

## **Research on Innovation and Entrepreneurship Education of College Students Based on Supply side Reform**

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**Keywords:** Innovation and entrepreneurship, Supply side reform, College students

**Abstract:** with the deepening of supply side structural reform, entrepreneurship education in Colleges and universities has entered a new development period. This paper verifies the necessity of innovation and entrepreneurship in China through endogenous growth model, and discusses the construction of innovation and entrepreneurship education system for college students from three aspects: interdisciplinary, teacher entrepreneurship and innovation promotion.

### **1. Introduction**

With the deepening of supply side structural reform, entrepreneurship education in Colleges and universities has entered a new development period, but also faces many new challenges. It has become an important proposition for the reform and development of education field to actively transform the supply and demand mode of education, improve the relevance and effectiveness of education content and mode, and ensure the high-quality supply of College Students' independent entrepreneurship.

### **2. College Students' Innovation and Entrepreneurship to Promote Efficient and Stable Economic Growth**

#### **2.1 Endogenous Growth Model Verification of the Necessity of Innovation and Entrepreneurship**

In the early stage of reform and opening up, China was just out of the planned economy of material scarcity. The marginal efficiency of capital is very high and the demand is great. There are investment opportunities everywhere. What entrepreneurship needs is to control consumption and allocate limited output to investment. Since the subprime mortgage crisis broke out in 2008, China's economy has maintained rapid growth relying on the 4 trillion investment stimulus plan, but since 2012, the economic growth has begun to decline. The unreasonable investment structure of the four trillion stimulus plan led to the rapid development of infrastructure and real estate, forming an industrial chain with civil construction as the core, with a large amount of backward production capacity of steel, cement, glass, etc., which seriously polluted the environment. Over the years, China's economic operation has been too eager for quick success and instant profits. Many people are keen on speculation and speculation in the financial and capital markets, and have no patience to operate the real economy. In the long run, high-quality supply must optimize human capital, cultivate high-level labor force, and stimulate the potential of innovation, entrepreneurship and creation of micro subjects, especially college students. The author uses an endogenous growth model to verify.

Like traditional economic growth model, simultaneous interpreting EGM also includes four key elements: physical capital  $K$  labor  $L$ , technical parameter  $A$ , output  $Y$ . In particular, EGM interprets technical parameter  $a$  as useful knowledge, which can play a role by improving TFP or labor efficiency, and knowledge can be accumulated as capital, but not depreciated (there is no physical loss process like physical objects). EGM also divides society into two departments, one is the material production department, the other is the research & development sector in charge of production knowledge. The latter is the key to knowledge accumulation, which can be seen as a

collection of all micro individuals engaged in knowledge technology R & D in an economy, such as the R & D departments of large enterprises, research institutions and universities.

Assuming that the proportion of K and L of  $a_K$  and  $a_L$  are invested in the R & D department, the proportion of K and L obtained by the material production department is  $1-a_K$  and  $1-a_L$ . Given  $a_K$  and  $a_L$ , the output function of the material production department is:

$$Y(t) = [(1-a_K)K(t)]^\alpha [A(t)(1-a_L)L(t)]^{1-\alpha} \quad (1)$$

It satisfies the traditional Cobb Douglas function and is homogeneous. For the sake of simplicity, assuming that capital K is not depreciated, the new capital comes from saving a part of output Y, and the growth rate of population is exogenous given, the change of growth rate of capital K depends on the growth rate of technology and capital. When the accumulation of capital reaches a certain limit, the growth rate of capital will not change any more, and the total amount of capital will increase steadily at a certain rate. At this time, if the technological growth rate is increased, the production capacity will be increased, and the economy will be allowed to accumulate capital at a higher growth rate. In order to know the steady state of the economy, we need to know the growth of technology A. The output function of R & D department is:

$$A(t) = B[a_K k(t)]^\beta [a_L L(t)]^\gamma A(t)^\theta, B > 0, \beta \geq 0, \gamma \geq 0 \quad (2)$$

Generally, adding a point on the variable means that the derivative of the variable to time t, that is, the change of the variable over time. (2) The formula shows that the R & D department is responsible for the production of new knowledge and technology. The amount of new knowledge and technology added is determined by the capital AK (T), AL (T) allocated by the Department and the total amount a (T) of existing knowledge and technology. Meanwhile, the R & D achievements have a conversion rate B, which represents the ability of the Department to produce useful knowledge and technology under the existing resources. Similarly, the change of technology growth rate depends on the growth rate of technology and capital. When the accumulation of technology reaches a certain limit, the growth rate of technology will not change any more, and the total amount of knowledge technology will increase steadily at a certain rate. At this time, if the growth rate of capital increases, more capital can be invested in the R & D department, allowing the economy to accumulate knowledge technology at a higher growth rate.

