

The Moderate Scale and Employment Problem of Chinese Construction Industry

Jin Weixing Lu Xinhong

(Xi'an University of Architecture & Technology, Xi'an 710055)

We carry out a correlative analysis of the characteristics of production factors and their influences on the production capacity in construction industry. Useful information to define the moderate scale for Chinese construction industry is acquired. Three reasonable suggestions to improve its employment status and to accomplish the industrial civilization are offered.

Key words construction industry, moderate scale, industrial civilization

The scale of construction industry directly influences the demand and supply of the construction market. The in-equilibrium of demand and supply can lead to non-competition or excessive competition, and unfair trade so that the market order will be disturbed. Therefore, to study and decide a moderate scale in construction industry is so important that it connects with the development, employment and management of the industry.

1 Analysis of the Scale of Construction Industry and Its Influencing Factors

The scale of construction industry is its throughput of final product determined by a given level of productivity and the quality and quantity of production factors. Specifically, the capacity is formed and organically combined by the talents and amount of employees, machines, and the performance, quality and processibility of materials and manufactured products. However, influenced by the technical and economic characteristics of construction products, the contributions of the factors to throughput of construction industry can be different significantly.

Firstly, because the construction products in China are mainly made of ferroconcrete, bricks, and building

blocks, the improvement of performance, quality and processibility of the current materials and manufactured products will not be expected to increase the productivity in construction industry.

Next, because the construction products are bulky, fixed and various, their main operations can be only on the building site and be aided with machines but manual work is dominating. Machines cannot work continuously and are just auxiliary. Although some processes can be mechanized or half-mechanized, and even automatization can be realized in some individual processes, the aggregate number and power of machinery and equipment are not the exact indicators of the production capacity of final products in construction industry. Contrarily, the value added in construction industry that indicates the throughput of final products and middle products paid on schedule results mainly from labor input. Fig. 1 fully explains this case.

This figure shows the relationship between the growth rate of value of machines per laborer, related to employees and total output. It is explicit that how it depends on the amount of employees in the increasing total output of construction industry. As a labor-intensive industry, the scale of construction industry is mainly de-

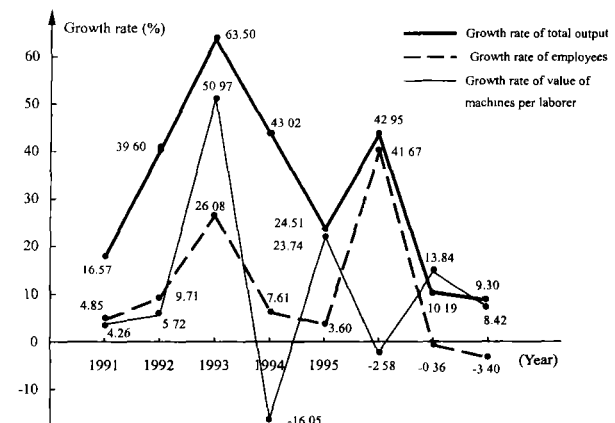


Fig. 1 Analysis of the productivity of Chinese construction industry from China Statistical Yearbook.

cided by the amount of its employees, namely by the scale of construction team. This is different from the production capacity or implying what the scale of industrial products means.

2 The Definition of the Moderate Scale for Chinese Construction Industry

Based on the above analysis, we define the moderate scale of construction industry as the scale of construction team when the industrial production capacity matches with the building demand. The government could manage the construction industry and control the market according to the moderate scale. The difficulty is to decide the scale directly because of the fluctuation of building investment that determines the building demand and that is always used to control the domestic demand, stimulates or restrains the economic growth. The fluctuation makes it difficult to decide a balance point between the demand and supply, even if the point is comparatively stable. Therefore the construction team that expands with the uprising demand of construction will be vastly wasted the over-capacity with the demand decline. In view of this problem, according to the close relationship between buildings and people's activity, the research proposes a new approach to decide the moderate scale of construction industry based on the

population and an international comparison of employees of the industry.

