is to decrease the energy of the subsystem wood(X) directly. And the secondary treatment is to decrease the energy of the mother water(S_X) of wood(X), and at the same time, to increase the energy of the prisoner earth(X_K) of wood(X).

In fact, the Chinese government did just that. For 1993-1999, not only had decreased gradually the financial amounts of investment in the manufacture (to decrease the energy of the subsystem wood(X) directly), but also had decreased investment in the Army (e.g., big disarmament, for decreasing the energy of water(S_X)) while had increased little by little the workers' wages, the social security and social welfare, such as, the public accumulation fund for housing construction, pension funds, medical insurance, unemployment insurance, etc.(to increase the energy of earth(X_K)).

Watching Table 1, the state of the GDP inflation rate is: virtual-normal, virtual-normal, virtual-normal, virtual-normal, virtual-normal, virtual-normal, real-normal, for 1997-2003, respectively. It means that the subsystem water(S_X) has first encountered an expected virtual economic disease with a healthy sub-economy. It is because the GDP belongs to "army-economic" of the subsystem water(S_X). During this period of time, mass goods cannot be made. Supplies are still scarce. Rush on still appear on the market.

Also watching Table 1, the state of the CPI inflation rate is: virtual-normal, virtual, virtual, virtual, virtual, virtual, virtual, for 1997-2003, respectively. For the CPI inflation rate of economic society, the normal range of theory is [1.8828%, 5.2216%] nearly to [2%, 5%], and the center is 3.2741% nearly to 3%.

It means that the subsystem earth(X_K) of the economic social system with an unhealthy sub-economy encounters a virtual economic disease since the CPI inflation rate belongs to the "commerce " of earth(X_K).

Also watching Table 1, the state of the PPI inflation rate is: virtual-normal, virtual, virtual, virtual, virtual, virtual, for 1997-2003, respectively. It means that the subsystem wood(X) falls a virtual disease for an unhealthy economy since the PPI inflation rate belongs to the "industry" of wood(X).

There are three subsystems wood(X), water(S_X) and earth(X_K) in which both wood(X) and earth(X_K) are virtual but water(S_X) is virtual-normal or real-normal. Both wood(X) and earth(X_K) have the killing relationship. And both earth(X_K) and water(S_X) also have the killing relationship. Both water(S_X) and wood(X) have the loving relationship. For an unhealthy economy, the key relationship is killing. Because water(S_X) is virtual-normal or real-normal, only consider the killing relationship from wood(X) to earth(X_K). By Definition **3.2**, the relation disease between virtual wood(X) and virtual earth(X_K) is rare since virtual wood(X) cannot kill virtual earth(X_K) which cannot destroy the balance of the killing order from wood(X) to earth(X_K). But if the subsystem earth(X_K) is intervened such that it is from virtual to real, there is a more serious relation disease between virtual wood(X) and real earth(X_K). It is because the virtual wood(X) cannot kill the real earth(X_K) which can destroy the balance of the killing relation from wood(X) to earth(X_K). Thus the mainly root-cause is the virtual disease of the subsystem wood(X).

So, at present the most serious problem is to treat the subsystem wood(X) falling a virtual disease for an unhealthy sub-economy. It is the case in (1) of Theorem **4.1** for wood(X).

By the (1) of Theorem **4.1**, the primary treatment is to increase the energy of the subsystem wood(X) directly. And the secondary treatment is to increase the energy of the son fire(X_S) of wood(X), and at the same time, to decrease the energy of the prisoner metal(K_X) of fire(X_S).

In fact, the Chinese government did just that. For 1999-2008, not only had increased gradually the financial amounts of investment in the manufacture (e.g., to invest in real estate, to increase the energy of the subsystem wood(X) directly), but also had increased investment in the agriculture and finance, such as, exempt from the agricultural taxation, increase of agricultural land expropriation compensation, improvement of the circulation of money, etc. (to increase the energy of fire(X_S) including jun-fire(X_S^j) and xiang-fire(X_S^x)) while had decreased in the science and education, such as, a small amount of teachers and researchers for a raise, schools and research institutions self-sustaining, etc. (to decrease the energy of metal(K_X)).

Therefore, the application of nature for the treatment principle of TCE by the Chinese government had brought the sustained and rapid growth of industry economy for 1991-2008.

Also watching Table 1 again, the state of the GDP inflation rate is: real-normal, real-normal, real-normal, real-normal, real, real-normal, virtual-normal, real-normal, real-normal, for 2004-2011, respectively. It means the subsystem water(S_X) is mainly with a healthy sub-economy and falls an expected real disease. It is because the GDP inflation rate belongs to the "army-economics" of water(S_X). During this period of time, large-scale goods have been still made. But a lot of society problems begin occurring.

Also watching Table 1 again, the state of the CPI inflation rate is: real-normal, virtual, virtual, real-normal, real, virtual, virtual-normal, real-normal, for 2004-2011, respectively. It means the subsystem earth(X_K) is mainly with an unhealthy sub-economy and falls a virtual disease. It is because the CPI inflation rate belongs to the "commerce" of earth(X_K).

Also watching Table 1 again, the state of the PPI inflation rate is virtual-normal, virtual-normal, virtual-normal, real-normal, real-normal, virtual, virtual-normal, real-normal, for 2004-2011, respectively. It means the subsystem wood(X) is mainly with a healthy sub-economy and falls an expected real disease. It is because the manufacture of large-scale goods or the normal PPI inflation rate belongs to "industry" of the subsystem wood(X).

There are three subsystems wood(X), water(S_X) and earth(X_K) in which both water(S_X) and wood(X) are real-normal but earth(X_K) is virtual. By Definition **3.2**, the relation disease between virtual earth(X_K) and real-normal water(S_X) is more serious since virtual earth(X_K) cannot kill real-normal water(S_X) which can destroy the killing order from earth(X_K) to water(S_X). Now the subsystem earth(X_K) must be intervened such that it is from virtual to real-normal.

So, at present the most serious problem is to treat the subsystem earth(X_K) falling a virtual disease for an unhealthy sub-economy. It is the case in (1) of Theorem **4.1** for earth(X_K).

The X_K as X in theorem **4.1**, using the (1) of Theorem **4.1** again, it is to get: the primary treatment is to increase the energy of the subsystem earth(X_K) directly. And the secondary treatment is to increase the energy of the son metal(K_X) of earth(X_K), where $(X_K)_S = K_X$ in Figure 1, and at the same time, to decrease the energy of the bane wood(X) of earth(X_K), where $K_{(X_K)} = X$ in Figure 1.

In fact, the Chinese government did just that. For 2009-2014, not only had increased the financial amounts of investment in commerce, such as, strengthen the support for the WTO trade, etc. (to increase the energy of the subsystem earth(X_K) directly), but also had increased investment in science, education and public facilities, such as to build high speed rail, etc. (to increase the energy of metal(K_X)) while had reduced the industrial support, such as, the appreciation of the RMB, etc. (to decrease the energy of wood(X)).

Therefore, again application of nature for the treatment principle of TCE by the Chinese government had brought the 2009-2014 economic taking off again.

Also watching Table 1 again and again, the state of the GDP inflation rate is: virtual-normal, virtual-normal, virtual-normal, for 2012-2014, respectively. It means that the subsystem water(S_X) is a healthy sub-economy which will fall an expected virtual disease if it encounters a disease. It is because the GDP belongs to "army-economics" the subsystem water(S_X). During this period of time, large-scale goods have been still made such that a lot of goods cannot sell out and a lot of society problems has occurred.

Also watching Table 1 again and again, the state of the CPI inflation rate is: virtual-normal, virtual-normal, virtual-normal, for 2012-2014, respectively. It means that the subsystem earth(X_K) is an expected virtual disease for a healthy sub-economy. It is because the manufacture of large-scale goods or the CPI inflation rate belongs to the "commerce or business" of the subsystem earth(X_K).

Also watching Table 1 again and again, the state of the PPI inflation rate is: virtual-normal, virtual-normal, virtual-normal, for 2012-2014, respectively. It means that the the subsystem wood(X) is an expected virtual disease for a healthy sub-economy. It is because the manufacture of large-scale goods or the PPI inflation rate belongs to the "industry" of the subsystem wood(X).

The virtual-normal disease of wood(X) is not because of its low energy, but because of its energy is too high to make producing products too much, so much so that there is no way to sell products, low profit of industrial production. In the TCE, this disease is Yang irritability turned to deficiency disease. This disease is not the current urgent problems since it cannot destroy the killing order balance of the economy.

There are three subsystems wood(X), water(S_X) and earth(X_K) in which all are virtual-normal. Both wood(X) and earth(X_K) have the killing relationship from wood(X) to earth(X_K). Both earth(X_K) and water(S_X) also have the killing relationship from earth(X_K) to water(S_X). Both water(S_X) and wood(X) have the loving relationship from water(S_X) to wood(X). For a healthy economy, the key relationship is loving. By Definition **3.1**, the relation disease between virtual-normal water(S_X) and virtual-normal wood(X) is less serious and a mother's disease **involving in** her son. The mother water(S_X) is the cause of disease. On the other hand, if the virtual-normal disease of wood(X) is continuously to develop such that it is from virtual-normal to virtual, by Theorem **3.2**, the virtual wood(X) will make its mother subsystem water(S_X) falling a virtual economic disease when it encounters an economic disease.

In fact, the economic indicators of GDP which belongs to the subsystem water(S_X) is beginning to decline. Abiding by TCE's idea "Don't have economic disease cure cure non-ill", the prevention and treatment of the current work is the need to prevent the virtual disease of the subsystem water(S_X) for a healthy economy.

So, at present the most serious problem is to treat the subsystem water(S_X) falling a virtual disease with a healthy sub-economy of the subsystem water(S_X). It is the case in (2) of Theorem **4.1** for water(S_X).

The S_X as X in (2) of Theorem **4.1**, the primary treatment is gotten to increase the energy of the mother subsystem metal(K_X) of the water(S_X), where $S_{(S_X)} = K_X$ in Figure 1. And the secondary treatment is gotten to increase the energy of the water(S_X) itself while decrease the energy of the prisoner fire(X_S) of the water(S_X), where $(S_X)_K = X_S$ in **Figure 1**.

In fact, the Chinese government also is doing just that. Since 2015, not only has increased continuously investment in science, education and public facilities, such as, One Belt and One Road, etc. (for increasing the energy of metal(K_X)), but also has increased to military spending (to increase the energy of the water(S_X)) while has reduced the agricultural support and finance, such as, reduce the purchase price of agricultural products, reduce the circulation of money, etc. (to decrease the energy of fire(X_S) including jun-fire(X_S^j) and xiang-fire(X_S^x)). Therefore, again and again application of nature for the treatment principle of TCE by the Chinese government will lead to economic continue to glory since 2015. #

6. Conclusion

This work shows how to treat the diseases of an economic society by using the GDP inflation rate x. For the GDP inflation rate, the normal range of theory is [5.8114%, 16.359%] nearly to [6%, 16%], and the center is 10.208% nearly to 10%. The first or second transfer law of economic diseases changes according to the different economic society's GDP inflation rate whether in the normal range or not. For the normal range, the first transfer law in Theorem **3.2** runs; For the abnormal range, the second transfer law in Theorem **3.3** runs.

Assume that the range of economic society's GDP inflation rate x is divided into four parts from small to large. Both second and third are for a healthy economy with an expected virtual or real disease respectively. The treating works are the prevention or treatment for a more serious relation disease between virtual X and real X_K or between virtual K_X and real X respectively. Each of both more serious relation diseases comes from the first transfer law in Theorem **3.2**.

And both first and fourth are for an unhealthy economy with a happened virtual or real disease respectively. The treating works are the prevention or treatment for a more serious relation disease between virtual X_S and real K_X or between virtual X_K and real S_X respectively. Each of both more serious relation diseases comes from the second transfer law in Theorem **3.3**.

Economic disease treatment should protect and maintain the balance or order of two incompatibility relations: the loving relationship and the killing relationship. The method for doing so can make the $\rho_3 = c\rho(x)$ tending to be large. In other words, using the method can make all of both $\rho(x)$ and c tend to be large, at least, greater than zero for an unhealthy economy; or, the best, equal to 1 for a healthy economy.

The following way can make the capabilities of both intervention reaction and self-protection becoming in the best state, the non-existence of side effects issue, the non-existence of economic intervention resistance problem, and so on.

