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Knowledge Rent Effect to Knowledge Production and Control Mechanisms

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Abstract: In the era of knowledge economy, knowledge will become the core of the organization of production factors, knowledge producers by virtue of its knowledge will get a lot of rent. This rent is the knowledge rent. The cause of knowledge rent is extremely complicated, the great danger based on the analysis of knowledge rent on the reasons for the basis of knowledge rent, put forward governance model and Solutions.

Key words: Knowledge rent, knowledge value, knowledge producers, governance mechanisms

INTRODUCTION

Era of knowledge economy, knowledge as a special kind of factors of production, its role is more and more bigger, the knowledge production and knowledge consumption has become a research hot spot problem in knowledge economics. However, knowledge is a special factor of production, knowledge owners can rely on their knowledge of the specificity of this privilege to obtain additional revenue, this particular income is the knowledge rent. Knowledge rent is a kind of rest which is acquired knowledge owners net income of the factors of production using knowledge and the factors of production more than knowledge opportunity cost remaining. Song (2000) thinks knowledge rent quantity depends on the size of the gold content of knowledge itself, the utilization degree of knowledge owners to the knowledge and the effectiveness of the knowledge market. For individual knowledge producer its goal in the process of creating knowledge and organizational goal is not always consistent. In the contribution to knowledge to the organization, knowledge producers may have reservations, in order to looking for the right opportunity at the appropriate time, maximizing the interests of the individual through the market behavior. Further, knowledge production is a continuous and gradually accumulated process, the producers of knowledge in the knowledge production tasks completed in accordance with the requirements for organizing contracts, are likely to find more business opportunities, thanks to its monopoly on intellectual achievements, appropriately modified on the basis of original knowledge innovation, developing new knowledge and gain additional revenues from the market transaction, essentially the process is knowledge producers with knowledge constantly seeking to maximize knowledge rent. Because of the complexity of knowledge production, the process is hard to be found and supervision, after the knowledge producer gain the

extra revenues of knowledge rent, as a limited rational man, he will continue to create and won the rent. So it is not hard to see, the existence of knowledge rent is an objective fact its effect on knowledge production and knowledge consumption is very outstanding, so the study on the basis of related research in the domestic and foreign scholars on knowledge production and knowledge consumption, find out knowledge rent on the influence law of knowledge production, with its objective problems of knowledge rent to make them get effective governance.

RESEARCH LITERATURE REVIEW ABOUT KNOWLEDGE PRODUCTION

Research literatures of knowledge production, dissemination and consumption, one of the most famous masterpiece is simple economics of basic scientific research published by Nelson (1959) and the invention of resource configuration and the economic benefits and the economic meaning of the middle school published by Arrow (1962a, b). These studies for the first time more comprehensively discusses the basic characteristics of the knowledge production and knowledge consumption, for the first time put forward the knowledge product publicity and privacy problem which have the effect of the milestone to people know knowledge this particular factors of production and products. Later scholars on this basis, along the two directions of knowledge production and knowledge consumption are quite productive research: One is to borrow from the development of the economic growth theory study; the second is of intellectual activity participants studied from the economics. As Dasgupta (Partha and David, 1994) and David (Partha and David, 1994) argues that in about knowledge production and consumption, the role of science and technology innovation, enterprise R and D behavior research, etc. Based on science and economics, the comprehensive study on the science and technology.

Yuan (1999) thinks knowledge production is same as other production process, needs to have a variety of factors of production input, after the production process, will have different output form. The essence of the process of knowledge production is knowledge innovation and scientific discovery and technological inventions. These two kinds of discoveries and inventions can form through the different results, such as scientists, books, reports, drawings, computer programs and so on. Finally, put economic activity into economic value. But it is different to the other production process, the input and output in the process of knowledge production process due to the influence of subjective factors, knowledge producer as a rational man, with its own knowledge is likely to be the privilege of opportunistic behavior, make its scientific research activities is difficult to monitor, as it depends on mastering the knowledge acquisition is higher than the value of knowledge itself, this leads to knowledge rent. Knowledge rent generation has a dual nature, the positive side is the knowledge producers inexhaustible motive force for knowledge creation, the negative side is not conducive to the spread of knowledge, sharing and hinder the pace of technological innovation. Therefore, the problem of knowledge rent should be caused enough attention, should be through deeply analyzing the reasons to establish an effective 'knowledge rent' governance mechanism, creating a system to provide reference for knowledge production. In order to facilitate research, this study mentioned knowledge rent is defined as unreasonable it need to be management knowledge.