## 2.2 Increasing Investment in Innovation and Entrepreneurship Will Surely Increase Economic Growth

Whether EGM model has stable equilibrium depends on the value of parameter  $\beta, \gamma, \theta$ . These three factors just represent the contribution of capital investment  $a_K K(t)$ , labor investment  $a_L L(t)$  and total amount of existing knowledge and technology a of R & D department in the process of producing new knowledge and new technology. In other words, if it can improve the ability of R & D department to produce new knowledge and technology, it will make a great contribution to the long-term stable growth of the economy, and make the economy develop at a high speed after reaching a stable equilibrium.

Even under the condition that  $\beta, \gamma, \theta$  cannot be changed, by changing the m value, the economy can be subject to a benign impact, and in the short term, the growth rate of technology can be increased, and then the economic growth rate can be increased. Compared with the level of developed countries, the investment of developing countries in R & D sector is far from enough, which means that  $a_K$  and  $a_L$  is much lower than that of developed countries. Therefore, if we can increase the number of investors to encourage innovation and entrepreneurship in the R & D department, then  $a_K$  and  $a_L$  will significantly improve, making knowledge technology accelerate in the short term.

EGM also has a parameter B related to “R & D efficiency”, which indicates that under the given knowledge and technology conditions, the R & D department can generate the transformation ability of useful knowledge and technology after investing human and material resources. According to

formula (2), although the size of B can not determine the growth rate of knowledge technology, it directly determines the speed of technology growth rate approaching the equilibrium value. Compared with the level of science and technology in developed countries, developing countries can also accelerate by improving B. Supply side structural reform outlines a clear and irreversible path that can be expected. Innovation lies in the core position of economic construction, with expected returns, college students can become the middle force of the era of creativity, create high-quality products, and effectively supply to meet the new needs of consumers, so China can catch up with developed countries.

### **3. Construction of the Innovation and Entrepreneurship Education System for College Students with Efficient Supply**

#### **3.1 Construction of the Innovation and Entrepreneurship Training System of Interdisciplinary and Mutual Integration**

At present, innovation and entrepreneurship in China are two skins. Entrepreneurship education is free in management, sociology, economics and pedagogy. It simply adds the courses of human management, production control, marketing, accounting and finance, while innovation is mainly concentrated in the fields of natural science such as engineering, with poor integration of innovation and entrepreneurship courses. In reality, innovation and entrepreneurship can't only happen in a single discipline. Innovation and entrepreneurship education must cross and fuse with each other along the life cycle of an innovative enterprise, integrate the scattered knowledge and technology into a system, so that college students can form a systematic understanding of the unpredictable entrepreneurial process, so that future technological innovators can master business knowledge, while businessmen have scientific knowledge to promote innovation. New businesses should be integrated. The university must break the boundary of disciplines, build interdisciplinary collaborative innovation laboratory, take the transformation of scientific and technological achievements and the incubation of innovative enterprises as the starting point, and build a three-layer three-dimensional talent training model of innovation, entrepreneurship and innovation. The research team of Diba Duta, vice president of Purdue University, interviewed 60 successful innovators in depth, including Stanford University President John Hennessey and apple president cook. The research report was published in National Journal Academies) published the research, which pointed out that many university entrepreneurship education focuses on entrepreneurship and ignores innovation. It is necessary to cross integrate engineering and business, let engineering students learn business knowledge, and train university researchers into businessmen.

In order to improve engineering courses in universities, teachers should introduce the background of the birth of technology and the deeds of inventors, especially the failed innovation process. The key to innovation is to find problems and find solutions. Altshuller, a famous inventor of the former Soviet Union, pointed out that "the contradictions of problems encountered in a large number of innovations are the same, the scientific principles of innovation are objective, and the same principles of technological innovation will be repeatedly applied. Refining the existing innovation principles to form a systematic theory can guide future innovation". In the innovation and entrepreneurship learning, teachers are very important. University teachers should summarize the methods of finding and solving problems together, compile an innovation and entrepreneurship guidance manual, guide college students to start from the areas of interest, use interdisciplinary methods to find problems, and then accurately find innovation entry points according to the guidance manual. University teachers must strengthen the teaching of innovative technology and skills, pay attention to teaching methods such as process inquiry, project participation, case discussion and scenario inspiration, and let college students master advanced technology and tools for innovation and entrepreneurship.

