

On Establishing A National Economic Target System Geared to Knowledge Economy

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I. Revision of the Accounting Mode for the National Economy As Demanded by Knowledge Economy

The commercialization of knowledge, the acceleration of its application to manufacturing and services have brought fundamental changes to the growth pattern of economy. In the theoretical foundation for national economic accounting, we did not have widely accepted measures for the following concepts such as the storage of technical knowledge, resource cost of the acquisition of human capital, rate of renovation, rate of desolation of knowledge.

Due to the fact that there is no proper evaluation of the value of knowledge and its input and output in application, the statistics in GNP and productivity are usually misleading, and a substantial part in the annual production in national economy is simply overlooked. In order to better reflect current production, the life of the nation and a general picture of the society, national economic accounting system is badly in need of revision. One of the purposes of national economic accounting is to locate the basis of economic growth. The traditional “production function” is focused on labor, capital, raw material and energy. Knowledge and techniques are viewed as external factors contributing to production. Investment in knowledge will definitely increase the productivity of other factors in production, and will turn out new products and technology. Furthermore, knowledge investment means increase in economic gains, a key factor for the current economic growth.

II. How to Measure the Value of Knowledge

Unlike the traditional economic input such as steel and labor, new knowledge has an impact on the operation of economy by changing “the knacks” themselves, providing unprecedented products and production process. Generally speaking, the output and quality of new knowledge is not known before hand though in the meanwhile it increases potential economic output. Also unlike traditional products, knowledge has no fixed effect. A new idea may bring forth a great change, an ordinary change or no change at all, depending on the entrepreneur’s ability, the competition and other economic environments. The resources created by knowledge input may increase economic potential, but the amount is not known, nor is the way of the increase. It is therefore difficult to generalize the relationship between knowledge input and its corresponding output by way of a standard production function.

It is also difficult to measure the price of knowledge with the principle of trial and error used in recurrent trade in the marketplace because there is neither any knowledge record for any company nor any statistics of the investigations into the creation of knowledge or exchange. In the exchange of knowledge the buyer has to measure the value of new information before knowing exactly what knowledge he is going to buy. There are four reasons that explain why knowledge targets, though rigidly constructed, are not able to be used in the same way as traditional economic targets to interpret the complexity of the system. First, there is no fixed formula or knack to interpret the input for knowledge creation as knowledge output; second, in the absence of national knowledge accounts similar to those traditional ones, knowledge creation and input are difficult to mark or record; third, knowledge production value lacks a systematic

price system serving as a foundation for total knowledge value; fourth, the creation of new knowledge does not necessarily include the storage of knowledge and the desolation of knowledge storage unit is not filed in the form of document.

In order to have a thorough mastery of the operation of knowledge economy, we need to develop new economic concepts, yardsticks to keep track of the phenomena that arise outside the traditional trade in the marketplace.

III. The System of knowledge Economic Targets

The traditional economic targets have never been completely satisfactory because they are not able to represent the economic operation mode besides the total value of goods and services. To evaluate the operation of knowledge economy may pose a great challenge since it is rather difficult to evaluate and measure knowledge itself inside knowledge economy. Currently we have only very indirect and partial growth targets for knowledge foundation itself. The unknown part of knowledge is implicit and disordered and hidden in the minds of individual people, for example, the storage and flow of knowledge, the dissemination of knowledge, and the relationship of knowledge creation and economic operation. There are no clear markers in these spheres, leaving a lot of work to be done. The work includes the following:

1. The evaluation of knowledge input. This includes the following specific targets: (1) research and development; (2) the employment of engineers and technicians; (3) patents; (4) income and expenditure balance statement of international techniques
2. The evaluation of knowledge storage and flow. The difficult task of measuring the storage of knowledge is conducted by accumulating the annual national input into research and development(R&D). Similarly the increase of the number of researchers in a specific field, the mobility of experts and the changeability of occupation, R&D patent storage can also be used as indexes of measuring knowledge storage. Two representative measures for knowledge flow are visible dissemination: the introduction of technology; invisible dissemination: the dissemination of knowledge, special skills or technology by way of the transfer of patents, licenses.
3. The evaluation of knowledge output. Measuring the returns of research and development may especially pose a challenge to the service sector, which is difficult to evaluate by the productivity method. In manufacturing and service sectors, China can carry out evaluation on the returns of materialized research and development in manufacturing.
4. The evaluation of knowledge network. The current system of knowledge targets is primarily used to measure knowledge input and sort out knowledge flow. New targets are needed to grasp the big processes in the technical renovation and knowledge distribution among the major participants and research institutions in the economic fields.
5. The evaluation targets of human resources. The conventional measurement of human resources development based on the number of years of schooling and experience can no longer satisfactorily reflect the quality of education and learning, nor the economic returns to the input into education and training. On a societal scale, one of the methods to evaluate returns to society is extensively measure the impact that education expenditure and the extent of completion of education have on society.