

Correlation between the Number of Applicants for Professional Surveyors and Government Fixed Capital Formation/GDP(%)

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Key words: Applicants for Professional Surveyors, Government fixed capital formation, GDP, Ig/GDP

SUMMARY

Shortage of young surveyors is a serious problem in Japan as well as in some Western countries. The number of applicants of the National Assistant Surveyor Examination has decreased and the students of surveying course in Polytechnic colleges have significantly decreased as well. Why young students do not select surveying as their profession is our main concern.

One of the causes is believed to be the drastic cut of the investment of government to the public work (Government Fixed Capital Formation) over the last twenty years, which is the supposed cause of failures of construction and surveying companies.

In this paper, the changes in the ratio of Government fixed capital formation to GDP are shown to be correlated with the changes in the number of applicants for the National Assistant Surveyor Examination and the number of fresh survey students in Polytechnic colleges.

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1. INTRODUCTION

The applicants for professional surveyors had dramatically decreased during the last twenty years in Japan. In particular, the number of students doing surveying courses in Polytechnic colleges had remarkably decreased. There were seventeen colleges with surveying courses in Japan in 1996. Some colleges abolished their surveying course and some closed the school entirely. In 2012, the number of the colleges with surveying courses was only nine.

The amount of jobs offered by surveying and construction companies has recently been restored. It has been a serious problem that polytechnic colleges have not always been able to meet the demands of the companies for young surveyors.

It is important to clarify the major cause of the decrease of students in surveying courses and to take necessary measures. Drastic cut of government investments for public works was suspiciously the major cause.

Nakahori, Y. (2007) pointed out that the secular changes in the ratio of the government fixed capital formation to GDP were well correlated with the changes of the number of fresh students in surveying courses. [1] The author simply explained the reason for this correlation as follows; if Ig/GDP decreases, construction and surveying look less attractive as compared with the other industries, and fewer students want to be surveyors.

In this paper, is introduced, the Japanese experience of decrease of the students in surveying courses and its cause. The author learned at FIG Congress in Kuala Lumpur that shortage of skilled surveyors has long been a critical global issue as described by Hannah, J., et al.[2] The purpose of this paper is to share our experience with colleagues of FIG.

2. CHANGES IN THE NUMBER OF FRESH STUDENTS IN SURVEYING COURSES OF POLYTECHNIC COLLEGES

Polytechnic colleges with surveying courses form a Surveying Professional Education Center (SPEC), where they have activities of exchanging information on management, developing textbooks, and so on.

According to the SPEC statistics, the changes in the total number of fresh students of all the polytechnic colleges in surveying courses are shown in Fig.1. 4150 students in 1980 and 3696 students in 1996 are the peaks and rapid decrease is seen from 1997 onward for more than 10 years. It falls to about 400 students in 2012, which is about 1/9 of the 1996 level.

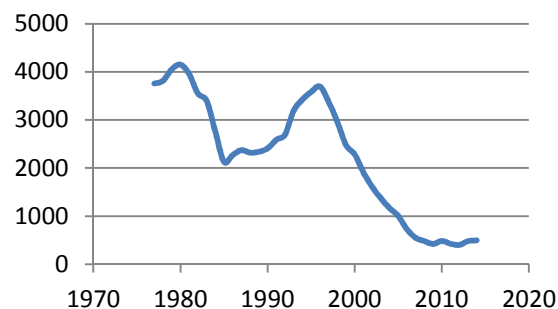


Fig.1 Changes in the number of fresh students

3. THE GOVERNMENT FIXED CAPITAL FORMATION

Fig.2 shows the changes of Ig (right axis) and the number of new students (left axis). The government fixed capital formation is often called Ig (Investment of Government) and can be referred to the National Account of Japan. Ig is the investments for public work such as dams, banks of a river and ocean, roads, ports, airports, parks, sewers, land consolidation. If Ig decreases, the amount of survey work is, in general, expected to decrease because survey work depends on public work.