ANALYZE THE CAUSES OF 'KNOWLEDGE RENT'

The special attributes of knowledge: Carriers of knowledge are knowledge producers. Knowledge is a special kind of intangible assets, the conversion cost is high which makes it very difficult for a reasonable valuation. As producers of knowledge for knowledge creation process is not very easy, partly because he has many years of learning, experience, furthermore probably own knowledge really spent a lot of effort and energy, so its gain by virtue of their knowledge tends to overestimate itself has 'knowledge' of value, so it is possible to make the 'knowledge' of the reality of the transaction value exceeds its knowledge should have value to obtain the knowledge rent.

Particularity of the laws of supply and demand of knowledge products and knowledge market failure: If knowledge producers to provide practical knowledge of product demand and the knowledge of the production of knowledge for other producers, still require a longer

period, then the knowledge producers in a given period may gain monopoly advantage; Furthermore, if the knowledge producers realized that other knowledge producers may also mimic the development track, he might seek protection system, such as through patent applications, the establishment of knowledge development barriers, impeding the entry of other producers of knowledge. It is because of the knowledge producer for a certain period of relative monopoly and product knowledge product supply and demand both sides of the asymmetric information, makes the knowledge market failure. Knowledge producers with its exclusiveness of knowledge, a development that way, can the knowledge products trading for many times, to create high knowledge rent to reward yourself.

Knowledge producers are adaptive contractual person:

Liang (2005) pointed out that knowledge producers are adaptive contract person, knowledge producers not only have ability to adapt to the knowledge of the market environment and has the ability to transform knowledge environment; Adaptive contract man mastery of knowledge, problem solving skills are limited, he must not only pursue their own interests maximization and will use its proprietary knowledge to master the implementation pursue their own interests and harm the interests of the act which is also this is the knowledge producers established team has an important reason for the instability. Therefore, as long as has the possibility to receive a rent, the knowledge producers always get as much as possible.

Opportunistic behavior of the demand of knowledge:

Knowledge demand itself is opportunist, the demand will be to make their own decisions according to the market demand change. If the price of knowledge producer is high, the demand will tend to weigh the pros and cons, if through the terminal revenue of the knowledge on very favorable, is easy to implement transfer payments, will eventually reach a deal, this process is essentially divided the process of knowledge rent together.

Existing knowledge management system is not perfect:

Knowledge management system is imperfect which is the system root of knowledge producers to obtain knowledge rent. Existing knowledge management system (such as the patent system) is not accurate measuring knowledge producers should obtain benefits and therefore cannot be a fair division of knowledge rent. Knowledge rent is an objective existence of an accomplished fact, both the reasonable rent and the unreasonable rent, that is consistent with Marxist view on excess profits.

Reasonable rent, such as part of the patent income, is positive incentives for producers to produce knowledge, will be conducive to the development of science and technology. Unreasonable rent refers to the knowledge producers who are gaining speculatively, using the lack of regulation to repeat the rent. In fact, as long as it is rent, always erodes the welfare of others, whether it's reasonable or unreasonable, even it is hard to define reasonable and unreasonable. A good knowledge management system should be able to effectively govern knowledge rent, to make it as little as possible, in order to get all the elements of a contributor to obtain its deserved income according to their contribution, rather than getting a high extra income for one side because of unfair segmentation of income.