1) Suppose that $x < a = 5.8114\%$, as **virtual**, in which X falls a virtual disease with an unhealthy economy. In order to protect or maintain the loving relation-

ship, abiding by TCE's idea "Virtual disease with an unhealthy economy is to fill itself" (虚则补之), increase the energy of X directly.

In order to protect or maintain the killing relationship, abiding by TCE's idea "Don't have disease cure cure non-ill" (不治已病治未病), do a preventive treatment for the more serious relation disease between virtual X_S and real K_X. Through the intervening principle of "Strong inhibition of the same time, support the weak" (抑强扶弱), increase the energy of the son X_S of X while decrease the energy of the prisoner K_X of X_S.

2) Suppose that $a = 5.8114\% \le x < t_0 = 10.208\%$, as **virtual-normal**, in which X will fall an expected virtual disease with a healthy economy. In order to protect and maintain the loving relationship, abide by TCE's idea "Virtual disease with a healthy economy is to fill his mother" (虚则补其母), increase the energy of the mother S_X of X. The treating way is an indirect treating for X.

In order to protect and maintain the killing relationship, abiding by TCE's idea "Don't have disease cure cure non-ill" (不治已病治未病), do a preventive treatment for the more serious relation disease between virtual X and real X_K. Through the intervening principle of "Strong inhibition of the same time, support the weak" (抑强扶弱), increase the energy of X itself while decrease the energy of the prisoner X_K of X.

3) Suppose that $t_0 = 10.208\% \le x \le b = 16.359\%$, as **real-normal**, in which X will encounter an expected real disease with a healthy economy. In order to protect or maintain the loving relationship, abiding by TCE's idea "Real disease with a healthy economy is to rush down his son" (实则泄其子), decrease the energy of the son X_S of X. The treating way is an indirect treating for X.

In order to protect or maintain the killing relationship, abiding by TCE's idea "Don't have disease cure cure non-ill" (不治已病治未病), do a preventive treatment for the more serious relation disease between virtual K_X and real X. Through the intervening principle of "Strong inhibition of the same time, support the weak" (抑强扶弱), decrease the energy of X itself while increase the energy of the bane K_X of X.

4) Suppose that $x > b = 16.359\%$, as **real**, in which X encounters a real disease with an unhealthy economy. In order to protect or maintain the loving relationship, abiding by TCE's idea "Real disease with an unhealthy economy is to rush down itself" (实则泄之), decrease the energy of X directly.

In order to protect or maintain the killing relationship, abiding by TCE's idea "Don't have disease cure cure non-ill" (不治已病治未病), do a preventive treatment for the more serious relation disease between virtual X_K and real S_X. Through the intervening principle of "Strong inhibition of the same time, support the weak" (抑强扶弱), decrease the energy of the mother S_X of X while increase the energy of the bane X_K of S_X.

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Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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Appendix

Proof of Theorem 2.1. Let $\min = -0.11, \max = 0.81, t_0 = 10.208\%$.

1) Firstly, from Equations (3) and (4), by equal ratio theorem,

$$\rho(x) = \frac{1/2}{\lambda(x)+1/2} \Leftrightarrow \frac{\rho(x)}{1-\rho(x)} = \frac{1/2}{\lambda(x)} \Leftrightarrow \lambda(x) = \frac{1-\rho(x)}{2\rho(x)}.$$

If $x \to \min$ or $x \to \max$, then $\lambda(x) \to +\infty$, and $\rho(x) \to 0$. If $x = t_0$, then $\lambda(x) = 0$, and $\rho(x) = 1$. Thus $0 < \rho(x) \le 1$ and $0 \le \lambda(x) < +\infty$ will be equivalent to each other. It is because $\lambda(x)$ is a monotone decreasing function of x if $x \in (\min, t_0]$ or a monotone increasing function of x if $x \in [t_0, \max)$; and $\rho(x)$ is a monotone decreasing function of $\lambda(x)$ if $\lambda(x) \in [0, +\infty)$; and $\lambda(x)$ is a monotone decreasing function of $\rho(x)$ if $\rho(x) \in (0,1]$.

In fact, $\lambda(x)$ is a monotone decreasing function of x if $x \in (\min, t_0]$ since

$$\begin{aligned}\frac{\mathrm{d}\lambda(x)}{\mathrm{d}x} &= \frac{-(x-\min)(\max-x)-(t_0-x)[(\max-x)-(x-\min)]}{[(x-\min)(\max-x)]^2}\\ &= -\frac{(x-\min)(\max-x)+(t_0-x)[(\max-x)-(x-\min)]}{[(x-\min)(\max-x)]^2}\\ &= -\frac{[(x-\min)(\max-t_0)+(t_0-x)(\max-x)]}{[(x-\min)(\max-x)]^2} < 0.\end{aligned}$$

And $\lambda(x)$ is a monotone increasing function of x if $x \in [t_0, \max)$ since

$$\begin{aligned}\frac{\mathrm{d}\lambda(x)}{\mathrm{d}x} &= \frac{(x-\min)(\max-x)-(x-t_0)[(\max-x)-(x-\min)]}{[(x-\min)(\max-x)]^2}\\ &= \frac{(x-\min)(\max-x)-(x-t_0)[(\max-x)-(x-\min)]}{[(x-\min)(\max-x)]^2}\\ &= \frac{[(\max-x)(t_0-\min)+(x-t_0)(x-\min)]}{[(x-\min)(\max-x)]^2} > 0.\end{aligned}$$

And $\rho(x)$ is a monotone decreasing function of $\lambda(x)$ if $\lambda(x) \in [0, +\infty)$ since

$$\frac{\mathrm{d}\rho(x)}{\mathrm{d}\lambda(x)} = \frac{-(1/2)[1]}{[\lambda(x)+1/2]^2} = \frac{-1}{2[\lambda(x)+1/2]^2} < 0.$$

And $\lambda(x)$ is a monotone decreasing function of $\rho(x)$ if $\rho(x) \in (0,1]$ since

$$\frac{\mathrm{d}\lambda(x)}{\mathrm{d}\rho(x)} = \frac{1}{2}\left(\frac{(-1)\rho(x)-(1-\rho(x))[1]}{\rho(x)^2}\right) = \frac{-1}{2\rho(x)^2} < 0.$$

2) Let the function $f(u) = (u+u^3)-(1-u^3), u \in (0,1]$. Then $f(u)$ is a monotone increasing function of u since $f(u)' = 1+6u^2 > 0$.

On the other hand, from Zhang & Shao (2012), there is $f(\rho_0) = (\rho_0+\rho_0^3)-(1-\rho_0^3) = 0$. Hence, if $\rho(x) \ge \rho_0$, then $f(\rho(x)) = (\rho(x)+\rho(x)^3)-(1-\rho(x)^3) \ge f(\rho_0) = 0$ because of monotonicity of *f*. Thus $\frac{1-\rho(x)}{2\rho(x)} \le \rho(x)^2$.

By the result of (1), it is to get $\lambda(x) = \frac{1-\rho(x)}{2\rho(x)} \le \frac{1-\rho_0}{2\rho_0} = \rho_0^2 \le \rho(x)^2$ since $\lambda(x)$ is a monotone decreasing function of $\rho(x)$ where $0 < \rho_0 \le \rho(x)$.

Similarly, it is to get $\frac{\lambda(x)}{\rho(x)} = \frac{1-\rho(x)}{2\rho(x)^2} \le \frac{1-\rho_0}{2\rho_0^2} = \rho_0 \le \rho(x)$ since $h(\rho(x)) = \frac{\lambda(x)}{\rho(x)}$ is a monotone decreasing function of $\rho(x)$ where $0 < \rho_0 \le \rho(x)$.

The proof of the monotone decreasing function $h(\rho(x)) = \frac{\lambda(x)}{\rho(x)}$ is from

$$\frac{\mathrm{d}h(\rho(x))}{\mathrm{d}\rho(x)} = \frac{1}{2}\left(\frac{(-1)\rho(x)^2 - (1-\rho(x))[2\rho(x)]}{\rho(x)^4}\right) = \frac{\rho(x)-2}{2\rho(x)^3} < 0.$$

Furthermore, it is to get $\frac{\lambda(x)}{\rho(x)^2} = \frac{1-\rho(x)}{2\rho(x)^3} \le \frac{1-\rho_0}{2\rho_0^3} = 1$ since $h(\rho(x)) = \frac{\lambda(x)}{\rho(x)^2}$ is a monotone decreasing function of $\rho(x)$ where $0 < \rho_0 \le \rho(x)$.

The proof of the monotone decreasing function $h(\rho(x)) = \frac{\lambda(x)}{\rho(x)^2}$ is from

$$\frac{\mathrm{d}h(\rho(x))}{\mathrm{d}\rho(x)} = \frac{1}{2}\left(\frac{(-1)\rho(x)^3 - (1-\rho(x))\left[3\rho(x)^2\right]}{\rho(x)^6}\right) = \frac{2\rho(x)-3}{2\rho(x)^4} < 0.$$

3) It is similar to the proof of (2).

4) Let the function $g(u) = (u + cu^3) - (1 - cu^3), u, c \in (0,1]$. Then $g(u)$ is a monotone increasing function of *u* since $g(u)' = 1 + 6cu^2 > 0$ where $0 < c \le 1$. On the other hand, $g(u) = 2(c-1)u^3 + f(u)$, where $f(u) = (u + u^3) - (1 - u^3), u \in (0,1]$ is the same as that in (2).

Therefore, if $\rho(x) < \rho_0$, then $g(\rho(x)) < 0$, $|g(\rho(x))| > 2(1-c)\rho_0^3$, since

$$g(\rho(x)) < g(\rho_0) = 2(c-1)\rho_0^3 + f(\rho_0) = 2(c-1)\rho_0^3 \le 0.$$

The condition $g(\rho(x)) < 0$ implies that

$$(\rho_1 + \rho_2\rho_3) = \rho(x) + c\rho(x)^3 < 1 - c\rho(x)^3 = 1 - \rho_2\rho_3.$$

5) Consider the function $g(u) = 2cu^3 - (1-u)$ is the same as in (4). Easy to know that $g(u) = 0$ if and only if $c = \frac{1-u}{2u^3}$. Denoted the function $\frac{1-u}{2u^3}$ by $c(u)$. The $c(u) = \frac{1-u}{2u^3}$ is a monotone decreasing function of $u \in (0,1]$ since

$$c(u)' = \frac{1}{2}\left(-3u^{-4} + 2u^{-3}\right) = \frac{1}{2u^4}(-3 + 2u) < 0, \forall, u \in (0,1].$$

If $c \geq c(u)$, i.e., $c \geq \frac{1-u}{2u^3}$, then $g(u) = 2u^3\left(c - \frac{1-u}{2u^3}\right) \geq 0$ which implies $\left(u + cu^3\right) \geq \left(1 - cu^3\right)$.

If $0 \leq c < c(u)$, i.e., $0 \leq c < \frac{1-u}{2u^3}$, then $g(u) = 2u^3\left(c - \frac{1-u}{2u^3}\right) < 0$ which implies $\left(u + cu^3\right) < \left(1 - cu^3\right)$.

