

Using Experiment To Help Understanding Valuation Issues

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Abstract: Traditional teaching method using lectures are unable to relate to real property valuation processes. Recent explorations of the experimental method have lead to its applications into the field of real estate. Experimental method utilize experiments and demonstrations to simulate real estate processes to examine various theories and hypotheses. The design of an experimental method involves: 1. Determine the learning outcome, 2. Design the experiment, 3. Implementation, 4. Statistical test and results. The main part of the study took place during three class days with the students divided into two groups. The Expeimental (EXP) Group is subject to observing a demonstration whereas the Control Group (CON) attend the normal lectures. The test scores are analysed using mean score of EXP and CON groups and mean difference analysis using ANOVA analysis. The ANOVA shows significant differences between the two groups of students in understanding valuation smoothing. The group that has undergone experiments is found to have a higher score in the test and shows better understanding towards the smoothing processes. Significant statistical difference in mean test values implies the success of the application. The experimental method is found to improve understanding theoretical principles and improve problem solving skills. Upon successful validation of the method, it can be applied to other similar topics/issues in the same subject or other subjects. Thus widening the teaching delivery options in the classroom other than lectures, tutorials, case studies etc.

Keywords: *experimental method, teaching and learning, valuation smoothing*

INTRODUCTION

The use of multimedia and case studies in the teaching on real estate topics are common these days. Subjects which involve practical applications tend to employ cognition practice and market research to train students. However these methods do not allow students to participate and experience first-hand the real property market processes and operations. Students could only observe and study as an onlooker without practical experience and involvement. This has prevented the students to have a deeper understanding of the processes or issues at hand. Traditional teaching method using lectures are unable to relate to real property valuation processes. Recent explorations of the experimental method have lead to its applications into the field of real estate. Experimental methods have been adopted recently to aid teaching not only in economics and finance but also recently in real estate (e.g. Yavas & Sirmans (2005), Seiler et al. (2013), Seiler (2014)). Experimental method utilize experiments and demonstrations to simulate real estate processes to examine various theories and hypotheses. Teaching that use experimental method is found to improve deeper understanding for students who do not have practical experience or having taken part in any of the economics processes.

LITERATURE REVIEW

Valuation smoothing is a temporal lag bias in valuations of real properties. As reported by Clayton et al. (2001), the lag bias is due to valuers valuing the same property in consecutive periods to anchor onto their previous appraised values resulting in more lagging than first time valuations. Due to infrequent transactions, valuers have to combine indications of value from the most recent comparable sale with past appraised values to arrive at the value that is actually reported for a given building each period. The extent of bias inducing behavior appears to vary over time and is affected by the quantity and quality of contemporaneous transaction information changes. Northcraft & Neale (1987) show that anchoring and adjustment perspective introduce biasness in the determination of property pricing. This temporal lagging is further actuated with the aggregation of property values within an index. This problem arise due to the fact that each valuation is not conducted at the same point in time. When property values are appraised at different points in time throughout each calender quarter, yet all these

valuations are averaged together to produce the quarterly index, then the index will be a moving average of spot values. This can result in smoothing with the volatility of the indices being lower than actual market values thereby understating the variability of returns in the property market. In another words the true standard deviation (or risk) is much higher for the de-smoothed indices. It tends to be worse for monthly & quarterly index series than annual series.

The implications of smoothing are as follows:

- (a) Understate the variability of returns in the property market,
- (b) The index will tend to lag underlying property market value changes,
- (c) The smoothing will add significant positive autocorrelation (i.e. apparent inertia or self- predictability) into the index.

Barkham & Geltner (1994) study property indices and find that they are prone to smoothing and lagging. This is a result of the fact that property indices are based on valuations, which are lagged thereby understating the true volatility of property returns. The authors suggest that the smoothing of property indices can be great enough to bias investment policy and decision making. Zhang et al. (2013) incorporates experimental methods into the teaching of real estate education. An experiment was carried out on property pricing bubbles where students participate in the experiment to understand better the property asset pricing bubble theory. Students are given a certain amount of Experimental Currency Units and a virtual house to trade in buying and selling houses under double auction market. Students are free to make and accept offers. The price offered will become the the market transaction price when it is accepted by another student. All offering and transaction prices are openly observable by all students. Prior to the experiment, the underlying concepts relating to a property pricing bubble is explained to the students. A bubble means the home's price is higher than its fair market value. The unique characteristics of real estate in terms of heterogeneity, immobile, low frequency of transaction etc. has prevented students of real estate in actual experience of buying, selling and trading of properties. The experimental method serves the purpose of providing the necessary exposure and experience to simulate actual economic processes that affect real estate . Nuriddin & Yavas (2012) using an experimental study approach found that cash flow volatility and price volatility affects pricing. Ong, S. et al. (2003) apply experimental method to examine oligopolistic

bidding and pricing in real estate.