GOVERNANCE MODEL OF KNOWLEDGE RENT

As can be seen from the above analysis, the generation of knowledge rent is in essence a game of knowledge value judgment between knowledge producers and demanders. In order to facilitate research, this study puts the reasonable part of knowledge rent into knowledge gains and put it as knowledge value while puts the part of knowledge producers acquired by virtue of its ownership of knowledge which exceed their legitimate income, collectively referred to as knowledge rent. So, this article use VNM utility function to set up corresponding knowledge rent governance model and analyze its governance issues (Von Neumann and Morgenstein, 1944).

First, we introduce a client, a knowledge producer I, who is an adaptive contract, whose total revenue is the sum of knowledge value k_1 and knowledge rent k_2 . For convenience of discussion, we assume that the utility function of the income for the knowledge producer I includes $M_1(k_1)$ and $M_2(k_2)$ two parts after excluding the price factors, that is:

$$M_z(k_1, k_2) = M_1(k_1) + M_2(k_2)$$

In the formula:

- M_z , total utility function of the knowledge producer
- $M_1(k_1)$, utility function of the knowledge value
- $M_2(k_2)$, utility function of the knowledge rent
- k_1 , knowledge value
- k_2 , knowledge rent

It is rational for knowledge producers, so it should be avoiding risk, thus the utility function $M_1(k_1)$ and $M_2(k_2)$, should be concave function.

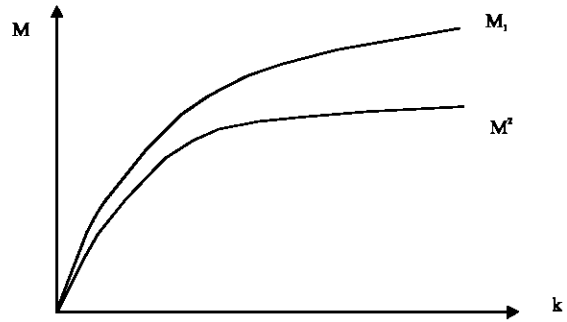


Fig. 1: Figure about utility function of knowledge income

And because k_2 is knowledge rent which is unreasonable income it will be punished once it is found and there are greater risks and the concavity of $M_2(k_2)$, is greater, as shown in Fig. 1 which are:

$$-\frac{M''_2(k_2)}{M'_2(k_2)} \geq -\frac{M''_1(k_1)}{M'_1(k_1)} \tag{2}$$

Further, $M_2(k_2)$, is utility function of risky knowledge rent income, so it can be seen as a kind of expected utility function under uncertainty it is the VNM utility function (Zhang, 1996). Might as well set:

$$M_2(k_2) = (1-p(k_2))M_1(k_2) + p(k_2)f(k_2) M_1(k_2) \tag{3}$$

In the equation $p(k_2)$, is the probability of being investigated which is a function on the k_2 , that satisfies:

$$0 \leq p(k_2) \leq 1, p'(k_2) > 0, p''(k_2) > 0$$

The greater knowledge rent income, the greater the probability of being investigated it is found. $F(k_2)$ is a kind of punishment function for knowledge rent income which meets: $F(k_2) < 0, f(k_2) < 0$. The more knowledge rent income, the more punishment it is accepted.

We obtain by the equation 1 and 3 that:

$$M_z(k_1, k_2) = M_1(k_1) + (1-p(k_2) + p(k_2)f(k_2)) M_1(k_2) \tag{4}$$

The equation 4 is utility function model of total knowledge income of the knowledge producer I.