Because the balance solution of $\frac{1-u}{2u^3} = \frac{1}{2}$ is $u = \rho_0'$ and $c(u) = \frac{1-u}{2u^3}$ is a monotone decreasing function of $u \in (\rho_0, 1]$, there are,

$$u \in [\rho_0, \rho_0') \Leftrightarrow 1 \geq \frac{1-u}{2u^3} > \frac{1}{2}\text{; and } u \in [\rho_0', 1) \Leftrightarrow 0 < \frac{1-u}{2u^3} \leq \frac{1}{2}.$$

Thus one is that $|g(u)| = \left|2cu^3 + u - 1\right| \leq (\rho_0')^3 = 0.31767, \forall u \in [\rho_0', 1)$ if $0 \leq c < \frac{1-u}{2u^3} \leq \frac{1}{2}$ since

$$|g(u)| = 2u^3\left(\frac{1-u}{2u^3} - c\right) < 2u^3\left(\frac{1-u}{2u^3}\right) = 1 - u \leq 1 - \rho_0' = (\rho_0')^3 = 0.31767.$$

And two is that $|g(u)| = \left|2cu^3 + u - 1\right| \leq 2\rho_0^3 = 0.41024, \forall u \in [\rho_0, \rho_0')$ if $0 \leq c \leq \frac{1}{2} < \frac{1-u}{2u^3} \leq 1$ since

$$|g(u)| = 2u^3\left(\frac{1-u}{2u^3} - c\right) < 2u^3\left(\frac{1-u}{2u^3}\right) = 1 - u \leq 1 - \rho_0 = 2\rho_0^3 = 0.41024.$$

And three is that $|g(u)| = \left|2cu^3 + u - 1\right| \leq 0.31767, \forall u \in [\rho_0, \rho_0')$ if $\frac{1}{2} < c < \frac{1-u}{2u^3} \leq 1$ since

$$|g(u)| = \left|2u^3\left(c - \frac{1-u}{2u^3}\right)\right| \leq 2u^3 \cdot \frac{1}{2} = u^3 \leq (\rho_0')^3 = 0.31767.$$

In particular, from the proof of (3), there is that $g(u) = 2u^3\left(c - \frac{1-u}{2u^3}\right)$ is a monotone increasing function of $u \in (0, 1]$. When c is nearly to 1/2, it is not only to obtain directly $\rho_1 - \rho_3 = \rho(x)(1-c) \to \rho(x)/2$, $\rho_2 - \rho_1\rho_3 = \rho(x)^2(1-c) \to \rho(x)^2/2$, but also to get the following statements.

a) $g(\rho_0') = -(1-2c)(\rho_0')^3$ and $g(u) = 2u^3\left(c - \frac{1-u}{2u^3}\right)$ are nearly to 0 if $0 < c < \frac{1-u}{2u^3} \leq \frac{1}{2}$ in which $u \in [\rho_0', 1)$.

b) $g(\rho_0) = -2(1-c)\rho_0^3$ and $g(\rho_0') = -(1-2c)(\rho_0')^3$ are nearly to $-\rho_0^3 = -0.20512, 0$ respectively, if $0 < c \leq \frac{1}{2} < \frac{1-u}{2u^3} \leq 1$ in which $u \in [\rho_0, \rho_0')$.

c) $g(\rho_0) = -2(1-c)\rho_0^3$ and $g(\rho_0') = -(1-2c)(\rho_0')^3$ are nearly to $-\rho_0^3 = -0.20512, 0$ respectively, if $\frac{1}{2} < c < \frac{1-u}{2u^3} \leq 1$ in which $u \in [\rho_0, \rho_0')$.

Taking $u = \rho(x)$, it is to get the desired. #

Proof of Corollary 2.1. (1). From the proof of (1) in Theorem **2.1**, for any $0 < d < 1$, there is an unique solution $u \in (-0.11, 10.208\%]$ and there is also an unique solution $v \in (10.208\%, 0.81)$, such that

$$\lambda(0.027047) = 0 \le \lambda(x) = \frac{1-\rho(x)}{2\rho(x)} \le \lambda(u) = \lambda(v) = (1-d)/(2d),$$

since $\lambda(x)$ is a monotone decreasing function of $x \in (-0.11, 10.208\%]$ or a monotone increasing function of $x \in [10.208\%, 0.81)$ if $0 \le (1-d)/(2d) < +\infty$.

By the result of (1) in Theorem **2.1**, $\lambda(u) = \lambda(v) = (1-d)/(2d)$ is equivalent to $\rho(u) = \frac{1/2}{\lambda(u)+1/2} = d = \frac{1/2}{\lambda(v)+1/2} = \rho(v)$.

For $d = \rho_0$, $\lambda(u) = \lambda(v) = (1-\rho_0)/(2\rho_0) = \rho_0^2$, since $(\rho_0 + \rho_0^3) = (1-\rho_0^3)$.

For $d = \rho_0'$, $\lambda(u) = \lambda(v) = (1-\rho_0')/(2\rho_0') = (\rho_0')^2/2$, since $(\rho_0')^3 = 1-\rho_0'$.

The others can be obtained through the calculated directly from the result of (1) by SAS. #

Proof of Theorem 3.2 Let $a = 5.8114\%, b = 16.359\%, t_0 = 10.208\%$.

1) If a subsystem *X* of a steady multilateral system *V* falls a virtual disease for a healthy economy, denoted by $\downarrow^0$, which means that there is a force such that its energy $\varphi(X)$ decreases, i.e., changed by the increment $\Delta\varphi(X) = -\Delta < 0$. By the Intervention Rule in Zhang & Shao (2012), its capability of intervention reaction can make the mother S_X of *X* to fall a virtual disease by a negative increment $\Delta\varphi(S_X) = -\rho_1\Delta < 0$, in which its absolute value is large, denoted by $\downarrow^+$, and also can make the son X_S of *X* to fall a virtual disease by a negative increment $\Delta\varphi(X_S) = -\rho_2\Delta < 0$, in which its absolute value is small, denoted by $\downarrow^-$. Diseases of the loving subsystems have the same direction of *X*.

At the same time, its capability of intervention reaction can make the bane K_X of *X* to fall a real disease by a large increment $\Delta\varphi(K_X) = \rho_1\Delta > 0$, denoted by $\uparrow^+$, and also can make the prisoner X_K of *X* to fall a real disease by a little increment $\Delta\varphi(X_K) = \rho_2\Delta > 0$, denoted by $\uparrow^-$. Diseases of the killing subsystems are the opposite direction of *X*.

The bane K_X of *X* is the biggest victim since its increment $\Delta\varphi(K_X) = \rho_1\Delta > 0$ is large.

On the other hand, if the GDP inflation rate $x \in [a,b]$, by Corollary **2.1**, there is $1 \ge \rho_1 = \rho(x) \ge \rho_0$ such that

$$\rho_1 + \rho_2\rho_3 = \rho(x) + c\rho(x)^3 \ge 1 - \rho_2\rho_3 = 1 - c\rho(x)^3.$$

Thus, $1 \ge c \ge [1-\rho(x)]/(2\rho(x)^3) > 0, \forall x \ne t_0$. It means that the economy is healthy such that there is the capability of self-protection of the steady multilateral system, i.e., $c > 0$. By the Self-protection Rule in Zhang & Shao (2012), its capability of self-protection can make the biggest victim as the bane K_X of *X* restored by a fixed increment $\Delta\varphi(K_X)_1 = -\rho_3\Delta < 0$, denoted by $\Downarrow^0$.

By the Intervention Rule in Zhang & Shao (2012) again and from Theorem **3.1**, its capability of self-protection can make the mother X_K of K_X to fall a virtual disease by a negative increment $\Delta\varphi(X_K)_1 = -\rho_1\rho_3\Delta < 0$, in which its absolute value is large, denoted by $\Downarrow^+$, and also can make the son S_X of K_X to fall a virtual disease by a negative increment $\Delta\varphi(S_X)_1 = -\rho_2\rho_3\Delta < 0$, in which its absolute value is small, denoted by $\Downarrow^-$. Diseases of the loving subsystems have the same direction of K_X.

At the same time, its capability of self-protection can make the bane X_S of K_X to fall a real disease by a large increment $\Delta\varphi(X_S)_1 = \rho_1\rho_3\Delta > 0$, denoted by $\Uparrow^+$, and also can make the prisoner X of K_X to fall a real disease by a little increment $\Delta\varphi(X)_1 = \rho_2\rho_3\Delta > 0$, denoted by $\Uparrow^-$. Diseases of the killing subsystems are the opposite direction of K_X. All these changes consist of those in **Figure 2**.

From **Figure 2** or from Theorem **3.2** in Zhang & Shao (2012), if $\rho_3 = \rho_1 = \rho(x)$, i.e., $c = 1$, its capabilities of intervention reaction and self-protection can make the subsystems X_S, X_K and K_X be restored at the same time, but the subsystems X and S_X will decrease their energies. In mathematics, from Theorems **3.1** and **3.2** in Zhang & Shao (2012), the final increments can be obtained as follows:

$$\Delta\varphi(X)_2 = \Delta\varphi(X)_1 + \Delta\varphi(X) = -(1-\rho_2\rho_3)\Delta = -\left(1 - c\rho(x)^3\right) \to -\left(1-\rho(x)^3\right) < 0,$$

$$\Delta\varphi(S_X)_2 = \Delta\varphi(S_X)_1 + \Delta\varphi(S_X) = -(\rho_1+\rho_2\rho_3)\Delta = -\left(\rho(x) + c\rho(x)^3\right)\Delta \to -\left(\rho(x)+\rho(x)^3\right)\Delta < 0,$$

$$\Delta\varphi(K_X)_2 = \Delta\varphi(K_X)_1 + \Delta\varphi(K_X) = (\rho_1-\rho_3)\Delta = \rho(x)(1-c)\Delta \to 0+,$$

$$\Delta\varphi(X_K)_2 = \Delta\varphi(X_K)_1 + \Delta\varphi(X_K) = (\rho_2-\rho_1\rho_3)\Delta = \rho(x)^2(1-c)\Delta \to 0+,$$

$$\Delta\varphi(X_S)_2 = \Delta\varphi(X_S)_1 + \Delta\varphi(X_S) = -(\rho_2-\rho_1\rho_3)\Delta = -\rho(x)^2(1-c)\Delta \to 0-.$$

It means that the first physiological system of the steady multilateral system runs normally. From the idea of TCE, by the Affording Rule, the second physiological system of the steady multilateral system will not work to afford for. It is because there is a full Yin food $\Delta\varphi(X)_2 = -(1-\rho_2\rho_3)\Delta = \left(1-c\rho(x)^3\right)\Delta < 0$ for the second physiological system if the subsystem X falls a virtual disease and is intervened for a healthy economy by the Attaining Rule.

By Theorem **2.1** and Corollary **2.1**, the GDP inflation rate $x \in [a,b]$ makes $1 \ge \rho(x) \ge \rho_0$ such that $-\left(\rho(x)+\rho(x)^3\right) \le -\left(1-\rho(x)^3\right)$, therefore the first transfer law is the first occurrence of the virtual disease of the mother S_X of X if a subsystem X of a steady multilateral system V falls a virtual disease for a healthy economy.

From **Figure 2** and by Definition **3.1**, the relation disease between virtual S_X and virtual X is less serious since virtual S_X can love virtual X.

If the disease continues to develop, it will lead to undermine firstly the best state of the capability of self-protection of the steady multilateral system, i.e., $c \ne 1$, since any disease that causes side effects in the first place dues to the non-best state of self-protection ability, i.e., $0 \le \rho_3 = c\rho(x) < \rho(x) = \rho_1$, where $0 \le c < 1$, even if the treatment principle of TCE is used. Thus the self-protection coefficient ρ_3 will near to small such that firstly $(\rho_1 - \rho_3) = \rho(x)(1-c) > 0$, secondly $(\rho_2 - \rho_1\rho_3) = \rho(x)^2(1-c) > 0$, and finally $-(\rho_2 - \rho_1\rho_3) = -\rho(x)^2(1-c) < 0$.

By Theorem **3.1** in Zhang & Shao (2012), the victim K_X or X_K of X will encounter a sick which is different from the disease direction of X, i.e., changed by the increments

$$\Delta\varphi(K_X)_2 = \Delta\varphi(K_X) + \Delta\varphi(K_X)_1 = (\rho_1 - \rho_3)\Delta = \rho(x)(1-c)\Delta > 0,$$

$$\Delta\varphi(X_K)_2 = \Delta\varphi(X_K) + \Delta\varphi(X_K)_1 = (\rho_2 - \rho_1\rho_3)\Delta = \rho(x)^2(1-c)\Delta > 0,$$

respectively. At the same time, the son X_S of X also falls a virtual ill which is the same disease direction of X, i.e., changed by the increment

$$\Delta\varphi(X_S)_2 = \Delta\varphi(X_S) + \Delta\varphi(X_S)_1 = -(\rho_2 - \rho_1\rho_3)\Delta = -\rho(x)^2(1-c)\Delta < 0,$$

since $1 > c \ge 0$. Therefore the transfer law is secondly the real disease of the bane K_X of X after the virtual disease of the mother S_X of X, and thirdly the real disease of the prisoner X_K of X, and fourthly the virtual disease of the son X_S of X, against the loving relationship order transmission.

In fact, watching **Figure 2**, S_X is virtual, K_X is real, X_K is real, and X_S is virtual, if X is virtual for a healthy economy. The order of the transfer law of diseases must be against the loving relationship order transmission. It is because

$$(\rho_1 - \rho_3) \ge (\rho_2 - \rho_1\rho_3) \ge -(\rho_2 - \rho_1\rho_3) \ge -(\rho_1 - \rho_2\rho_3) \ge -(\rho_1 + \rho_2\rho_3).$$

The result is obtained from $(1 - \rho_2\rho_3) \le (\rho_1 + \rho_2\rho_3)$ since

$$\begin{aligned}(\rho_1 + \rho_2\rho_3) \ge (\rho_1 - \rho_2\rho_3) \ge (\rho_1 - \rho_3) = \rho(x)(1-c) \\ \ge \rho(x)^2(1-c) = (\rho_2 - \rho_1\rho_3).\end{aligned}$$

In other words, the diseases are transferred from real K_X to virtual S_X against the loving relationship order if X is the cause of diseases or X is intervened. It implies that the mother S_X of X will obtain the best Yin (negative) energy if the energy of X decreases.