The most probable cause of the decrease of fresh students is the decrease of Ig. The peak of Ig was about 31 trillion Yen in 1995 as shown in Fig.2 and it fell to about 15 trillion Yen in 2010 and 2011, which is 1/2 of the peak value. These drastic budget cut is supposed to have influence on student recruit.

However, Ig and number of fresh students are not always correlated well. From 1977 to 1985, Ig had increased by about 40%, but the number of fresh students decreased by about 50%. On the other hand, the peak of the number of fresh students is 3696 in 1996 and 400 in 2012, which is 1/9 of the peak.

Therefore, the influence of Ig change and the number of students is not clearly understood in Fig.2.

The number of fresh students in surveying courses reflects the results of the student's decision on their profession. Ig does not seem to be a good index to understand their career selection.

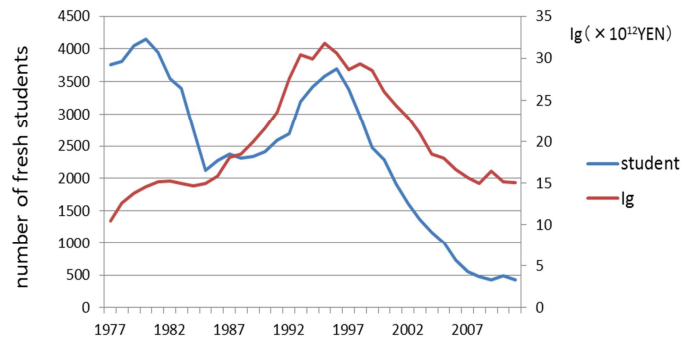


Fig.2 Changes in Ig and number of fresh students

4. CORRELATION BETWEEN THE NUMBER OF FRESH STUDENTS AND IG/GDP (%)

Students probably compare occupations of different industries when they decide their career selection. If more students select surveying as their profession, survey work must be more attractive than other industries for them.

A way of comparison of survey work and public work with other industries is to look at the ratio of Ig to GDP. Ig/GDP (%) is an index which is often used to compare the investment for public work among the countries. If Ig/GDP (%) increases, public work probably looks more attractive in comparison with the other industries.

Fig.3 shows the secular changes of

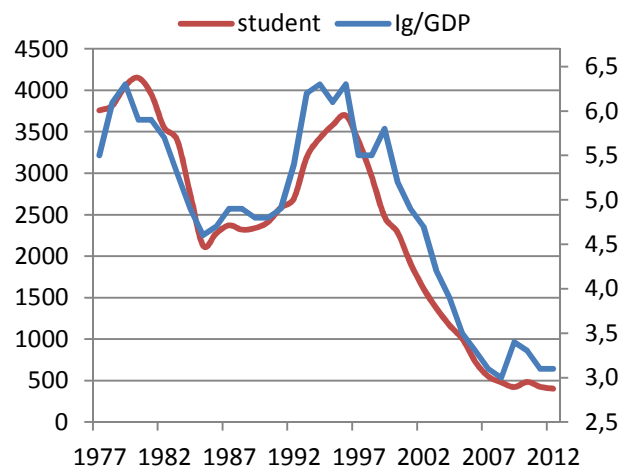


Fig.3 changes in Ig/GDP(% ,right axis) and number of fresh students(left axis)

the number of fresh students (left axis) and Ig/GDP (% , right axis). Both curves are surprisingly similar to each other. This implies that the number of fresh students in surveying courses is proportional to Ig/GDP (%).

Fig.4 is the scatter diagram and the fitted line. These two factors are very well correlated. The coefficient of determination R^2 is 0.91. The proportionality constant is 1086 and change in the number of fresh students when change in Ig/GDP is 1%. The number of fresh students would be zero if Ig/GDP (%) were 2.7%. Fortunately, the fall of Ig/GDP recently stopped at about 3.0%.