ANALYSIS OF THE MODEL

Countermeasures of the knowledge producer I:

- If $1-p(k_2) + p(k_2)f(k_2) \leq 0$, $M_2(k_2)$, is non-positive. Obviously, knowledge producer I won't have any

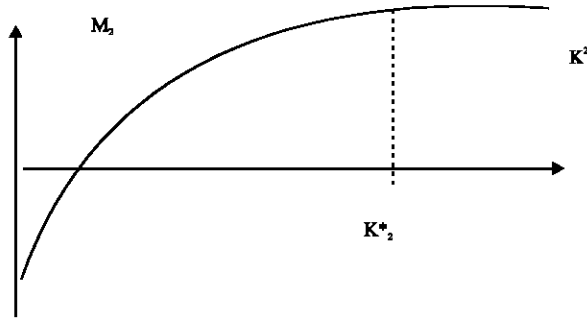


Fig. 2: Figure about knowledge rent income utility function

knowledge rent-seeking behavior, knowledge management system and rules guaranteed

- If $1-p(k_2)+p(k_2)f(k_2)>0$, $M_2(k_2)$ is positive. Knowledge producer I will seek to maximize their own interests and there will be a knowledge rent-seeking behavior. And because M_1 is strictly monotone increasing, there is no non-zero stationary point about k_1 . But there is $f(k_2)<0$, so M_2 is first increased and then decreased and there is a non-zero stationary point, as shown in Fig. 2

Then to seek a first order partial derivative of M_2 about k_2 can determine the maximum utility which can be obtained:

$$k_2^* = d(p(k_2), f(k_2), M_1) \quad (5)$$

For knowledge producers I, this is the maximum utility of knowledge producers getting knowledge rent income but it is not necessarily a limit of knowledge rent income it can be seen intuitively from Fig. 2.

Countermeasures of regulators: To prevent knowledge producers I from obtaining knowledge rent it is particularly important to control the knowledge producer income in a rational and reasonable level. Therefore, some measures can be taken from the following several aspects:

- To strengthen the moral education. Because knowledge itself is invisible its management and magnitude of knowledge value is very difficult to measure. At this moment, through the organization construction, social consciousness of knowledge producers, especially moral stock, can effectively prevent its bad behavior. Of course, this is a long-term process and it is very limited to rely on the single moral constraint to manage knowledge rent as shown

- Perfect the knowledge market, to build knowledge trading platform. The market mechanism realizes adjustment of the resource through usually supply and demand, competition, price volatility and the rational flow of production factor. And this particular production factor of knowledge also requires a perfect knowledge trading platform to achieve adequate flow of knowledge resources. So perfect knowledge trading market system will make producers take advantage of knowledge to seek excessive profits income nearly equal to its opportunity cost which can effectively prevent the generation of knowledge rent
- Sound knowledge of the supervision system, strengthening the knowledge management. In terms of knowledge itself, the knowledge supervision system is without supervision which also cannot be supervised. The supervision is a process of knowledge producers use knowledge which is an application process in which knowledge producers use knowledge and generate power by virtue of it. With the advent of the knowledge economy it is of great significance to build a knowledge supervision system.
- Ensure that $1-p(k_2)+p(k_2)f(k_2)\leq 0$, there is no any knowledge rent; When $1-p(k_2)+p(k_2)f(k_2)\leq 0$, can't be met, the critical parameter η of refusal rent can be set to make rational knowledge producer I start from its own utility preference to refuse to rent when:

$$\frac{M_1'(k_1)}{M_2'(k_2^*)} = \frac{M_1(k_1)}{(1-p(k_2^*)f(k_2^*))M_1(k_2^*)} \geq \eta$$

which can be obtained:

$$k_1^* = g(p(k_2^*), f(k_2^*), M_1(k_2^*)) = g(k_2^*) \quad (6)$$

Then k_1^* is the desired knowledge value when the knowledge producers don't acquire knowledge rent which can avoid the generation of knowledge rent in equilibrium point (k_1^*, k_2^*) . It is fair for both knowledge producers and demanders.