Watching **Figure 2** and by Definitions **3.1** and **3.2**, the relation disease between real K_X and virtual X is less serious since real K_X can kill virtual X, but the relation disease between virtual X and real X_K is **more serious** since virtual X cannot kill real X_K which will destroy the killing order from X to X_K of the Yin Yang Wu Xing system if the disease continues to develop.

Finally the relation disease between virtual X and virtual X_S is also less serious since virtual X can love virtual X_S. The less serious relation disease between virtual X and virtual X_S makes that the loving order from X to X_S will be restored easily. The transferring way of strengthening the loving relationship can make the new virtual disease of X remission since $\Delta\varphi(X)_2 = -\left(1 - c\rho(x)^3\right)\Delta \ge -\Delta = \Delta\varphi(X)$. Despite of the positive way, the system will be still for the next round of disease transmission, until the disease rehabilitation.

2) If a subsystem X of a steady multilateral system V falls a real disease for a healthy economy, denoted by $\uparrow^0$, which means that there is a force such that its energy $\varphi(X)$ increases, i.e., changed by the increment $\Delta\varphi(X)=\Delta>0$. By the Intervention Rule in Zhang & Shao (2012), its capability of intervention reaction can make the son X_S of X to fall a real disease by a large increment $\Delta\varphi(X_S)=\rho_1\Delta>0$, denoted by $\uparrow^+$, and also can make the mother S_X of X to fall a real disease by a little increment $\Delta\varphi(S_X)=\rho_2\Delta>0$, denoted by $\uparrow^-$. Diseases of the loving subsystems have the same direction of X.

At the same time, its capability of intervention reaction can make the prisoner X_K of X to fall a virtual disease by a negative increment $\Delta\varphi(X_K)=-\rho_1\Delta<0$, in which its absolute value is large, denoted by $\downarrow^+$, and also can make the bane K_X of X to fall a virtual disease by a negative increment $\Delta\varphi(K_X)=-\rho_2\Delta<0$, in which its absolute value is small, denoted by $\downarrow^-$. Diseases of the killing subsystems are the opposite direction of X.

The prisoner X_K of X is the biggest victim since its increment $\Delta\varphi(X_K)=-\rho_1\Delta<0$ is the scope of big changes.

On the other hand, if the GDP inflation rate $x\in[a,b]$, by Theorem **2.1** and Corollary **2.1**, there is $1\ge\rho_1=\rho(x)\ge\rho_0$ such that

$$\rho_1+\rho_2\rho_3=\rho(x)+c\rho(x)^3\ge 1-\rho_2\rho_3=1-c\rho(x)^3.$$

Thus, $1\ge c\ge[1-\rho(x)]/(2\rho(x)^3)>0,\forall x\ne t_0$. It means that the economy is healthy such that there is a good capability of self-protection of the steady multilateral system.

By the Self-protection Rule in Zhang & Shao (2012), its capability of self-protection can make the biggest victim as the prisoner X_K of X restored by a fixed increment $\Delta\varphi(X_K)_1=\rho_3\Delta>0$, denoted by $\Uparrow^0$.

By the Intervention Rule in Zhang & Shao (2012) again and from Theorem **3.1**, its capability of self-protection can make the son K_X of X_K to fall a real disease by a large increment $\Delta\varphi(K_X)_1=\rho_1\rho_3\Delta>0$, denoted by $\Uparrow^+$, and also can make the mother X_S of X_K to fall a real disease by a little increment $\Delta\varphi(X_S)_1=\rho_2\rho_3\Delta>0$, denoted by $\Uparrow^-$. Diseases of the loving subsystems have the same direction of X_K.

At the same time, its capability of self-protection can make the prisoner S_X of X_K to fall a virtual disease by a negative increment $\Delta\varphi(S_X)_1=-\rho_1\rho_3\Delta<0$, in which its absolute value is large, denoted by $\Downarrow^+$, and also can make the bane X of X_K to fall a virtual disease by a negative increment $\Delta\varphi(X)_1=-\rho_2\rho_3\Delta<0$, in which its absolute value is small, denoted by $\Downarrow^-$. Diseases of the killing subsystems are the opposite direction of X_K. All these changes consist of those in **Figure 3**.

From **Figure 3** or by Theorem **3.2** in Zhang & Shao (2012), if $\rho_3=\rho_1=\rho(x)$, i.e., $c\to 1$, its capabilities of intervention reaction and self-protection can make the subsystems S_X, K_X and X_K restored at the same time, but the subsystems X and X_S will increase their energies. In mathematics, from Theorems **3.1** and **3.2** in Zhang & Shao (2012), the final increments can be obtained as follows:

$$\Delta\varphi(X)_2 = \Delta\varphi(X)_1 + \Delta\varphi(X) = (1-\rho_2\rho_3)\Delta$$
$$= \left(1-c\rho(x)^3\right)\Delta \to \left(1-\rho(x)^3\right)\Delta > 0,$$

$$\Delta\varphi(X_S)_2 = \Delta\varphi(X_S)_1 + \Delta\varphi(X_S) = (\rho_1+\rho_2\rho_3)\Delta$$
$$= \left(\rho(x)+c\rho(x)^3\right)\Delta \to \left(\rho(x)+\rho(x)^3\right)\Delta > 0,$$

$$\Delta\varphi(X_K)_2 = \Delta\varphi(X_K)_1 + \Delta\varphi(X_K) = -(\rho_1-\rho_3)\Delta = -\rho(x)(1-c)\Delta \to 0-,$$

$$\Delta\varphi(K_X)_2 = \Delta\varphi(K_X)_1 + \Delta\varphi(K_X) = -(\rho_2-\rho_1\rho_3)\Delta = -(x)^2(1-c)\Delta \to 0-,$$

$$\Delta\varphi(S_X)_2 = \Delta\varphi(S_X)_1 + \Delta\varphi(S_X) = (\rho_2-\rho_1\rho_3)\Delta = \rho(x)^2(1-c)\Delta \to 0+.$$

It means that the first physiological system of the steady multilateral system runs normally. From the idea of TCE, by the Affording Rule, the second physiological system of the steady multilateral system will not work to afford for. It is because there is a full Yang food $\Delta\varphi(X)_2 = (1-\rho_2\rho_3)\Delta = \left(1-c\rho(x)^3\right)\Delta > 0$ for the second physiological system if the subsystem X falls a real disease and is intervened for a healthy economy by the Attaining Rule.

By Theorem **2.1** and Corollary **2.1**, the GDP inflation rate $x \in [a,b]$ makes $1 \ge \rho_1 = \rho(x) \ge \rho_0$ such that $\left(\rho(x)+\rho(x)^3\right) \ge \left(1-\rho(x)^3\right)$. Therefore the transfer law is the first occurrence of the real disease of the son X_S of X if a subsystem X of a steady multilateral system V falls a real disease for a healthy economy.

From **Figure 3** and by Definition **3.1**, the relation disease between real X and real X_S is less serious since real X can love real X_S.

If the disease continues to develop, it will lead to undermine firstly the capability of self-protection of the steady multilateral system, i.e., $c \ne 1$ since any disease that causes side effects in the first place dues to the non-best state of self-protection ability, i.e., $\rho_3 = c\rho(x) < \rho(x) = \rho_1$ where $0 \le c < 1$, even if the treatment principle of TCE is used. Thus the self-protection coefficient ρ_3 will near to small such that firstly $(\rho_1-\rho_3) = \rho(x)(1-c) > 0$, and secondly $(\rho_2-\rho_1\rho_3) = \rho(x)^2(1-c) > 0$, and finally $-(\rho_2-\rho_1\rho_3) = -\rho(x)^2(1-c) < 0$. By Theorem **3.1** in Zhang & Shao (2012), the victim X_K or K_X of X will encounter a sick respectively which is different from the disease direction of X, i.e., changed by the increments

$$\Delta\varphi(X_K)_2 = \Delta\varphi(X_K) + \Delta\varphi(X_K)_1 = -(\rho_1-\rho_3)\Delta = -\rho(x)(1-c) < 0,$$

$$\Delta\varphi(K_X)_2 = \Delta\varphi(K_X) + \Delta\varphi(K_X)_1 = -(\rho_2-\rho_1\rho_3)\Delta = -\rho(x)^2(1-c) < 0,$$

respectively since $1 > c \ge 0$. At the same time, the mother S_X of X also falls a real ill which is the same disease direction of X, i.e., changed by the increment

$$\Delta\varphi(S_X)_2 = \Delta\varphi(S_X) + \Delta\varphi(S_X)_1 = (\rho_2-\rho_1\rho_3) = \rho(x)^2(1-c)\Delta > 0$$

since $1 > c \ge 0$. Therefore the first transfer law is secondly the virtual disease of the prisoner X_K of X after the real disease of the son X_S of X, and thirdly the virtual disease of the bane K_X of X, and fourthly the real disease of the mother S_X of X, along the loving relationship order transmission.

In fact, watching Figure 3, X_S is real, X_K is virtual, K_X is virtual, and S_X is real if X is real for a healthy economy. The order of the transfer law of diseases must be along the loving relationship order transmission. It is because

$$-(\rho_1-\rho_3)\le-(\rho_2-\rho_1\rho_3)\le(\rho_2-\rho_1\rho_3)\le(\rho_1-\rho_2\rho_3)\le(\rho_1+\rho_2\rho_3).$$

The result is obtained from $(1-\rho_2\rho_3)\le(\rho_1+\rho_2\rho_3)$ since

$$(\rho_1+\rho_2\rho_3)\ge(\rho_1-\rho_2\rho_3)\ge(\rho_1-\rho_3)=\rho(x)(1-c)$$
$$\ge\rho(x)^2(1-c)=(\rho_2-\rho_1\rho_3).$$

In other words, the diseases are transferred from virtual X_K to real X_S along the loving relationship order if X is the cause of diseases or X is intervened for a healthy economy. It implies that the son X_S of X will obtain the best Yang (positive) energy if the energy of X increases.

Watching Figure 3 and by Definitions **3.1** and **3.2**, the relation disease between real X and virtual X_K is less serious since real X can kill virtual X_K, but the relation disease between virtual K_X and real X is **more serious** since virtual K_X cannot kill real X which will destroy the killing order of the Yin Yang Wu Xing system from K_X to X.

Finally the relation disease between real S_X and real X is also less serious since real S_X can love real X. The less serious relation disease between real S_X and real X makes that the loving order from S_X to X will be restored easily. The transferring way of strengthening the loving relationship can make the real disease of X remission since $\Delta\varphi(X)_2=\left(1-c\rho(x)^3\right)\Delta<\Delta=\Delta\varphi(X)$. Despite of the positive way, the system will be still for the next round of disease transmission, until disease rehabilitation. This completes the proof.#

Proof of Theorem 3.3. Let $a=5.8114\%, b=16.359\%, t_0=10.208\%$.

1) If a subsystem X of a steady multilateral system V falls a virtual disease for an unhealthy economy, denoted by $\downarrow^0$, which means that there is a force such that its energy $\varphi(X)$ decreases, i.e., changed by the increment $\Delta\varphi(X)=-\Delta<0$. By the Intervention Rule in Zhang & Shao (2012), its capability of intervention reaction can make the mother S_X of X to fall a virtual disease by a negative increment $\Delta\varphi(S_X)=-\rho_1\Delta<0$, in which its absolute value is large, denoted by $\downarrow^+$, and also can make the son X_S of X to fall a virtual disease by a negative increment $\Delta\varphi(X_S)=-\rho_2\Delta<0$, in which its absolute value is small, denoted by $\downarrow^-$. Diseases of the loving subsystems have the same direction of X.

At the same time, its capability of intervention reaction can make the bane K_X of X to fall a real disease by a large increment $\Delta\varphi(K_X)=\rho_1\Delta>0$, denoted by $\uparrow^+$, and also can make the prisoner X_K of X to fall a real disease by a little increment $\Delta\varphi(X_K)=\rho_2\Delta>0$, denoted by $\uparrow^-$. Diseases of the killing subsystems are the opposite direction of X.