#### **3.2 University Teachers Should Practice and Set Up Enterprises**

The law on promoting the transformation of scientific and technological achievements promulgated by the State Council on March 2, 2016 stipulates that "after the transfer of the invention

achievements of public universities, all the recipients will be returned to the units, and the person in charge of the invention and the technical backbones will be rewarded with not less than 50% of the proceeds, and the researchers are allowed to retain the basic treatment and human relationship within three years, and bring the projects or achievements to the enterprises for innovation and entrepreneurship". For many years, the United States has actively encouraged university teachers to set up enterprises. University Teachers' entrepreneurship can freely and flexibly go back and forth between universities and enterprises. American universities have promoted the efficient spillover of university technology by incubating high-tech enterprises. The main bodies of innovation and entrepreneurship have changed from simple bilateral interaction to multilateral communication network of government, enterprises, universities, banks, etc. only Stanford University teachers have successfully established 2454 enterprises, including instagram linkedIn Yahoo, Google, HP, Cisco. The campus of Stanford University bears rich cultural connotation of innovation and entrepreneurship. Teachers and students are influenced by the ideas of innovation and Design Institute, innovation laboratory and maker space.

The experience of innovation and entrepreneurship is inseparable from the actual experience. The times, years and management experience of innovation and entrepreneurship are all important contents of innovation and entrepreneurship experience. Only when university teachers go out of the campus can they really see the real society. Stanford University actively encourages teachers to take part in entrepreneurship. Professors with entrepreneurial aspirations are allowed to leave their posts for two years to start their own businesses. Entrepreneurial holidays have brought significant benefits to Stanford University. By 2012, Stanford University graduates had founded nearly 40000 enterprises with good benefits, many of which were directly incubated on Stanford campus. The guidance of professors is the key to the success of innovation and entrepreneurship. At Stanford University, 25% of full-time professors have experienced more than one entrepreneurship. When they return to their teaching positions, they will impart valuable experience to students, including innovation and entrepreneurship essentials such as initiative, open source, collaboration, sharing, team, etc., profound innovation and entrepreneurship methods become traceable, and professors can guide students to dream of innovation and entrepreneurship Want to become a reality.

### **3.3 Based on Innovation to Improve the Quality of Entrepreneurship**

Innovation and entrepreneurship is a complex system of mutual integration and progression. Innovation dominates the direction, level and level of entrepreneurship. What the era needs is innovative entrepreneurship, high-quality entrepreneurship and high growth entrepreneurship. Innovation refers to people's activities in order to meet their own needs of life or social development, follow the objective laws of things change, explore and recognize the objective world and change things, and promote social development and renewal. Innovation is the ability that everyone has. People's innovation ability usually reaches the highest level at the age of 12-14. The traditional education of our country is easy to destroy and bury the students' innovation ability. College Students' innovation and entrepreneurship must effectively identify innovation and entrepreneurship opportunities from social development trends, and create technological products or management models that can produce social or economic benefits. College Students' innovation and entrepreneurship must have four elements: innovation and entrepreneurship subject, innovation and entrepreneurship process, innovation and entrepreneurship achievements, innovation and entrepreneurship benefits. The purpose of College Students' innovation and entrepreneurship should be clear, and new achievements should be created through the combination of four elements of innovation and entrepreneurship.

The research shows that 95% to 99% of the problems of College Students' innovation can be solved by sorting out the existing scientific and technological information. Mining the existing patent documents systematically can shorten the innovation cycle by 60% and save 40% of the innovation funds. College Students' innovation and entrepreneurship should master the necessary information sorting ability, and based on the previous experience, innovation and entrepreneurship can achieve twice the result with half the effort. The innovation of college students is first to invent new

technology or improve existing technology; second, management innovation is to lead new elements to change the management of enterprises and produce enterprise benefits efficiently. College Students' innovation can be divided into six aspects: first, to make their own initiative under the condition of unprecedented achievements; second, to completely subvert the existing achievements, to break through and replace them; third, to cross and merge into new fields; fourth, to think about the dislocation of the breakthrough scope; Fifth, to make local breakthroughs; sixth, to learn from and imitate innovation. The university students of Buffalo State College in the United States are divided into four processes to realize innovation: first, to accurately find problems; then to put aside fixed thinking and give full play to imagination; then to try various innovative methods to solve problems; finally, to promote innovation and realize value.

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