AN EXPERIMENTAL STUDY OF AUCTION AND TENDER BEHAVIOUR

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ABSTRACT

An experimental laboratory simulation of property sales and management was used to study auction and tender bidding behaviour. The simulation creates a model property investment environment where subjects have the opportunity to purchase property, but must then manage it profitably to succeed.

The experiment revealed that in a well-informed, mildly optimistic market, tender sales returned prices close to rational capitalised values, whereas auction sales returned premiums. Moreover, when sets of properties are auctioned in succession in a single auction session, there appears to be a learning effect on prices. The paper relates the experiment to the developing literature on the behavioural study of property auctions.

Keywords: Price formation; behavioural property; property cycles; experimental property research; auction behaviour.

INTRODUCTION

Auction sales are very peculiar social/psychological events. Bidders may come to an auction cognisant of the rational value of an asset, but expecting a bargain due to the circumstances of the sale. In the heat of the moment, they may bid beyond the limit that they had previously set. Likewise, an auction session is made up of a series of individual auction sales, where each sale is essentially independent, but early results may have an effect on subsequent bidding patterns. In each case, the price may not reflect a sober analysis of the rational value of the asset, but rather complex psychological factors that are beyond the scope of conventional economic theory.

A prudent, well informed bidder should be prepared to initially bid low, but also be prepared to outbid any competitor whose bid is perceived as lower than rational expectations. This has given rise to the theoretical expectation that prices obtained at auction should be the best indication of value, since they result from the free interaction of informed market participants who should rationally outbid any discount bid, but stop at the rational value. Lusht (1994a) raised some queries concerning this conventional wisdom, citing the problem of what he referred to as the *winner's curse*. He contended that in analysing the value of a property, some prospective purchasers would make errors in their appraisal, either through ignorance, mis-allocation of risk or simple arithmetic error. He noted that the person who erred most optimistically might win the property, but would be most likely to have the investment fail. It is also possible that the second last bid could be the rational price, on the basis that the final bid clears competition by exceeding the financial value of the asset. Lusht (1994b) found that bids at auctions were at discounts compared to rational valuations, as did Allen and Swisher (2000) and Mayer (1998).

These authors were also interested in the patterns of prices within the auction session. Lusht (1994b) found that prices declined through the auction, while Allen and Swisher (2000) found they improved and Mayer (1998) found no significant price trend.

The peculiarity of auction price formation suggests extra-economic behaviours that produced unexpected pricing results. Their results indicate that real estate markets may be better understood using behavioural methods following the general suggestion of Earl (1983) and its property specific expression by Diaz (1999) or Hardin (1999). By contrast, sale by tender has no social interaction. Bidders have only information and must estimate how high they must bid to win over informed competition without paying so much that the asset will not be profitable to use. The variables here are the quality of market information and an estimate of the keenness of the competition.

This study is an attempt to understand market behaviour experimentally. It seeks to better understand biases evident in the behaviour of actual bidders compared to its rational financial value computed by sober analysis of the asset's earning potential. It uses as a control condition, a highly competitive, fully informed market where highest and best use, financial parameters, and valuation methodology are all held constant. In this environment, it tests the ability of tenders and auctions to produce rational price outcomes. The difference between the two is considered to be the result of the psychological impact of the auction situation. Further, it tests the behavioural impact of uncertainty by slightly varying the quality of information within a tender environment, while holding all other variables constant.

AIM

To experimentally examine behavioural biases resulting from the property auction environment.

OBJECTIVES

1. To identify pricing differences between auctions and tenders in a controlled market.

2. To examine behavioural trends within an auction session.

3. To test if the auction prices conform to rational expectations.

4. To examine the impact of uncertainty in pricing behaviour.

HYPOTHESES

1. Tenders should return prices close to rational expectations in a competitive, fully informed market.

2. The auction situation can influence bidding behaviour.

3. Earlier sales within an auction session can influence later bidding behaviour.

4. Uncertainty is poorly priced.

PROCEDURE

An experimental methodology was employed involving a simulated property market following generally accepted experimental design (Sarantakos, 1993). The experiment involved having groups of subjects play a game that simulated a property market. The simulation began with the competitive sale of a limited number of investment properties, followed by simulated annual rental negotiations between property owners and tenants. Important in the design was the control of confounding variables. The rental negotiation phase of the simulation is described, along with a general description of the game and its rules in Small and Oluwoye (1999) that examines rental market formation. Some aspects of the simulation, such as the choice of five-lot parcels and the tendency to use tenders in latter simulations, pertain specifically to its use in exploring rental formation behaviour and are not pursued here.