The bane K_X of X is the biggest victim since its increment $\Delta\varphi(K_X)=\rho_1\Delta>0$ is large.

By Corollary **2.1** and Theorem **2.1**, the GDP inflation rate $x\in[a,b]$ makes that $\rho_0>\rho_1=\rho(x)>\rho_2=\rho(x)^2>0$ such that $(\rho_1+\rho_2\rho_3)<(1-\rho_2\rho_3)$. In this case, the steady multilateral system V is abnormal or unhealthy. The unhealthy means the lack of self-protection ability. Thus the self-protection coefficient $\rho_3 = c\rho(x)$ will near to small such that firstly $0 < (\rho_1 - \rho_3) = \rho(x)(1-c) \to \rho(x) = \rho_1$ and secondly $0 < (\rho_2 - \rho_1\rho_3) = \rho(x)^2(1-c) \to \rho(x)^2 = \rho_2$, i.e., $c \to 0$, if the disease continues to develop.

Consider in the worst state: $\rho_3 = c\rho(x) \to 0$, i.e., $c \to 0$, where $\rho_0 > \rho_1 = \rho(x) > \rho_2 = \rho(x)^2 > 0$. Its capability of self-protection cannot make the biggest victim as the bane K_X of X restored. In mathematics, from Theorems **3.1** and **3.2** in Zhang & Shao (2012), the final increments can be obtained as follows:

$$\begin{aligned}\Delta\varphi(X)_2 &= \Delta\varphi(X)_1 + \Delta\varphi(X) = -(1-\rho_2\rho_3)\Delta \\ &= -\left(1-c\rho(x)^3\right)\Delta \to -\Delta < 0,\end{aligned}$$

$$\begin{aligned}\Delta\varphi(S_X)_2 &= \Delta\varphi(S_X)_1 + \Delta\varphi(S_X) = -(\rho_1+\rho_2\rho_3)\Delta \\ &= -\left(\rho(x)+c\rho(x)^3\right)\Delta \to -\rho_1\Delta < 0,\end{aligned}$$

$$\begin{aligned}\Delta\varphi(K_X)_2 &= \Delta\varphi(K_X)_1 + \Delta\varphi(K_X) = (\rho_1-\rho_3)\Delta \\ &= \rho(x)(1-c)\Delta \to \rho(x)\Delta = \rho_1\Delta > 0,\end{aligned}$$

$$\begin{aligned}\Delta\varphi(X_K)_2 &= \Delta\varphi(X_K)_1 + \Delta\varphi(X_K) = (\rho_2-\rho_1\rho_3)\Delta \\ &= \rho(x)^2(1-c)\Delta \to \rho(x)^2\Delta = \rho_2\Delta > 0,\end{aligned}$$

$$\begin{aligned}\Delta\varphi(X_S)_2 &= \Delta\varphi(X_S)_1 + \Delta\varphi(X_S) = -(\rho_2-\rho_1\rho_3)\Delta \\ &= -\rho(x)^2(1-c)\Delta \to -\rho_2\Delta < 0.\end{aligned}$$

It means that the first physiological system of the steady multilateral system runs hardly, such that the final increments of self-protection are similar to the increments of intervention reaction. The hard running is not only because the killing order has been destroyed, but also the loving order cannot be running.

From the idea of TCE, by the Affording Rule, the second physiological system of the steady multilateral system will work. It is because a steady multilateral system would become ill or dies if its Chi or energy in the steady multilateral system is imbalanced or exhausted. The purpose of the second physiological system working is to increase the energy of the system, and restores the order of the killing relationship of the Yin Yang Wu Xing system.

By Theorems **3.3** and **3.4** and Corollary **3.2** in Zhang & Shao (2012), the method of "Strong inhibition of the same time, support the weak", i.e., to increase energy of virtual X while to reduce energy of real X_K, should be used in this case: $x \Subset [a,b]$ which is equivalent to that $\rho_0 > \rho_1 = \rho(x) > \rho_2 = \rho(x)^2 > 0$, such that $(\rho_1+\rho_2\rho_3) < (1-\rho_2\rho_3)$. It is because the inequality $(\rho_1+\rho_2\rho_3) < (1-\rho_2\rho_3)$ makes the absolute value of their increments $\pm(1-\rho_2\rho_3)\Delta_1$ becoming large.

By Definitions **3.1** and **3.2**, consider the lack of self-protection ability, from

Figure 4, for a virtual disease of X, its capability of intervention reaction can make many relation diseases occurrence. Only the relation between virtual X and real X_K can be considered as more serious, since virtual X cannot kill real X_K, which will destroy the killing order from X to X_K of the Yin Yang Wu Xing system if the disease continues to develop.

By Affording Rule again, abiding by the treatment principle of "Strong inhibition of the same time, support the weak", the intervention of the second physiological system is to increase the energy of virtual X while to reduce the energy of real X_K. If an intervention force on the subsystem X of steady multilateral system V is implemented such that its energy $\varphi(X)$ has been changed by an increment $\Delta\varphi(X)=\Delta_1>0$, denoted by $\Uparrow^0$, and at the same time, another intervention force on the subsystem X_K of steady multilateral system V is also implemented such that its energy $\varphi(X_K)$ has been changed by an increment $\Delta\varphi(X_K)=-\Delta_1<0$, denoted by $\Downarrow^0$, then from Theorem **3.4** in Zhang & Shao (2012), all other subsystems: S_X, K_X and X_S can be restored at the same time, and the subsystems X and X_K will increase and decrease their energies by the same size but the direction opposite, respectively.

In mathematics, from Theorems **3.1**, **3.3** and **3.4** in Zhang & Shao (2012), the final increments can be obtained as follows:

$$\begin{aligned}\Delta\varphi(X)_3^1 &= \left[(1-\rho_2\rho_3)+(\rho_1-\rho_3)\right]\Delta_1\\ &= \left[\left(1-c\rho(x)^3\right)+\rho(x)(1-c)\right]\Delta_1>0,\end{aligned}$$

$$\Delta\varphi(X_S)_3^1=\left[(\rho_1+\rho_2\rho_3)-(\rho_1+\rho_2\rho_3)\right]\Delta_1=0,$$

$$\begin{aligned}\Delta\varphi(X_K)_3^1 &= -\left[(\rho_1-\rho_3)+(1-\rho_2\rho_3)\right]\Delta_1\\ &= -\left[\rho(x)(1-c)+\left(1-c\rho(x)^3\right)\right]\Delta_1<0,\end{aligned}$$

$$\Delta\varphi(K_X)_3^1=\left[-(\rho_2-\rho_1\rho_3)+(\rho_2-\rho_1\rho_3)\right]\Delta_1=0,$$

$$\Delta\varphi(S_X)_3^1=\left[(\rho_2-\rho_1\rho_3)-(\rho_2-\rho_1\rho_3)\right]\Delta_1=0.$$

All these changes consist of those in **Figure 4**.

Of course, the virtual disease of X comes from the son X_S of X since any virtual disease always comes from its son by Theorem **3.2**.

In order to cure the virtual disease of X, by Affording Rule, the increment

$$\Delta\varphi(X)_3^1=\left[(1-\rho_2\rho_3)+(\rho_1-\rho_3)\right]\Delta_1=\left(1-c\rho(x)^3+\rho(x)(1-c)\right)\Delta_1>0$$

must be very big. For example $\Delta_1\geq\Delta$, which means righteousness to defeat evil, this treatment can make the increment

$$\Delta\varphi(X_K)_3^1=-\left[(1-\rho_2\rho_3)+(\rho_1-\rho_3)\right]\Delta_1=-\left(1-c\rho(x)^3+\rho(x)(1-c)\right)\Delta_1<0$$

be very small.

In fact, by Affording Rule and from Theorems **3.1-3.4** in Zhang & Shao (2012), the all final increments are can be obtained as follows:

$$\begin{aligned}\Delta\varphi(X_K)_4^1 &= \Delta\varphi(X_K)_3^1 + \varphi(X_K)_2 \\ &= -[(1-\rho_2\rho_3)+(\rho_1-\rho_3)]\Delta_1 + (\rho_2-\rho_1\rho_3)\Delta \\ &\le [-(1-\rho_2\rho_3)-(\rho_1-\rho_3)+(\rho_2-\rho_1\rho_3)]\Delta \\ &= -[(1-\rho_2)+\rho_3(\rho_1-\rho_2)+(\rho_1-\rho_3)]\Delta < 0,\end{aligned}$$

$$\begin{aligned}\Delta\varphi(S_X)_4^1 &= \Delta\varphi(S_X)_3^1 + \varphi(S_X)_2 = -(\rho_1+\rho_2\rho_3)\Delta \\ &= -\left(\rho(x)+c\rho(x)^3\right)\Delta \to -\rho_1\Delta < 0,\end{aligned}$$

$$\begin{aligned}\Delta\varphi(X_S)_4^1 &= \Delta\varphi(X_S)_3^1 + \varphi(X_S)_2 = -(\rho_2-\rho_1\rho_3)\Delta \\ &= -\rho(x)^2(1-c)\Delta \to -\rho(x)^2\Delta = -\rho_2\Delta < 0,\end{aligned}$$

$$\begin{aligned}\Delta\varphi(K_X)_4^1 &= \Delta\varphi(K_X)_3^1 + \varphi(K_X)_2 = (\rho_2-\rho_2\rho_3)\Delta \\ &= \rho(x)^2(1-c)\Delta \to \rho(x)^2\Delta = \rho_2\Delta > 0,\end{aligned}$$

$$\begin{aligned}\Delta\varphi(X)_4^1 &= \Delta\varphi(X)_3^1 + \varphi(X)_2 \\ &= [(1-\rho_2\rho_3)+(\rho_1-\rho_3)]\Delta_1 - (\rho_2-\rho_1\rho_3)\Delta \\ &\ge [(1-\rho_2\rho_3)(\rho_1-\rho_3)-(\rho_2-\rho_1\rho_3)]\Delta \\ &= [(1-\rho_2)+\rho_3(\rho_1-\rho_2)+(\rho_1-\rho_3)]\Delta > 0.\end{aligned}$$

Therefore, the transfer law is the first occurrence of the virtual disease of the prisoner X_K of X; secondly the virtual disease of the mother S_X of X, thirdly the virtual disease of the son X_S of X, and finally the real disease of the bane K_X of X.

In fact, watching **Figure 4**, X_K is virtual, S_X is virtual, X_S is virtual, and K_X is real if X is virtual for an unhealthy economy. The order of the transfer law of diseases must be along the killing relationship order transmission. It is because

$$\begin{aligned}&-[(1-\rho_2)+\rho_3(\rho_1-\rho_2)+(\rho_1-\rho_3)] \\ &< -(\rho_1+\rho_2\rho_3) < -(\rho_2-\rho_1\rho_3) < (\rho_2-\rho_1\rho_3) \\ &< [(1-\rho_2)+\rho_3(\rho_1-\rho_2)+(\rho_1-\rho_3)].\end{aligned}$$

The result is obtained from $(1-\rho_2\rho_3) > (\rho_1+\rho_2\rho_3)$ since

$$\begin{aligned}&[(1-\rho_2)+\rho_3(\rho_1-\rho_2)+(\rho_1-\rho_3)]-(\rho_1+\rho_2\rho_3) \\ &= 1-\rho_2\rho_3+\rho_3\rho_1-\rho_2\rho_3-\rho_2 \\ &> \rho_1+\rho_2\rho_3+\rho_3\rho_1-\rho_2\rho_3-\rho_2 = (\rho_1-\rho_2)+\rho_3\rho_1 > 0,\end{aligned}$$

and

$$\begin{aligned}&(\rho_1+\rho_2\rho_3)-(\rho_2-\rho_1\rho_3) = (\rho_1-\rho_2)-(\rho_1-\rho_2)\rho_3 \\ &= (\rho_1-\rho_2)(1-\rho_3) > 0.\end{aligned}$$

In other words, the diseases are transferred from virtual X to real K_X along the killing relationship order transmission.

By Definition **3.2**, the relation disease between virtual X and virtual X_K is rare since the relation disease cannot destroy the killing order from X and X_K although virtual X cannot kill the virtual X_K. The rare relation disease between virtual X and virtual X_K makes that the killing order from X to X_K will be cured difficultly. Although rare refractory disease, but their disease transmission is natural since they are all virtual.

