Good afternoon.
My name is Jun Iwamatsu. I am a senior research fellow at Research Institute on Building Cost (RIBC), JAPAN.
I am very glad to have an opportunity to present today, following last year in Brunei. The title is “STABILITY AND CHANGE IN THE MANAGEMENT OF JAPANESE CONSTRUCTION ENTERPRISES IN RECENT YEARS: A MICRO DATA ANALYSIS”.

This paper analyzes the changes in the **profitability** and **productivity** indices of Japanese construction enterprises in recent years.

Same as the last year’s paper, the analysis used a very large database, called the **Business Evaluation Results (BERs)**, which is compiled and published under the **Construction Business Act**.

BERs data includes various contents of the construction enterprise, and the data scale is quiet large. The data used covers about **120,000 companies** between **2009 and 2011**.

The contents of the data released are many, such as completed work amount, financial conditions and number of engineers.

As **this database assigns an ID to each company**, it is possible to follow each company’s business performances overtime. Therefore, BERs is **a large-scale panel data** set that enables **both time-series and cross-sectional analyses**.
Let’s move on to the methodology of analysis.
The analyzed data was extracted in 3 points (please see the arrows in the figure). It covers fiscal year end dates between 2009 ~ 2011. Total no. of data are 114,000 ~ 120,000 companies per year.
We used two categories of analysis attributes. One is classifications of work type. We have selected 8 main work types out of 29. Such as 00. General construction, 01. Civil engineering, 02. Building, 08 Electrical, etc. And another is capital class. We divided the data into 3 class. Large, Medium and SMEs. Table 1 shows no. of enterprises by each analysis attributes. Sample size of Large is 184, Medium is 828, SMEs is about 100 thousand. And, these numbers should be sample size of the analysis hereafter.
These figures presents the total amounts of Sales, Gross profit and Ordinary profit. On each figure, the amounts are divided by the Principal work type and Firm size. These are the data for the analysis of next page.
With using the last page data, we can calculate the profit ratios. Left one is Gross profit ratio. Total mean of construction is 12.72%. Right one is Ordinary profit ratio, and the total mean of construction is 1.99%. These are arithmetic means.
These tables are the very same with the last figures. These shows arithmetical means of profits by the analysis attributes.
This figures show distribution of the Profit Ratio of large firms. It is presented by box-plots, putted on red scatter plots of individual firms. A box-plots presents half cases by a box from hinge to hinge, barred at the median. We can recognize the distribution. The profit ratios by firm are disperse and vary from one work type to another. These differences are even more pronounced in the case of medium enterprises and SMEs.
In these figures, the changes in the Net sales and Profit ratios of individual firms were shown in histograms. Based on the comparison of these analyses, the Net sales and the Profit ratios were found to be more varied when the size of the enterprise was smaller. And, changes in Net sales is stable, but the changes in Profit ratios are varied. The red vertical line in each figure shows median value. Median value of Changes in Net sales and Gross profit ratios point around zero, on the other hand, that of Ordinary Profit ratio shows minus value. This presents the market conditions around 2010 ~ 2011 in Japan.

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In other words, the smaller the enterprise is, the more unstable its management related statistics become.
In Japan, a construction company's net sales of completed construction contracts per engineer is an index that is akin to the productivity of that enterprise, and is thus often used as such in the construction industry.

So, below is considered as an index of productivity in the BERs data:

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\text{a firm's productivity} = \frac{\text{net sales of completed construction contracts}}{\text{number of engineers}}
\]

UNIT: Million Yen / Person

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The unit of a firm’s productivity is “million yen per person”.
These box-plot figure shows the productivity analysis by the firm size and work types. In the case of large firms, this index varies from one work type to another. But such differences are much smaller in the cases of medium enterprises and SMEs. As seen in the box plot of the SMEs, a large number of points are scattered outside the whiskers, indicating that a significant number of values are outside the general tendency. This may imply that the data includes SMEs that declared excessively large net sales of completed construction contracts.
These figure shows scatter plots of large firms. X axes are net sales. Y axes of the left figure is no. of engineers, and the right figure is productivity. We can recognize the difference of net sales and productivity between the work types.
This study used micro data from a large data set at 3 selected points in time to statistically analyze the changes in the management of Japanese construction enterprises.

The profit ratios by firm are disperse and vary from one work type to another. These differences are even more pronounced in the case of medium enterprises and SMEs. The fact that such findings were made from a micro data analysis is significant.

Moreover, because even basic analytical data of company management in other Asian countries is not easily accessible, comparisons of such data with Japanese data must be postponed to a future study.

It would be useful to exchange information of this kind by the cooperation of the member QS.
Thank you for listening.
If you have any questions, please contact me.