- From the above analysis, we could see that k_2^* is function of $p(k_1)$, $f(k_2)$ and $M_1(k_2)$. And there are different p , k and M_1 for different producers. Then k_2^* is closely related to academic status, position power, regulation and so on of the knowledge producers I and its numerical large difference between the knowledge producers. But as we know that the disparity of knowledge value is unlikely to differ very large in an organization. In theory, knowledge value

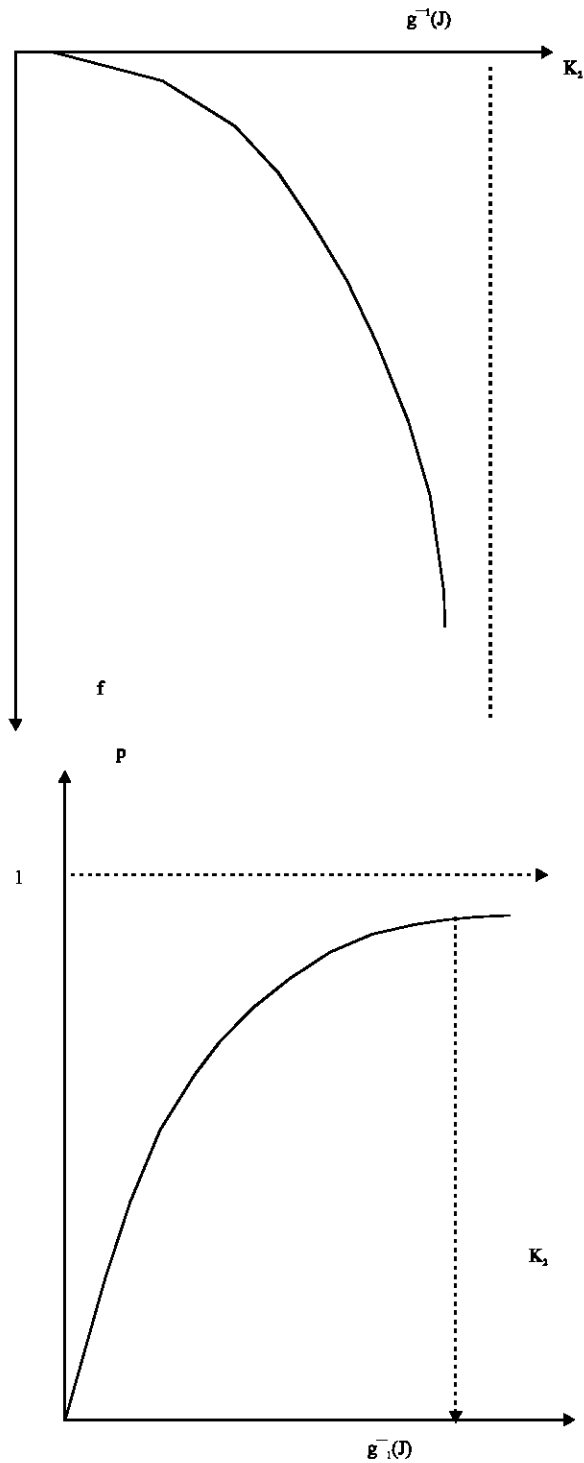


Fig. 3: Knowledge producer punishment function diagram

k_1 has the upper bound J while knowledge rent may have no upper bound. Thus it can be introduced that the knowledge producers can't be ensured to refuse knowledge by improving knowledge value. At the

moment, eitheror, as shown in Fig. 3, can the knowledge producers refuse rent which is the same with in essence

CONCLUSION

Through the above analysis and discussion, we found that, only when knowledge rent income is in a lower level can it work to give the knowledge producer higher knowledge value. Namely when $k_2 \cdot g^{-1}(j)$, to raise corresponding knowledge value k_1 , according to the contribution of knowledge producers can effectively prevent the knowledge rent. But once , knowledge rent is hard to get effective management by interests driven. Therefore, only by strengthening supervision dynamics ($p \rightarrow 1$) and punishment ($f \rightarrow \infty$) may knowledge rent be prevented to be flooded which is the most critical and fundamental solution. Through the investment of education, vigorously develop education career, effectively increase the number of knowledge producers, standardize the competition of the knowledge market which is the effective way to reduce the knowledge rent and, of course, this process is a long way to go.

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