By Definition **3.2**, the relation disease between virtual X_K and virtual S_X, or between virtual S_X and virtual X_S, is also rare, respectively. Thus the disease transmission from virtual X_K to virtual S_X, or, from virtual S_X to virtual X_S, is also natural since they are all virtual, respectively.

Only the relation disease between virtual X_S and real K_X is **more serious** since virtual X_S cannot kill real K_X, which will destroy the killing order from X_S to K_X of the Yin Yang Wu Xing system if the disease continues to develop.

Finally the less serious relation disease between real K_X and virtual X makes that the killing order from K_X to X will be restored easily. The transferring way of strengthening the killing relationship by the second physiological system can make the new virtual disease of X remission since virtual X will get the positive increment

$$\Delta\varphi(X)_4^1 \geq \left[(1-\rho_2)+\rho_3(\rho_1-\rho_2)+(\rho_1-\rho_3)\right]\Delta > 0 \text{, if } \Delta_1 \geq \Delta > 0 .$$

Despite of the positive way, the system still will be for the next round of disease transmission, until the disease rehabilitation.

2) If a subsystem X of a steady multilateral system V falls a real disease for an unhealthy economy, denoted by $\uparrow^0$, which means that there is a force such that its energy $\varphi(X)$ increases, i.e., changed by the increment $\Delta\varphi(X)=\Delta>0$. By the Intervention Rule in Zhang & Shao (2012), its capability of intervention reaction can make the son X_S of X to fall a real disease by a large increment $\Delta\varphi(X_S)=\rho_1\Delta>0$, denoted by $\uparrow^+$, and also can make the mother S_X of X to fall a real disease by a little increment $\Delta\varphi(S_X)=\rho_2\Delta>0$, denoted by $\uparrow^-$. Diseases of the loving subsystems have the same direction of X.

At the same time, its capability of intervention reaction can make the prisoner X_K of X to fall a virtual disease by a negative increment $\Delta\varphi(X_K)=-\rho_1\Delta<0$, in which its absolute value is large, denoted by $\downarrow^+$, and also can make the bane K_X of X to fall a virtual disease by a negative increment $\Delta\varphi(K_X)=-\rho_2\Delta<0$, in which its absolute value is small, denoted by $\downarrow^-$. Diseases of the killing subsystems are the opposite direction of X.

The prisoner X_K of X is the biggest victim since its increment $\Delta\varphi(X_K)=-\rho_1\Delta<0$ is the scope of big changes.

By Corollary **2.1** and Theorem **2.1**, the GDP inflation rate $x\in[a,b]$ makes that $\rho_0>\rho_1=\rho(x)>0$, such that $(\rho_1+\rho_2\rho_3)<(1-\rho_2\rho_3)$. In this case, the steady multilateral system V is abnormal or unhealthy. The unhealthy economy implies the lack of self-protection ability. Thus the self-protection coefficient $\rho_3=c\rho(x)$ will near to small such that firstly $0<(\rho_1-\rho_3)=\rho(x)(1-c)\to\rho(x)=\rho_1$, and secondly $0<(\rho_2-\rho_1\rho_3)=\rho(x)^2(1-c)\to\rho(x)^2=\rho_2$, i.e., $c\to 0$, if the disease continues to develop.

Consider in the worst state: $\rho_3=c\rho(x)\to 0$, i.e., $c\to 0$, where $\rho_0>\rho_1=\rho(x)>\rho_2=\rho(x)^2>0$. Its capability of self-protection cannot make the biggest victim as the prisoner X_K of X be restored.

In mathematics, from Theorems **3.1** and **3.2** in Zhang & Shao (2012), the final increments can be obtained as follows:

$$\begin{aligned}\Delta\varphi(X)_2 &= \Delta\varphi(X)_1 + \Delta\varphi(X) = (1-\rho_2\rho_3)\Delta \\ &= \left(1-c\rho(x)^3\right)\Delta \to \Delta > 0,\end{aligned}$$

$$\begin{aligned}\Delta\varphi(X_S)_2 &= \Delta\varphi(X_S)_1 + \Delta\varphi(X_S) = (\rho_1+\rho_2\rho_3)\Delta \\ &= \left(\rho(x)+c\rho(x)^3\right)\Delta \to \rho_1\Delta > 0,\end{aligned}$$

$$\begin{aligned}\Delta\varphi(X_K)_2 &= \Delta\varphi(X_K)_1 + \Delta\varphi(X_K) = -(\rho_1-\rho_3)\Delta \\ &= -\rho(x)(1-c)\Delta \to -\rho(x)\Delta = -\rho_1\Delta < 0,\end{aligned}$$

$$\begin{aligned}\Delta\varphi(K_X)_2 &= \Delta\varphi(K_X)_1 + \Delta\varphi(K_X) = -(\rho_2-\rho_1\rho_3)\Delta \\ &= -\rho(x)^2(1-c)\Delta \to -\rho(x)^2\Delta = -\rho_2\Delta > 0,\end{aligned}$$

$$\begin{aligned}\Delta\varphi(S_X)_2 &= \Delta\varphi(S_X)_1 + \Delta\varphi(S_X) = (\rho_2-\rho_1\rho_3)\Delta \\ &= \rho(x)^2(1-c)\Delta \to \rho(x)^2\Delta = \rho_2\Delta > 0.\end{aligned}$$

It means that the first physiological system of the steady multilateral system runs hardly, such that the final increments of self-protection are similar to the increments of intervention reaction. The hard running is not only because the killing order has been destroyed, but also the loving order cannot be running.

From the idea of TCE, by the Affording Rule, the second physiological system of the steady multilateral system will work. It is because a steady multilateral system would become ill or dies if its *Chi* or energy in the steady multilateral system is imbalanced or exhausted. The purpose of the second physiological system working is to increase the energy of the system, and restores the order of the killing relationship of the Yin Yang Wu Xing system.

By Theorems **3.3** and **3.4** and Corollary **3.2** in Zhang & Shao (2012), the method of "Strong inhibition of the same time, support the weak", i.e., to decrease energy of real X while to increase energy of virtual K_X, should mainly be used in this case: $x \in [a,b]$ which is equivalent to that $\rho_0 > \rho_1 = \rho(x) > 0$, such that $(\rho_1+\rho_2\rho_3) < (1-\rho_2\rho_3)$. It is because the inequality $(\rho_1+\rho_2\rho_3) < (1-\rho_2\rho_3)$ makes the increment $(1-\rho_2\rho_3)\Delta_1$ becoming large. From Affording Rule, this is just the working method of the second physiological system.

By Definitions **3.1** and **3.2**, consider the lack of self-protection ability, from **Figure 5**, for a real disease of X, its capability of intervention reaction will make the many relation diseases occurrence. Only the relation disease between virtual K_X and real X can be considered as more serious, since virtual K_X cannot kill real X which will destroy the killing order from K_X to X of the Yin Yang Wu Xing system if the disease continues to develop.

By Affording Rule again, abiding by the treatment principle of "Strong inhibition of the same time, support the weak", the intervention of the second physiological system is to decrease energy of real X while increase energy of virtual K_X. If an intervention force on the subsystem X of the steady multilateral system V is implemented such that its energy $\varphi(X)$ has been changed by an increment $\Delta\varphi(X) = -\Delta_1 < 0$, denoted by $\Downarrow^0$, and at the same time, another intervention force on the subsystem K_X of the steady multilateral system V is also implemented such that its energy $\varphi(K_X)$ has been changed by an increment $\Delta\varphi(K_X) = \Delta_1 > 0$, denoted by $\Uparrow^0$, then from Theorem **3.4** in Zhang & Shao (2012), all other subsystems: S_X, X_K and X_S can be restored at the same time, and the subsystems X and K_X will decrease and increase their energies by the same size but the direction opposite, respectively.

In mathematics, from Theorems **3.1**, **3.3** and **3.4** in Zhang & Shao (2012), the final increments can be obtained as follows:

$$\begin{aligned}\Delta\varphi(X)_3^1 &= -\left[(1-\rho_2\rho_3)+(\rho_1-\rho_3)\right]\Delta_1 \\ &= -\left[\left(1-c\rho(x)^3\right)+\rho(x)(1-c)\right]\Delta_1 < 0,\end{aligned}$$

$$\Delta\varphi(S_X)_3^1 = \left[-(\rho_1+\rho_2\rho_3)+(\rho_1+\rho_2\rho_3)\right]\Delta_1 = 0,$$

$$\begin{aligned}\Delta\varphi(K_X)_3^1 &= \left[(\rho_1-\rho_3)+(1-\rho_2\rho_3)\right]\Delta_1 \\ &= \left[\rho(x)(1-c)+\left(1-c\rho(x)^3\right)\right]\Delta_1 > 0,\end{aligned}$$

$$\Delta\varphi(X_K)_3^1 = \left[(\rho_2-\rho_1\rho_3)-(\rho_2-\rho_1\rho_3)\right]\Delta_1 = 0,$$

$$\Delta\varphi(X_S)_3^1 = \left[-(\rho_2-\rho_1\rho_3)+(\rho_2-\rho_1\rho_3)\right]\Delta_1 = 0.$$

All these changes consist of those in **Figure 5**.

Of course, the real disease of X comes from the mother S_X of X since any real disease always comes from its mother by Theorem **3.2**.

In order to cure the real disease of X, by the Affording Rule, the intervention of the second physiological system must make the increment

$$\Delta\varphi(X)_3 = -(1-\rho_2\rho_3)\Delta_1 = -\left(1-c\rho(x)^3\right)\Delta_1$$

tending to be very small, for example $\Delta_1 \geq \Delta$, which means righteousness to defeat evil, this treatment makes the increment
$\Delta\varphi(K_X)_3 = (1-\rho_2\rho_3)\Delta_1 = \left(1-c\rho(x)^3\right)\Delta_1$ tending to be very big.

In fact, by Affording Rule and from Theorem **3.1** in Zhang & Shao (2012), the all final increments are obtained as follows:

$$\begin{aligned}\Delta\varphi(K_X)_4^1 &= \Delta\varphi(K_X)_3^1 + \varphi(K_X)_2 \\ &= \left[(1-\rho_2\rho_3)+(\rho_1-\rho_3)\right]\Delta_1 + (\rho_2-\rho_1\rho_3)\Delta \\ &\geq \left[(1-\rho_2\rho_3)+(\rho_1-\rho_3)-(\rho_2-\rho_1\rho_3)\right]\Delta \\ &= \left[(1-\rho_2)+\rho_3(\rho_1-\rho_2)+(\rho_1-\rho_3)\right]\Delta > 0,\end{aligned}$$

$$\begin{aligned}\Delta\varphi(X_S)_4^1 &= \Delta\varphi(X_S)_3^1 + \varphi(X_S)_2 = (\rho_1+\rho_2\rho_3)\Delta \\ &= \left(\rho(x)+c\rho(x)^3\right)\Delta \to \rho_1\Delta > 0,\end{aligned}$$

$$\begin{aligned}\Delta\varphi(S_X)_4^1 &= \Delta\varphi(S_X)_3^1 + \varphi(S_X)_2 = (\rho_2 - \rho_1\rho_3)\Delta \\ &= \rho(x)^2(1-c)\Delta \to \rho(x)^2\Delta = \rho_2\Delta > 0,\end{aligned}$$

$$\begin{aligned}\Delta\varphi(X_K)_4^1 &= \Delta\varphi(X_K)_3^1 + \varphi(X_K)_2 = -(\rho_2 - \rho_2\rho_3)\Delta \\ &= -\rho(x)(1-c)\Delta \to -\rho(x)\Delta = -\rho_1\Delta < 0,\end{aligned}$$

$$\begin{aligned}\Delta\varphi(X)_4^1 &= \Delta\varphi(X)_3^1 + \varphi(X)_2 \\ &= -\left[(1-\rho_2\rho_3) + (\rho_1 - \rho_3)\right]\Delta_1 + (\rho_2 - \rho_1\rho_3)\Delta \\ &\le -\left[(1-\rho_2\rho_3)(\rho_1 - \rho_3) - (\rho_2 - \rho_1\rho_3)\right]\Delta \\ &= -\left[(1-\rho_2) + \rho_3(\rho_1 - \rho_2) + (\rho_1 - \rho_3)\right]\Delta < 0.\end{aligned}$$

Therefore, the transfer law is the first occurrence of the real disease of the bane K_X of X; secondly the real disease of the son X_S of X, thirdly the real disease of the mother S_X of X, and finally the virtual disease of the prisoner X_K of X.