Subjects were given an outline of a market where the currency unit was the bag of gold (**฿**). The highest and best use of the property assets, along with operating and living costs, were publicly known. Subjects aimed to achieve the greatest wealth by either productively occupying property as tenants, or earning rent from it as landlords, over a number of simulated years with leases negotiated annually. All subjects could bid to purchase property parcels at the beginning of the game/simulation. Each parcel consisted of five identical units. This meant that for every landlord, there were five tenants and also that there was a high level of competition for property purchase. The productivity of the units varied by parcel as shown in Table 1. Tenants had costs and subsistence expenses of **฿**50. From this information, the maximum rental potential of each unit could be computed. The number of parcels released was calculated to leave a slight under-supply that was compensated for by the provision of rent-free low productivity property called *commons*. This simulated public welfare (unemployment allowance and public housing), but offered no savings potential to tenants. As such, it gave tenants extra mobility, but frustrated any hope of them earning bonus marks for savings.

Property purchases were funded by interest free mortgages that had to be paid for entirely from the rent earned in the first four years or they were foreclosed and the owners were bankrupted. This simple financing structure meant that the maximum bid price could be computed from expected rents less the landlord's costs (**฿**30 per year) using a simple four-years-purchase computation.

In a perfect market, rents could be expected to be negotiated up to the maximum using Ricardian theory. Conversely, the availability of the commons set a ceiling on rents since any attempt by individual landlords to ask for prices above the Ricardian maximum would send tenants onto the commons. Hence, the maximum bids were easily computed from transparent market information. These bids are referred to as the *rational prices* because they are derived mathematically from reasonable market participant behaviour. They are listed in Table 2. Furthermore, the rational prices are considered the maxima since there could be vacancies if tenants chose to occupy the commons, or sub-optimal rents since the tenants goal was to achieve some savings that could only happen if rents were lowered. Shrewd bidders were therefore expected not to bid to this level and any bids above the rational prices were not expected to result in successful investments if tenants acted rationally.

Table 1: Land Market

Grade	Parcels	Lots	Product	Rational Rent	Maximum Rational Bid Price
1	1	5	150	100	*1880*
2	1	5	140	90	*1680*
3	1	5	130	80	*1480*
4	1	5	120	70	*1280*
5	1	5	110	60	*1080*
6	1	5	100	50	*880*
7	1	5	90	40	*680*
8	1	5	80	30	*480*
9	1	5	70	20	*280*
10	1	5	60	10	*80*
11	*Commons*	*5*	50	*0*	*State owned*
12	*Commons*	*5*	45		*State owned*
13	*Commons*	*5*	40		*State owned*

The game has been found to be an effective teaching device as well as an experimental tool (Small, 1999). The running of the simulation as a teaching exercise had the additional advantage that rewards and penalties could be easily set as a consistent part of the simulation. The exercise was allocated 5% towards the final subject grade, with bonuses for outstanding performance enabling the winners to score up to 9 marks towards their final grade. Diaz *et al.* (1999) considered the importance of rewards in this type of experiment and the design of this experiment is in good accord with their recommendations. As well as proving to be a successful behavioural experiment, it has proven to be very popular with students who tend to rate it as one of the outstanding exercises within the subjects in which it is run.

The simulation is structured to facilitate observation of the formation of both rents and sale prices. Small and Oluwoye (1999) found that it was a consistent and valid experimental tool that yielded useful insights into the operation of rental theory. Those studies focused on the rental market. That study found that the simulation returned results consistent with rental theory operating within a near-perfect market. On that basis, the rental estimation and capitalisation valuation can be adopted as reliable for this study.

The ownership and property value formation were a necessary part of the total simulation. By allowing subjects to competitively bid for land, the prices were expected to absorb the marginal value of the different parcels and therefore place property owners on an equal footing. In that way, it was expected that they would all be similarly motivated to seek optimum rents, which was what was found in Small and Oluwoye (1999).