As shown in Table 1, the proportions of the amount of employees in construction industry to the total population, and to the amount of employees in all industries are all less than their counterparts in the U.S.A, Japan, the U.K., Germany and Korea, etc., all of which have strong competitiveness in the industry. This shows a relatively small scale of employees in current Chinese construction industry. Considering the following factors: (1) the huge population in China, (2) the low general productivity in the construction industry, and (3) the future scale and growth potential of building demand which are decided by such factors as the economic development in China and the relationship between buildings and people, etc., we reckon that the proportion of the amount of employees of the construction industry (including the rural construction teams) to the total population is approximately to 3%. Higher than 3% could result in excessive competition, or a much lower proportion could limit the necessary competition. From the cases of the countries with the developed market mechanism, we could see that, under the above-stated scale of construction industry, it is possible that most construction enterprises would naturally be survived and developed, and the construction market would keep a proper relationship of demand and supply and compe-

Table 1 An international comparison of employees of construction industry (Average from 1991 to 1997)

Items	China	U. S.	Japan	U. K.	Korea	Germany
Total population (10000 persons)	119785.3 (123626)	26038.3 (26790)	12509.9 (5901)	5840.3 (4599)	4464.1 (4599)	8125.4 (8206)
Amount of employees in all industries (100000 persibs)	67188.86 (69600.0)	12185.62 (12670.8)	6458.29 (6557.0)	2604.20 (2668.2)	1983.89 (2104.8)	3638.21 (3580.5)
Amount of employees in construction industry (10000 persons)	3079.86 (3449.0)	755.50 (830.2)	648.00 (685.0)	182.86 (186.5)	183.13 (200.4)	309.13 (327.1)
Amount of employees in construction industry Total population (%)	2.56 (2.79)	2.90 (3.09)	5.18 (5.43)	3.13 (3.16)	4.08 (4.36)	3.80 (3.98)
Amount of employees in construction industry Amount of employees (%) in all industries	4.58 (4.96)	6.10 (6.55)	10.03 (10.45)	7.02 (6.99)	9.13 (9.52)	8.51 (9.10)

Notes: (1) The figures in the brackets are of 1997.

(2) Sources are from the United Nations Statistical Monthly (June 1999), the Labor Statistical Yearbook (1998) from the International Organization of labor, and SIC (the same years) from the U.S. Bureau of Labor Statistics.

tition. This scale can be a reference for China, whose government is establishing a socialistic market economy system and is making its best efforts to develop the economy.

3 The Employment Problem of Chinese Construction industry

The definition of the moderate scale of construction industry provides a scientific basis for the growth, development, employment and management of the industry. At the same time, the problem of employment of construction industry is influenced by the fluctuation of market demand. It is necessary to consider the peculiarities of construction industry and its productive organization method, so that correct policy can be made for scientific management. In view of the current problem of employment in Chinese construction industry, the following three facets and suggestions should be fully emphasized.

3.1 Moderate scale and elasticity

The above-conclusion said that 3% of population could be the upper limit for the amount of Chinese construction industry's employees. These employees could be the normal labor force of the industry and should be kept steady, which is very important for the technical progress and industrial growth in China. When the building demand fluctuates abnormally, the international market can be exploited to increase the demand, or the urban unemployed and the rural residual labor can be collected and temporarily registered as construction teams as flexible force to supplement or adjust the market supply (via the force's entrance or retreat). If so, the dynamic equilibrium of construction market can be fulfilled.

Since the 1990s, along with the lasting and stable development of China's economy, the expansion of domestic demand, the increase of infrastructure investment and the reform of housing system by government, Chinese construction industry has been meeting a golden age, and the demand and supply in market are generally balanced. Therefore, for the time being it is not necessary that Chinese construction industry discharges and removes its employees. It is true at least for those employed by a few special state-owned enterprises and engaged in a single sector for a long time under the past planned economy system. These employees and enter-

prises are suffering from the economic structure re-organization and the changing demand structure in the construction market. The enterprises should seek new room for production and development to re-arrange the employees. As for the separation of the management and workers in large and middle scales of construction enterprises, actually it is to re-organize production factors^[1], not to discharge and remove employees. As a labor-intensive industry, it is not advisable for the construction industry to leave its employees to be members of the unemployed resulting from the reformed state-owned enterprises, as the market is generally in equilibrium.