In fact, watching **Figure 5**, K_X is real, X_S is real, S_X is real, and X_K is virtual if X is real for an unhealthy economy. The order of the transfer law of diseases must be against the killing relationship order transmission. It is because

$$\begin{aligned}&\left[(1-\rho_2) + \rho_3(\rho_1 - \rho_2) + (\rho_1 - \rho_3)\right] \\ &> (\rho_1 + \rho_2\rho_3) > (\rho_2 - \rho_1\rho_3) > -(\rho_2 - \rho_1\rho_3) \\ &> -\left[(1-\rho_2) + \rho_3(\rho_1 - \rho_2) + (\rho_1 - \rho_3)\right].\end{aligned}$$

The result is obtained from $(1-\rho_2\rho_3) > (\rho_1 + \rho_2\rho_3)$ since

$$\begin{aligned}&\left[(1-\rho_2) + \rho_3(\rho_1 - \rho_2) + (\rho_1 - \rho_3)\right] - (\rho_1 + \rho_2\rho_3) \\ &= 1 - \rho_2\rho_3 + \rho_3\rho_1 - \rho_2\rho_3 - \rho_2 \\ &> \rho_1 + \rho_2\rho_3 + \rho_3\rho_1 - \rho_2\rho_3 - \rho_2 = (\rho_1 - \rho_2) + \rho_3\rho_1 > 0,\end{aligned}$$

and

$$\begin{aligned}&(\rho_1 + \rho_2\rho_3) - (\rho_2 - \rho_1\rho_3) = (\rho_1 - \rho_2) - (\rho_1 - \rho_2)\rho_3 \\ &= (\rho_1 - \rho_2)(1 - \rho_3) > 0.\end{aligned}$$

In other words, the diseases are transferred from real X to virtual X_K against the killing relationship order transmission.

By Definition **3.2,** the relation disease between real K_X and real X is rare since the relation disease cannot destroy the order of the killing relationship from K_X to X although the real K_X cannot kill the real X. The rare relation disease between real K_X and real X makes that the killing order from K_X to X will be cured difficultly. Although rare refractory disease, but their disease transmission is natural since they are all virtual.

By Definition **3.2**, the relation disease between real X_S and real K_X, or between real S_X and real X_S, is also rare, respectively. Thus the disease transmission from real X_S to real K_X, or from real S_X to real X_S, is also natural since they are all virtual, respectively.

Only the relation disease between virtual X_K and real S_X is **more serious** since virtual X_K cannot kill real S_X, which will destroy the killing order from X_K to S_X of the Yin Yang Wu Xing system if the disease continues to develop.

But the less serious relation disease between real X and virtual X_K makes that the killing order from X to X_K will be restored easily. The transferring way of strengthening the killing relationship by the second physiological system can make the new real disease of X remission since real X will get a negative increment

$$\Delta\varphi(X)_4^1 \le -\left[(1-\rho_2)+\rho_3(\rho_1-\rho_2)+(\rho_1-\rho_3)\right]\Delta < 0 \text{ if } \Delta_1 \ge \Delta > 0 .$$

Despite of the positive way, the system will be still for the next round of disease transmission, until the disease rehabilitation. This completes the proof. #

Proof of Theorem 4.1. Let $a = 5.8114\%, b = 16.359\%, t_0 = 10.208\%$.

1) If $x < a$, then from Theorem **2.1** and Corollary **2.1**, there is that $0 < \rho_1 = \rho(x) < \rho_0$ which means that the economy is unhealthy where $0 \le c \le 1$ and $(\rho_1 + \rho_2\rho_3) < (1-\rho_2\rho_3)$. Since that $x < a$ means that the GDP inflation rate is too lower than the normal state, thus the subsystem X has encountered the virtual disease for an unhealthy economy.

From Theorem **3.2** and Corollary **3.2** in Zhang & Shao (2012), the subsystem X was considered as virtual for an unhealthy economy. Assume that the capability of self-protection is nearly to the best state, i.e., $\rho_3 = c\rho(x)$ where $c \to 1$.

If it is to increase the energy of the virtual subsystem X directly, then the capabilities of both intervention reaction and self-protection can make the subsystems S_X, K_X and X_K restored at the same time, but the subsystems X and X_S will increase their energies, i.e., changed by the increments

$$\Delta\varphi(X)_2 \to \left(1-\rho(x)^3\right)\Delta > 0, \Delta\varphi(X_S)_2 \to \left(\rho(x)+\rho(x)^3\right)\Delta > 0,$$

respectively. Since the GDP inflation rate $x < a$ makes $0 \le \rho_1 = \rho(x) < \rho_0$ such that $\left(\rho(x)+\rho(x)^3\right) < \left(1-\rho(x)^3\right)$, therefore the subsystem X can obtain the large increment $\Delta\varphi(X)_2 = \left(1-\rho(x)^3\right)\Delta > 0$ and the subsystem X_S will get the small increment $\Delta\varphi(X_S)_2 = \left(\rho(x)+\rho(x)^3\right)\Delta > 0$. The later is the pseudo side effects issue, by Attaining Rule, which is just the food of the second physiological system of the steady multilateral system since that the economy is unhealthy, virtual X intervened makes that the second physiological system will attain the *Chi* or energy (Yang energy) from the son X_S of the intervened subsystem X. The attaining way is an indirect treating for an unhealthy economic subsystem X with a virtual disease.

Thus the primary treatment should be to increase the energy of the subsystem X directly in order to avoid the side effects issue occurrence for an unhealthy economy. This is just one of the affording working principle of the second physiological system by Affording Rule. The idea means that "Virtual disease with an unhealthy economy is to fill itself".

When the capability of self-protection is nearly to the worst state, i.e., $\rho_3 = c\rho(x) \to 0$ where $c \to 0$, the first physiological system will stop to work, or, the first transfer law will stop to run, while the second physiological system will begin to work, or, the second transfer law will begin to run.

By Affording Rule and the second transfer law in Theorem **3.3**, the purpose of the second physiological system working is to improve the physical ability of self-protection of the first physiological system, i.e., to make all of both $\rho_1 - \rho_3 = \rho(x)(1-c)$ and $\rho_2 - \rho_1\rho_3 = \rho(x)^2(1-c)$ tending to be small, i.e., for fixed $\rho(x)$, c tends to be large, at least, greater than zero, to drive the first physiological systems will begin to work.

By the second transfer law in Theorem **3.3**, for a virtual disease of *X*, the more serious relation disease is the relation between virtual X_S and real K_X since virtual X_S cannot kill real K_X which can destroy the killing order between X_S and K_X if the disease continues to develop.

Abiding by the TCE's idea of "Don't have disease cure cure non-ill", in order to avoid the more serious relation disease between virtual X_S and real K_X occurrence, the system should be intervened when the intervened system was non-ill, but the incidence of the system from the second transfer law in Theorem **3.3** will be to occur for the more serious relation disease between virtual X_S and real K_X.

According to the intervening principle of "Strong inhibition of the same time, support the weak" from Theorem **3.4** in Zhang & Shao (2012), it is to get that the secondary treatment is to increase the energy of X_S, and at the same time, to decrease the energy of K_X.

In general, although the economy is unhealthy and falls a virtual disease, the capability of self-protection can be any state, i.e., $\rho_3 = c\rho(x) \geq 0$ where $0 \leq c \leq 1$. The primary treatment is mainly for the normal state of the capability of self-protection, i.e.

$$0 < \rho_3 = c\rho(x) \to \rho(x) = \rho_1, \rho_0 > \rho_1 = \rho(x) > 0$$

where $0 < c \leq 1$ and $(\rho_1 + \rho_2\rho_3) < (1 - \rho_2\rho_3)$. The secondary treatment is for the worst state of the capability of self-protection, i.e.,

$$0 \leftarrow \rho_3 = c\rho(x) < \rho(x) = \rho_1, \rho_0 > \rho_1 = \rho(x) > 0$$

where $c \to 0$ and $(\rho_1 + \rho_2\rho_3) < (1 - \rho_2\rho_3)$. Comprehensive use of the two methods for the unhealthy economy with a virtual disease can deal with a general situation, i.e.,

$$0 \leq \rho_3 = c\rho(x) \leq \rho(x) = \rho_1, \rho_0 > \rho_1 = \rho(x) > 0$$

where $0 \leq c \leq 1$ and $(\rho_1 + \rho_2\rho_3) < (1 - \rho_2\rho_3)$. #

2) If $a \leq x < t_0$, then from Theorem **2.1** and Corollary **2.1**, there is that $1 \geq \rho_1 = \rho(x) \geq \rho_0$ which means that the economy is healthy where in general $1 \geq c \geq \frac{1-\rho(x)}{2\rho(x)^3} \geq 0$ such that $(\rho_1 + \rho_2\rho_3) \geq (1 - \rho_2\rho_3)$; and $1 \geq \frac{1-\rho(x)}{2\rho(x)^3} > c \geq 0$ such that $(\rho_1 + \rho_2\rho_3) \approx (1 - \rho_2\rho_3)$, i.e.,

$$\left|(\rho_1 + \rho_2\rho_3) - (1 - \rho_2\rho_3)\right| \leq 2\rho_0^3 = 0.41024 .$$

The fact means that $(\rho_1 + \rho_2\rho_3) \geq$ or $\approx (1 - \rho_2\rho_3)$.

Since the condition $a \le x < t_0$ means that the GDP inflation rate x is lower than the center t_0, thus the subsystem X will encounter an expected virtual disease if the subsystem X falls ill for a healthy economy.

From Theorem **3.2** and Corollary **3.2** in Zhang & Shao (2012), the subsystem X will be considered as virtual. First the case can be studied that the capability of self-protection is in the best state, i.e., $\rho_3 = c\rho(x) \to \rho(x) = \rho_1 > 0$ where $c \to 1$.

If the energy of the virtual-normal subsystem S_X is intervened to increase its energy, then its capabilities of intervention reaction and self-protection can make the subsystems K_X, X_K and X_S restored at the same time, but the subsystems S_X and X will increase their energies, i.e., changed by the increments $\Delta\varphi(S_X)_2 \to \left(1-\rho(x)^3\right)\Delta > 0$, $\Delta\varphi(X)_2 \to \left(\rho(x)+\rho(x)^3\right)\Delta > 0$, respectively. Since the GDP inflation rate $a \le x < t_0$ makes $1 \ge \rho_1 = \rho(x) \ge \rho_0$ such that mainly $\left(\rho(x)+\rho(x)^3\right) \ge \left(1-\rho(x)^3\right)$, therefore the subsystem X can obtain the large increment $\Delta\varphi(X)_2 = \left(\rho(x)+\rho(x)^3\right)\Delta > 0$ and the subsystem S_X will get the small increment $\Delta\varphi(S_X)_2 = \left(1-\rho(x)^3\right)\Delta$. The later is the pseudo side effects issue, by Attaining Rule, which is just the food of the second physiological system of the steady multilateral system since that the economy is healthy, virtual S_X intervened makes that the second physiological system will attain the *Chi* or energy (Yang energy) from the intervened subsystem S_X directly for a healthy economy with a virtual disease.

Thus it is to get the primary treatment should be to increase the energy of the subsystem S_X in order to avoid the side effects issue occurrence for a healthy economy. The idea means that "Virtual disease with a healthy economy is to fill his mother".

Since the economy is healthy, the worst state of the capability of self-protection will not be possible, i.e., $\rho_3 = c\rho(x) > 0$ where $0 < c \le 1$, the first physiological system will not stop to work, or, the first transfer law will not stop to run, while the second transfer law will not begin to run.

Is the first physiological system working in order to improve its corresponding intervention ability, at the same time, to provide the food for the second physiological system. In other words, it makes $\rho_1 + \rho_2\rho_3 = \rho(x) + c\rho(x)^3$ tending to be large while $1-\rho_2\rho_3 = \left(1-c\rho(x)^3\right)$ tending to be small, i.e., $\rho(x)$ tends to large while c also tends to be large, the best, equal to 1, such that the non-existence of side effects, or, the non-existence of economic intervention resistance problem. The work mainly improves the loving relationship since the loving relationship is mainly used.

By the first transfer law in Theorem **3.2** for a virtual X, the more serious relation disease is the relation between virtual X and real X_K since virtual X cannot kill the real X_K which can destroy the killing order between X and X_K if the disease continues to develop.

Abiding by the TCE's idea of "Don't have disease cure cure non-ill", in order to avoid the more serious relation disease occurrence, the system should be intervened when the intervened system was non-disease, but the incidence of the system from the first transfer law in Theorem **3.2** will be to occur for the more serious relation disease between virtual X and real X_K.