Property sale was competitive, so that the subjects themselves formed the market. In each run of the simulation, either auction or tender bidding was used. The properties were all sold in order of diminishing value. Future trials may consider changing this order. Each subject could enter the bidding, though ownership was limited to one parcel per subject. Subjects were not obligated to bid if they considered the risks too great.

The experiment was run a total of eight times between March 1997 and March 2001, as shown in Table 2. Runs 1 & 2 used auctions, while the remainder used closed tenders. To test the relationship between auction and tender pricing, auction runs 1 & 2 are compared to the matched tender runs 4 & 6. Each of these uses first year subjects. Tender runs 4 - 8 investigate the effect of learning by comparing the naïve subjects in runs 4 & 6 with experienced subjects in runs 5 & 7. Small and Oluwoye (1999) found that learning had little influence on rental markets as they were highly efficient in a well informed environment regardless of prior experience. While rental markets were found to be rational and efficient, it is possible that experience may temper tendencies towards bidding above a rationally supportable level.

Subjects in simulation 3 were told that *"productivities would increase sometime after year one"* before they computed their tenders. This was to inject a small level of optimistic uncertainty into the market information. The simulation typically ran for five or six simulated annual rental cycles, of which the first four were critical for landlords, since they were bankrupted if they failed to pay for their property in that time and were punished with a zero grade for the exercise. Since the productivity increase was not specified, and could happen in years five or six, a prudent bidder was not expected to place great value on it, especially in view of the penalty that over-ambitious expectation would have on final subject grades. Simulation 5 was used as a control for this run, as both it and simulation 3 were second year students with comparable prior experiences of the exercise.

SUBJECTS

Subjects were first and second year undergraduate real estate students. They were considered an appropriate sample because of the following:

1. Their interest in real estate could be expected to be greater than the average and representative of lay investors/tenants.

2. Their knowledge of real estate could be expected to be reasonably uniform, though not well developed. As such, they could be expected to reasonably mirror the profile of the majority of small real estate investors and tenants. Their behaviour could be expected to follow rational economic utility optimisation.

3. By incorporating performance in the exercise into subject assessment, meaningful rewards and punishments could be incorporated into the game.

4. Their attention and continuous availability was reasonably assured.

5. Their motivation could be confidently expected on the basis of the game's learning potential and the competitive spirit encouraged within the programme.

Ethical aspects of the simulation were considered due to the use of human subjects with limited experience. The risk of severe penalty for poor performance was identified as a possible issue, especially as it contributed to final grades in an undergraduate subject. Subjects were therefore permitted two options in participating in the exercise. One option was to be eligible for the bonuses and penalties that could result in marks between minus 2 and plus 9 out of a nominal 5 mark allocation. The second option was

risk adverse, and involved being graded in a conventional manner out of five, with no rewards and penalties. Subjects taking the second option were not permitted to bid for property and on average earned about 3/5. Since students had the choice to take risks or not, and even the risk-takers did not have to bid for property, it was considered that the simulation met ethical requirements. The high regard held by students for the simulation is an additional support for its claim to be ethical in its treatment of subjects.

RESULTS

The prices paid for the parcels sold in each simulation are shown in Table 2.

Table 2: Parcel Sale Prices

Simulation number		1	2	3	4	5	6	7	8
Sale type		Auction	Auction	Tender	Tender	Tender	Tender	Tender	Tender
Market sentiment				*Optimistic*					
Student year		1	1	2	1	2	1	2	1
Grade	Rational	1997	1998	1998	1999	1999	2000	2000	2001
1	*1880*	1950	1920	2800	1880	1880	1800	1880	1880
2	*1680*	1815	1790		1680	1680	1590	1680	1710
3	*1480*	1700	1720	2080	1480	1480			1480
4	*1280*	1626	1655			1280	1140	1280	1280
5	*1080*			1900			1200	1120	1060
6	*880*	1420	1586		880	880	780	880	1080
7	*680*	1323	1215	1080		680	500		880
8	*480*	1040	855			460	420	480	480
9	*280*	610	510	780	280	220	120	240	300
10	*80*	290	370		80	60	800	40	87
Average premium:		339	322	648	0	-11	3	-5	44

DISCUSSION

For the purposes of comparison, premiums above the rational maximum prices have been used to normalise the successful bids. Four questions will be considered as follows:

- Are the tender prices significantly different to the rational prices?
- Is there a learning effect with experience with the simulation?
- Do auctions return significantly different prices to rational expectations?
- How does optimism affect bidding behaviour?

