

Review of Human Capital Theory

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ABSTRACT

The human capital theory is one of the most important breakthroughs in economics. With the continuous development of human capital theory, its important influence on social development has gradually been understood by people, and it has also helped many countries achieve economic progress. The practical application of human capital theory is based on the measurement of human capital. This article reviews the relevant literature of human capital, from two aspects: theory and method.

Keyword: *human capital, theory, measurement method*

1. Theory Review

The idea of human beings as capital was first proposed in 1776. The British economist Adam Smith pointed out in his "The Wealth of Nations": Human endowment, that is, the usable ability possessed by the people, is also a kind of capital. And it is the real capital that people carry, and this kind of capital can be obtained through education and accumulated experience at work, and generally speaking, the formation of this kind of capital requires a certain amount of expenditure. In the following time, The French economist say, as well as the German economists von Dunn and Liszt, etc. have enriched and extended the connotation, meaning and formation of human capital to varying degrees. Marshall, the founder of the neoclassical school, once said: "Knowledge is the most powerful locomotive for the development of productive forces."

After experiencing this period of extensive discussion and in-depth research on human capital-related ideas by economists, the importance of human capital has been gradually recognized, and it has also attracted more and more experts and scholars to invest in research on human capital. However, during this period, although the importance of human capital was widely accepted, it did not form an accurate concept, and did not really incorporate human capital into the economic system for research. These researches are more biased towards the belief that human capital is Belongs to part of fixed capital. Even so, the research in this period is still groundbreaking. The thought of human capital and its importance are pointed out, and it also laid the foundation for the follow-up human capital theory.

The concept of human capital was first put forward in 1906, and it was expounded by Irving Fisher, and this was the first time that economists included human capital in the economic system for analysis. The economist St Lu Meilin first proposed the formula for calculating the rate of return of education investment in 1924. This was the first time that an economist expressed the economic connotation of education in a formula. Subsequently, Walsh, an economist from the United States, linked the individual's education to his future income. Galbraith discussed the impact of human capital on economic growth. He pointed out that investment in education and science is the key to technological progress, as well as the importance of modern society's investment in human capital. Continuous progress requires more attention to investment in people. In his article published in 1958, Ming Sai used mathematical modeling for the first time to link personal income and personal training, and then used this model to estimate the private rate of return of on-the-job training in the United States.

2. Method Review

With the development of related theories, the measurement of human capital has gradually become a hot issue in academic circles. According to Li Haizheng et al. (2010), the measurement methods of human capital can usually be summarized into the following three types: Cost method, which measures human capital from the perspective of input; Income method, which is calculated from the perspective of output, with income as the starting point; Characteristic method, which is measured based on some characteristic indicators of human capital, For example, years of education, illiteracy rate, etc., due to the convenience of data acquisition, the method of education years has become the most commonly used method.

The cost method originated from Engel's (1883) production cost method. He mainly estimated human capital based on the cost of raising children. Later, Schultz (1961) and Machlup (1962) improved on this basis and gradually formed the cost method that is now commonly used to measure human capital. Among them, the stock of human capital is equivalent to the depreciation value of the dollar amount of human capital investment projects. Kendrick (1976) systematically measured the stock of human capital in the United States based on the cost method, and he divided human capital into two parts, tangible and intangible. Tangible human capital mainly covers the cost of raising children, and intangible human capital It mainly includes expenditure on education, health, training, safety and transportation. Chinese scholars Zhou Tianyong (1994), Zhang Fan (2000), Qian Xueya and Liu Jie (2004) have also used the cost method to measure China's human capital stock. However, the data required by this method is more complex and detailed. The availability of this method has not been widely used so far, and because the relationship between human capital input and output is not very clear, and this method is difficult to consider the heterogeneity of people, it also has considerable limitations.

The first scholar who used the income method to measure human capital was William Petty. He used wages to calculate the stock of human capital in England and Wales. Although he did not consider the heterogeneity of people, he was also a later researcher. We opened up a new way of measuring human capital. Later, Farr (1853) used the present value of personal future income minus personal living expenses to estimate the capitalized value of earning ability. And according to the life table to adjust the death, according to the 5% discount rate to estimate the human capital. Scholars such as Nicholson (1891), Fisher (1908), Graham and Webb (1979) have expanded and improved the income method. Jorgenson and Fraumeni (1989; 1992) proposed a more comprehensive human capital measurement method based on the income method. The specific methods are as follows: The present value of the lifetime labor income of individuals of a certain age is equal to their current year's labor income plus the present value of their lifetime income in the next period, and then weighted by the employment and survival probabilities. With the development of statistical data in China, scholars who use the income method to measure human capital have gradually increased. For example, Wang Dejin and Xiang Rongmei (2006), Zhu Pingfang and Xu Dafeng (2007), Li Haizheng (2010) and other scholars have used the income method to measure human capital.