According to the intervening principle of "Strong inhibition of the same time, support the weak" from Theorem **3.4** in Zhang & Shao (2012), it is to get that the secondary treatment is to increase the energy of X, and at the same time, to decrease the energy of X_K.

In general, since the economy is healthy and virtual, the capability of self-protection cannot be the worst state and should be normal, i.e., $\rho_3 = c\rho(x) > 0$ where $0 < c \le 1$. The primary treatment is for the best state of the capability of self-protection, i.e.,

$$0 < \rho_3 = c\rho(x) \to \rho(x) = \rho_1, \rho_0 \le \rho_1 = \rho(x) \le 1$$

where $c \to 1$ and $(\rho_1 + \rho_2\rho_3) \ge (1 - \rho_2\rho_3)$. The secondary treatment is for the normal state of the capability of self-protection, i.e.,

$$0 < \rho_3 = c\rho(x) < \rho(x) = \rho_1, \rho_0 \le \rho_1 = \rho(x) \le 1$$

where $0 < c < 1$ and $(\rho_1 + \rho_2\rho_3) \ge (1 - \rho_2\rho_3)$. Comprehensive use of the two methods for the healthy economy with a virtual disease can deal with a general situation, i.e.,

$$0 < \rho_3 = c\rho(x) \le \rho(x) = \rho_1, \rho_0 \le \rho_1 = \rho(x) \le 1$$

where $0 < c \le 1$ and $(\rho_1 + \rho_2\rho_3) \ge \text{or} \approx (1 - \rho_2\rho_3)$. #

3) If $t_0 \le x \le b$, then from Theorem **2.1** and Corollary **2.1**, there is that $1 \ge \rho_1 = \rho(x) \ge \rho_0$ which means that the economy is healthy where in general $1 \ge c \ge \frac{1-\rho(x)}{2\rho(x)^3} \ge 0$ such that $(\rho_1 + \rho_2\rho_3) \ge (1 - \rho_2\rho_3)$; and $1 \ge \frac{1-\rho(x)}{2\rho(x)^3} > c \ge 0$ such that $(\rho_1 + \rho_2\rho_3) \approx (1 - \rho_2\rho_3)$, i.e.,

$$\left|(\rho_1 + \rho_2\rho_3) - (1 - \rho_2\rho_3)\right| < 2\rho_0^3 = 0.41024.$$

The fact means that $(\rho_1 + \rho_2\rho_3) \ge \text{or} \approx (1 - \rho_2\rho_3)$.

Since the condition $t_0 \le x \le b$ means that the GDP inflation rate x is higher than or equal to the center t_0, thus the subsystem X will encounter a real disease if the subsystem X falls ill for a healthy economy.

From Theorem **3.2** and Corollary **3.2** in Zhang & Shao (2012), the subsystem X will be considered as real. First the case is studied that the capability of self-protection is in the best state, i.e., $\rho_3 = c\rho(x) \to \rho(x) = \rho_1$ where $c \to 1$.

If the energy of the real-normal subsystem X_S is intervened to decrease its energy, then its capabilities of intervention reaction and self-protection can make the subsystems X_K, K_X and S_X restored at the same time, but the subsystems X and X_S will decrease their energies, i.e., changed by the increments

$$\Delta\varphi(X)_2 \to -\left(\rho(x) + \rho(x)^3\right)\Delta > 0, \Delta\varphi(X_S)_2 \to -\left(1 - \rho(x)^3\right)\Delta > 0,$$

respectively. Since the GDP inflation rate $t_0 \le x \le b$ makes $1 \ge \rho_1 = \rho(x) \ge \rho_0$ such that mainly $\left(\rho(x) + \rho(x)^3\right) \ge \left(1 - \rho(x)^3\right)$, therefore the subsystem X can obtain the substantial reduction $\Delta\varphi(X)_2 = -\left(\rho(x)+\rho(x)^3\right)\Delta < 0$ and the subsystem X_S will get a modest reduction $\Delta\varphi(X_S)_2 = -\left(1-\rho(x)^3\right)\Delta < 0$. The later is the pseudo side effects issue, by Attaining Rule, which is just the food of the second physiological system of the steady multilateral system since that the economy is healthy, real X_S intervened makes that the second physiological system will attain the *Chi* or energy (Yin energy) from the intervened subsystem X_S directly for a healthy economy with a real disease.

Thus it is to get the primary treatment should be to decrease the energy of the subsystem X_S in order to avoid the side effects issue occurrence for a healthy economy. The idea means that "Real disease with a healthy economy is to rush down his son".

Since the economy is healthy, the state of the capability of self-protection should be normal, i.e., $\rho_3 = c\rho(x) > 0$ where $0 < c \le 1$. In this case, the first physiological system will not stop to work, or, the first transfer law will not stop to run, while the second transfer law will not begin to run.

Is the first physiological system working in order to improve its corresponding intervention ability, at the same time, to provide the food for the second physiological system. In other words, it makes $\rho_1 + \rho_2\rho_3 = \rho(x) + c\rho(x)^3$ tending to be large while $1-\rho_2\rho_3 = \left(1-c\rho(x)^3\right)$ tending to be small. Equivalently, the way can make $\rho(x)$ tending to large and c also tending to be large, the best, equal to 1, such that the non-existence of side effects issue, or, the non-existence of economic intervention resistance problem. The work mainly improves the loving relationship since the loving relationship is mainly used.

By the first transfer law in Theorem **3.2**, the more serious relation disease is the relation between virtual K_X and real X since virtual K_X cannot kill the real X which can destroy the killing order between K_X and X if the disease continues to develop.

Abiding by the TCE's idea of "Don't have disease cure cure non-ill", in order to avoid the more serious relation disease occurrence, the system should be intervened when the intervened system was non-disease, but the incidence of the system from the first transfer law in Theorem **3.2** will be to occur for the more serious relation disease between virtual K_X and real X.

According to the intervening principle of "Strong inhibition of the same time, support the weak" from Theorem **3.4** in Zhang & Shao (2012), it is to get that the secondary treatment is to increase the energy of K_X, and at the same time, to decrease the energy of X.

In general, since the economy is healthy with an expected real disease, the capability of self-protection should be normal, i.e., $\rho_3 = c\rho(x) > 0$ where $0 < c \le 1$. The primary treatment is for the best state of the capability of self-protection, i.e.,

$$0 < \rho_3 = c\rho(x) \to \rho(x) = \rho_1, \rho_0 \le \rho_1 = \rho(x) \le 1,$$

where $c \to 1$ and $(\rho_1 + \rho_2\rho_3) \ge (1-\rho_2\rho_3)$. The secondary treatment is for the normal state of the capability of self-protection, i.e.,

$$0<\rho_3=c\rho(x)<\rho(x)=\rho_1,\rho_0\le\rho_1=\rho(x)\le 1$$

where $0<c<1$ and $(\rho_1+\rho_2\rho_3)\approx(1-\rho_2\rho_3)$. Comprehensive use of the two methods for the healthy economy with a real disease can deal with a general situation, i.e.,

$$0<\rho_3=c\rho(x)\le\rho(x)=\rho_1,\rho_0\le\rho_1=\rho(x)\le 1$$

where $0<c\le 1$ and $(\rho_1+\rho_2\rho_3)\ge$ or $\approx(1-\rho_2\rho_3)$. #

4) If $x>b$, then from Corollary **2.1**, there is that $0<\rho_1=\rho(x)<\rho_0$ which means that the economy is unhealthy where $0\le c\le 1$ and $(\rho_1+\rho_2\rho_3)<(1-\rho_2\rho_3)$. Since the condition $x>b$ means that the GDP inflation rate x is too higher than the normal state, thus the subsystem X has encountered the real disease for an unhealthy economy.

From Theorem **3.2** and Corollary **3.2** in Zhang & Shao (2012), the subsystem X was considered as real. Assume that the capability of self-protection is in the best state, i.e., $\rho_3=c\rho(x)\to\rho(x)=\rho_1$ where $c\to 1$.

If the energy of the real subsystem X is intervened to decrease its energy directly, then its capabilities of intervention reaction and self-protection can make the subsystems X_K, K_X and X_S restored at the same time, but the subsystems X and S_X will decrease their energies, i.e., changed by the increments

$$\Delta\varphi(X)_2\to-\left(1-\rho(x)^3\right)\Delta<0,\Delta\varphi(S_X)_2\to-\left(\rho(x)+\rho(x)^3\right)\Delta<0,$$

respectively. Since the GDP inflation rate $x>b$ makes $0<\rho_1=\rho(x)<\rho_0$ such that $\left(\rho(x)+\rho(x)^3\right)<\left(1-\rho(x)^3\right)$, therefore the subsystem X can obtain the substantial reduction $\Delta\varphi(X)_2=-\left(1-\rho(x)^3\right)\Delta<0$ and the subsystem S_X will get a modest reduction $\Delta\varphi(S_X)=-\left(\rho(x)+\rho(x)^3\right)\Delta<0$. The later is the pseudo side effects, by Attaining Rule, which is just the food of the second physiological system of the steady multilateral system since that the economy is unhealthy, real X intervened makes that the second physiological system will attain the *Chi* or energy (Yin energy) from the mother S_X of the intervened subsystem X. The attaining way is an indirect treating for an unhealthy economic subsystem X with a real disease.

Thus it is to get the primary treatment should be to decrease the energy of the subsystem X directly, in order to avoid the side effects issue occurrence for an unhealthy economy. This is just one of the affording working principle of the second physiological system by Affording Rule. The idea means that "Real disease with an unhealthy economy is to rush down itself".

When the capability of self-protection is at the worst state, i.e., $\rho_3=c\rho(x)\to 0$ where $c\to 0$, the first physiological system will stop to work, or, the first transfer law will stop to run, while the second physiological system will begin to work, or, the second transfer law will begin to run.

By Affording Rule and the second transfer law in Theorem **3.3**, the purpose of the second physiological system working is to improve the physical ability of self-protection of the first physiological system, i.e., to make all of both $\rho_1-\rho_3=\rho(x)(1-c)$ and $\rho_2-\rho_1\rho_3=\rho(x)^2(1-c)$ tending to be small, i.e., for fixed $\rho(x)$, c tends to be large, at least, greater than zero, to drive the first physiological systems will begin to work. The work mainly improves the killing relationship since the killing relationship is mainly used.

By the second transfer law in Theorem **3.3**, for a real X, the more serious relation disease is the relation between virtual X_K and real S_X since virtual X_K cannot kill the real S_X which can destroy the killing order between X_K and S_X if the disease continues to develop.

Abiding the TCE's idea of "Don't have disease cure cure non-ill", in order to avoid the more serious relation disease occurrence, a system should be intervened when the intervened system was non-disease, but the incidence of the system from the second transfer law in Theorem **3.3** will be to occur for the more serious relation disease between virtual X_K and real S_X.

According to the intervening principle of "Strong inhibition of the same time, support the weak" from Theorem **3.4** in Zhang & Shao (2012), it is to get that the secondary treatment is to decrease the energy of S_X, and at the same time, to increase the energy of X_K.

In general, although the economy is unhealthy with a real disease, the capability of self-protection can be any state, i.e., $\rho_3 = c\rho(x) \geq 0$ where $0 \leq c \leq 1$. The primary treatment is mainly for the normal state of the capability of self-protection, i.e.,

$$0 < \rho_3 = c\rho(x) \to \rho(x) = \rho_1, \rho_0 > \rho_1 = \rho(x) > \rho_2 = \rho(x)^2 > 0$$

where $0 < c \leq 1$ and $(\rho_1 + \rho_2\rho_3) < (1 - \rho_2\rho_3)$. The secondary treatment is for the worst state of the capability of self-protection, i.e.,

$$0 \leftarrow \rho_3 = c\rho(x) < \rho(x) = \rho_1, \rho_0 > \rho_1 = \rho(x) > \rho_2 = \rho(x)^2 > 0$$

where $c \to 0$ and $(\rho_1 + \rho_2\rho_3) < (1 - \rho_2\rho_3)$. Comprehensive use of the two methods for the unhealthy economy with a virtual disease can deal with a general situation, i.e.,

$$0 \leq \rho_3 = c\rho(x) \leq \rho(x) = \rho_1, \rho_0 > \rho_1 = \rho(x) > \rho_2 = \rho(x)^2 > 0$$

where $0 \leq c \leq 1$ and $(\rho_1 + \rho_2\rho_3) < (1 - \rho_2\rho_3)$. This completes the proof. #