3.2 Retiring age and re-employment

Because a lot of heavy work and poor conditions often occur during the process of construction products, it is necessary lowering the retiring age properly when considering safety in working, so as to keep much younger construction teams. Based on the characteristics of the work of employees in the construction industry, and referred to the similar practices of most enterprises in other countries, for technicians and the management, the retiring age could be 55 years; for workers, it could be 50. A few employees working in upper air and abominable environment could retire at even younger age. Meanwhile, these people should have much higher income so as to accumulate enough savings during short working years for the living after retiring. In addition, the retired persons could try to accept other jobs that are suitable for them if their health are good, and their household income and society require them to do so. The re-employment will profit themselves, the society and the nation.

3.3 Commuters and industry civilization

What is called the "commuters" is to imply an advanced employment pattern, in which workers can regularly go out for work from their houses or some fixed living places, and after work they can go back to the same places where they leave in the morning. Except hydraulic, transport engineering and large-scale industrial and mining projects, other building projects in China should adopt this pattern as early as possible. Otherwise, building sites in cities would have always been concentrated fields for mobile workers, which brings many

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Fifthly, it can attract more intellectuals and make the science and technology team stable, and serve our economy and social construction. The construction of socialism market economy offers more chance for people to develop. Since our economy is not strong enough and the investment in science and education is very scarce, many scientists and technicians were forced to leave this area. Usually, the unsatisfied working condition will cause some people to abandon their former wishes. Recently in order to bring out intellectuals, our country has set many kinds of science funds to attract young people who are dedicated to science to come back from abroad or work at the frontline of research. It will be helpful to save the promising fates of many excellent researchers who would give up their science research foreground for some kinds of money reasons.

4 The Science Fund Provides the Necessary Environment for the Experts' Grow-up: Chance, Condition, Challenge, and Test

From the process of the experts grow-up, I deeply feel that the science fund as well as all the kinds of funds for youth provides an essential condition for their pullulating, and exerting especial influence:

Firstly, it is not only an honor but also an encouragement. To young people, the youth fund is not only an outlay for research but also an honor and encouragement. It can add pride and self-confidence but also bring more pressure. The winners will try their best effort to produce the best result to obtain the recognition from the society. So, obtaining fund can impel development

of their career.

Secondly, it is not only affirmation but also exercise. Obtaining fund is an affirmation of the applicant's scientific assumption and ability, as well as an exercise for their research and organizing ability that will benefit them all their lives. For many applicants, they have few chances to sponsor high-level research project independently before they obtain the fund, so they lack experience and exercise. After they obtain the fund, they have to prepare the research plan and organize the members of the project team (even the members are in different subject and different department) to tackle key problem in-group. They may meet difficulty, but with such experience, their ability of organizing and performing science research can improve greatly, which is of significance to their grow-up.

Finally, it is not only an opportunity but also a test. When researchers apply for the fund, they must examine their own research thoughts roundly. If they obtain the fund and hold fast to the chance and discuss the problem with more experts in the same field and improve their organizing ability and research level, they will be able to enter the higher level of research. Otherwise, what they obtain is only the research outlay. So, obtaining the fund is an austere test for the young applicants.

I do hope more scientists, especially the youth, are on the line of NSFC's application, receive exercise and give full play to their intelligence for our country's science project! And I hope more outstanding talents will be brought up.

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problems in humanism, environment and public security. The problems would not be solved and the industrial civilization would not be improved until this pattern is adopted.

Presently, an epitome of commuters in the construction industry can be seen from some building projects in villages, towns and small urban areas. In large and middle cities, now construction volumes, preconditions for commuters, and construction management models cannot fully support this pattern, the comprehensive management and control to the problems are expected, which can refer to the corresponding results

of research^[2] by readers themselves.

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