As an important feature of human capital, education is widely used in human capital measurement due to its advantages such as convenient data acquisition and simple calculation methods. The main indicators include education investment, adult literacy rate, enrollment rate, education level, etc. The years of education method is the most common. Barro & Lee (1996) used United Nations data to estimate the education status of people over 15 years old in many countries, and regarded it as an important indicator of human capital. De la Fuente and Doménech (2006) estimated the average educational level of 21 Organizations for Economic Cooperation and Development (OECD), and used it as an indicator of human capital to explore the relationship between human capital and economic growth. Education law is also the main method used by Chinese researchers to measure human capital. For example, Cai Fang and Wang Dewen (1999) used the education level of the population over 6 years old to represent the stock level of human capital in each province. Based on this, the factors affecting China's sustainable economic development are analyzed, and corresponding countermeasures are proposed. Hu Angang (2002) used the number of years of education of the population to express human capital and estimated the stock of human capital in China from 1980 to 2000. Chen Binkai and Zhang Chuanchuan (2016) used the ratio of the number of people with higher education excluding students to the total number as a proxy indicator of human capital in a region. In addition, scholars such as Yao Xianguo and Zhang Haifeng (2008), Li Mei and Liu Shichang (2012) have also used years of education to measure human capital.

6. ACKNOWLEDGEMENT

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7. REFERENCES

- [1] Barro R J, Lee J W. International measures of schooling years and schooling quality[J]. The American Economic Review, 1996, 86(2): 218-223.
- [2] Cai Fang, Wang Dewen. China's economic growth sustainability and labor contribution[J]. Economic Research, 1999(10): 62-68.
- [3] Chen Binkai, Zhang Chuanchuan. Human Capital and Housing Prices in Chinese Cities[J]. Chinese Social Sciences, 2016(05): 43-64+205.
- [4] De la Fuente A, Doménech R. Human capital in growth regressions: how much difference does data quality make?[J]. Journal of the European Economic Association, 2006, 4(1): 1-36.
- [5] Engel E. Der werth des menschen[M]. L. Simion, 1883.
- [6] Farr W. Equitable taxation of property[J]. Journal of Royal Statistics, 1853, 16(1): 45.
- [7] Fisher I. The cost of tuberculosis in the United States and its reduction[M]. 1908.
- [8] Graham J W, Webb R H. Stocks and depreciation of human capital: New evidence from a present - value perspective[J]. Review of Income and Wealth, 1979, 25(2): 209-224.
- [9] Hu Angang. From a country with a large population to a country with large human capital: 1980~2000[J]. China Population Science, 2002(05): 3-12.
- [10] Jorgenson D W, Fraumeni B M. The output of the education sector[M]//Output measurement in the service sectors. University of Chicago Press, 1992: 303-341.
- [11] Jorgenson D, Fraumeni B M. The Accumulation of Human and Nonhuman Capital, 1948-84[J]. NBER Chapters, 1989: 227-286.
- [12] Kendrick J W. The formation and stocks of total capital[J]. NBER Books, 1976.
- [13] Li Haizheng, Liang Yunling, Barbara Fraumeni, Liu Zhiqiang, Wang Xiaojun. Human Capital Measurement and Index Construction in China[J]. Economic Research, 2010, 45(08): 42-54.
- [14] Li Mei, Liu Shichang. Regional differences and threshold effects of reverse technology spillovers of foreign direct investment: threshold regression analysis based on China's inter-provincial panel data[J]. Management World, 2012 (01): 21-32+66.
- [15] Machlup F. The production and distribution of knowledge in the United States[M]. Princeton university press, 1962.
- [16] Nicholson J S. The living capital of the United Kingdom[J]. The Economic Journal, 1891, 1(1): 95-107.
- [17] Qian Xueya, Liu Jie. An Empirical Study on the Level of Human Capital in China[J]. Statistical Research, 2004(03): 39-45.
- [18] Schultz T W. Investment in human capital[J]. The American economic review, 1961: 1-17.
- [19] Wang Dejin, Xiang Rongmei. Estimation of China's Human Capital Stock[J]. Statistics and Decision, 2006(10): 100-102.
- [20] Yao Xianguo, Zhang Haifeng. Education, Human Capital and Regional Economic Differences[J]. Economic Research, 2008(05): 47-57.
- [21] Zhang Fan. China's material capital and human capital estimation[J]. Economic Research, 2000(08): 65-71.
- [22] Zhou Tianyong. Labor and Economic Growth (First Edition) [M]. Shanghai: Shanghai People's Publishing House, 1994.
- [23] Zhu Pingfang, Xu Dafeng. Estimation of Human Capital in Chinese Cities[J]. Economic Research, 2007(09): 84-95.