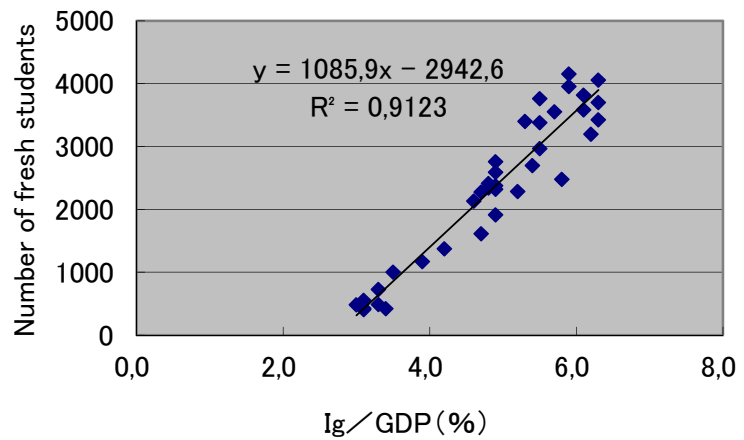


Fig.4 Scatter diagram of the number of fresh students and Ig/GDP

Fig.4 indicates that the major cause of the changes in the number of fresh students is the changes in Ig/GDP. If Ig/GDP decreases, surveying looks less attractive as compared with other industries and fewer students want to be surveyors.

Therefore, the decrease of students is out of control for the managers and teachers of colleges.

5. CORRELATION BETWEEN THE NUMBER OF APPLICANTS FOR THE NATIONAL ASSISTANT SURVEYOR EXAMINATION AND IG/GDP (%)

Applicants for the National Assistant Surveyor Examination are people who want to get Assistant Surveyors License without learning surveying in polytechnic colleges. Therefore, the number of applicants for National Examination and students of polytechnic colleges are statistically independent. Successful applicants can work at the same condition as the graduates of polytechnic college. The number of applicants is supposed to correlate with Ig/GDP as well as the number of fresh students in polytechnic colleges.

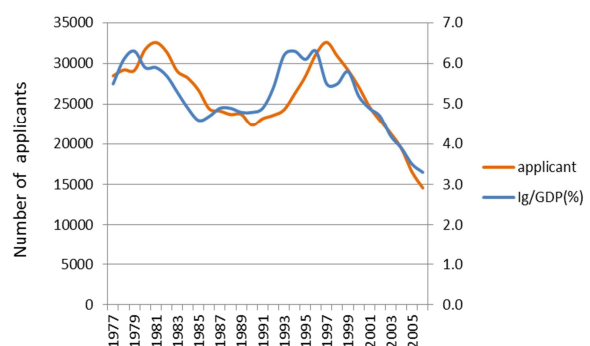


Fig.5 changes in Ig/GDP and number fo applicants for the National Assistant Surveyor Examination

Fig.5 shows the secular changes in Ig/GDP (% , right axis) and the number of applicants (left axis).

These two curves are similar and clearly correlated. The number of applicants has been decreasing from 1997 to 2006.

Taking a look at the peaks of 1979 and 1993 of these two curves, changes in Ig/GDP preceded the changes in the number of applicants. The reason would be that change in Ig/GDP is the cause of change in the number of applicants.

6. CONCLUSION

Shortage of young surveyors is serious in Japan. The number of fresh students in surveying courses of polytechnic colleges has rapidly and significantly decreased and is not enough to meet the demand of employment offered by survey companies.

Drastic cut of Investment of government (Ig) for public work is expected to be the major cause of the decrease of fresh students in surveying courses. However, correlation of these two factors is not clearly found.

The number of fresh students and the number of applicants for the National Assistant Surveyor Examination are correlated with Ig/GDP (%). This correlation can be simply interpreted in the following way; if Ig/GDP decreases, surveying looks less attractive as compared with other industries, and fewer students want to be surveyors and to take National Examination.

It would be impossible to expect that the Japanese government increase Ig because the gross debt obligations of the Japanese Government have exceeded 1000 trillion Yen, which is about 230% of GDP of Japan. Therefore, it seems to be difficult to expect more young applicants for professional surveyors. It is important for surveying industry including education to innovate the survey work which can be managed by private funds.

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BIOGRAPHICAL NOTES

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