RESEARCH METHOD

Experiments are an excellent way for the controlled testing of causal processes. The experiment tests the effect of an experimental stimulus (the independent variable) on a dependent variable through the pretesting and posttesting of experimental and control groups. It is important that the experimental and control groups be similar to each other. Neither the experimenter or the subjects knows which subjects are in the control and experimental groups i.e. double-blind. Randomisation is used to achieve comparability in the experimental and control groups.

The design of the experimental method for this research involves:

1. Determine the learning outcome
The learning outcome is to understand better the valuation smoothing process.
2. Design the experiment
The main part of the study took place during three different class days over three weeks. On the first day of assessment, the researchers came to class and distributed two types of materials to all students: math assessment and notes explaining valuation smoothing.

In the next class period, students attended a traditional valuation smoothing lecture presented by their regular instructor. In the third and subsequent class period, all students first took a valuation smoothing assessment (i.e., pre-test 1). Following pretest 2, the CONTROL (CON) group was excused from class and the TREATMENT (TRTMT) group stayed to watch the 30 minutes demonstration and experiment. Immediately after the demonstration and experiment, the TRTMT group took the valuation smoothing assessment for the second time (i.e. post-test). In our study design, we did not assign the CON group a different intervention.

3. Implementation stages
 - a Explain the theoretical principles to the students
 - b. Conduct the experiment

4. Analysis
Analysis are carried out using mean score of EXP and CON groups and mean difference analysis using ANOVA analysis. Significant statistical difference in mean test values implies the success of the application.

Students in this study are students enrolled in a Masters programme during the 2016-2017 academic year. Apart from the treatment group's use of demonstration and experiment, efforts was made to maintain homogeneity both between and within the control and treatment groups. The number of total contact hours between the students and lecturer was equal, except the treatment group has one extra 30 minutes demonstration and experiment session. All students in the sample use the same required lecture materials and covered the same topics.

Analysis of variance is used for assessing the statistical significance of the relationship between categorical independent variables and a single continuous dependent variable. It evaluates experimental hypothesis by assessing treatment effects by comparing the means between two groups of subjects that are treated differently. It is assumed that differences between the scores of the groups will be due to a combination of a systematic treatment effect and unsystematic group differences (random error). It is also assumed that differences in the scores within each group will be due to unsystematic individual differences (random error).

RESULTS AND DISCUSSION

The data is of categorical nature where the values refer to the number of cases that fall within particular categories. For categorical data, a non-parametric test is applied. The non-parametric test can be applied to non-normally distributed sampled populations. The participants are unrelated samples as one group has been subject to an experimental treatment while the other group has no treatment. Table 1 shows the mean score between the two groups before the experiment. The F-statistic shows no difference

between the mean values of the two groups.

Table 1. Comparing the means of scores between Control group and Experimental Group (pre-experiment)

Group	Number	Mean	Standard Deviation	F stat	Sig
Control	18	43.29	19.45	0.000	0.987
Treatment (Pre-experiment)	18	42.86	18.74	0.000	0.987

Table 2 shows the mean score between the two groups. The mean score of the Treatment Group is higher than the Control Group. The F-statistic shows significant difference between the mean values of the two groups.

Table 2. Comparing the means of scores between Control Group and Experimental Group (post experiment)

Group	Number	Mean	Standard Deviation	F stat	Sig
Control	12	44.63	19.62	0.000	0.987
Treatment (Post-experiment)	12	50.50	19.85	2.307	0.987

It can be concluded that the experiment method has contributed to the improvement of understanding of the valuation smoothing process by the students. It can also be inferred that the experimental method is the intervention in the learning process that has contributed towards a better understanding of valuation smoothing by the postgraduate students.

Like all research methods, experimental method has its strengths and weaknesses. The strength of experimental method is the clear ability to isolate the independent variable which permits causal inferences. Experimental methods are also relatively easy to be replicated. There are scientific rigour in the methodology of experimental methods.

The primary weakness is the artificiality whereby what happens in an experiment may not reflect what happens in the real property world.

Also experimental findings may not reflect real life situations, hence the issue of external validity on the results of experiments. Another limitation is that there might be interaction between testing and the stimulus which could affect external validity.

CONCLUSION

One of the main cause of valuation smoothing are valuers use historic comparable transactions in the property valuations and are slow to adjust values for new public information. The experimental method is found to provide a teaching tool that could make the valuation process explicit thereby enhancing the learning experience and understanding of students on the valuation smoothing issue. Further topics on the valuation of land and buildings can be investigated to examine its suitability to be taught using the experimental approach. The experimental method is found to be suitable for valuation processes that are implicit and not observable. Further successful application of the experimental method will provide evidence that the experimental method could contribute as a useful teaching tool in the teaching and learning of real estate valuation.

ACKNOWLEDGEMENTS

We would like to thank Reasearch Managemet Institute (RMI), Universiti Teknologi MARA for the ARAS Research Grant that has funded the research of this study.

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