Tender pricing and rational values

The tenders have an average premium of only **฿**3.5. Given that the standard deviation of the sample mean for the tender simulations is **฿**20.3, the tender prices are not significantly different to the rational values at the 0.05 probability level. Using the 42 observations that compose the normal tender simulations, the standard deviation for a single price within the sample is **฿**131.6. Using them as an estimate of the population of rational market pricings, returns an estimated population standard deviation of **฿**133.2. The small difference between these two statistics suggests that **฿**133.2 may be

confidently adopted as a conservative estimate of the population standard deviation for further analysis. This facilitates the analysis of the auction and optimistic tender simulations using the simpler Z-test rather than the more common t-test. Since t-testing uses particular sample means to estimate population parameters, it has the weakness of being forced to rely on small sample sizes to estimate parameters that are consequently less likely to be reliable.

Learning and tender pricing

The tenders for naïve subjects averaged a premium of ฿16.6, whereas for subjects who had experienced the experiment previously, the average was a discount of ฿8. While this appears to suggest a learning effect, it is not statistically significant at the 0.05 probability level. Both results could be part of a single distribution with a population mean equal to the rational prices. Perhaps further research may add power to the data sufficient to demonstrate significance, but at this point, learning cannot be said to produce a statistically significant effect.

Auction versus tender behaviour

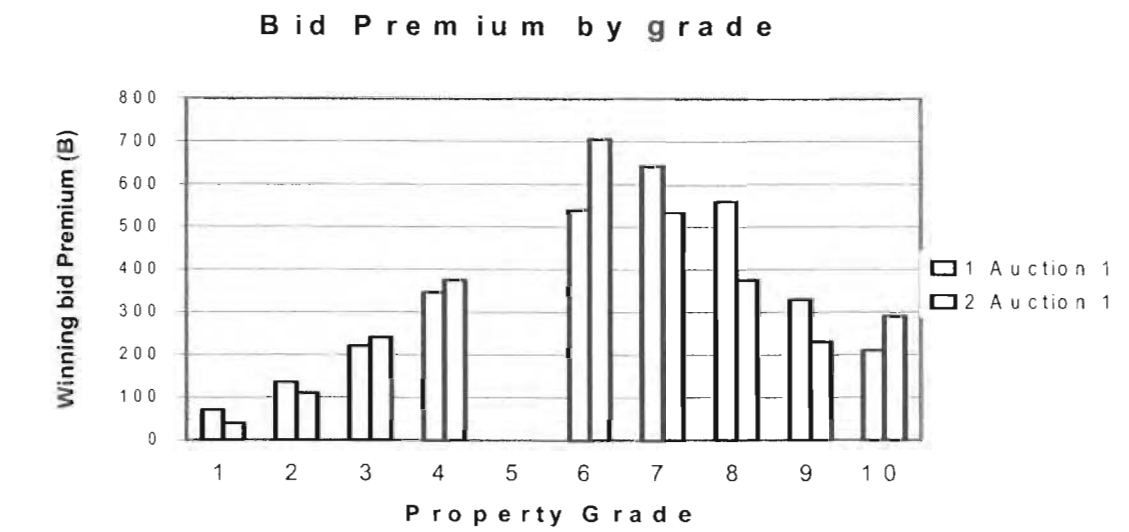
The auction simulations in runs 1 & 2 may be matched to tender simulations 4 & 6. All use first year students as subjects who have had no previous experience of the experiment. The auctions have a net average premium of ฿331, whereas simulations 4 & 6 have an average premium of only ฿1.5. The standard deviation of the sample mean of the combined auction results is ฿31.4, which produces an observed Z score of 4.42 for the auction mean compared to the tender mean. For a 0.01 two-tailed test, the critical Z score is 2.57, which means that the results support the hypothesis that the auction results do not come from the same population as the tenders.

This means that the auction prices are statistically different to the tender prices, in this case exceeding them. Since tenders have been shown to return prices that are not significantly different to rational values, it can be concluded that auctions can return prices that are different to rational prices.

Auction behaviour

The properties were offered for auction in order of their grade in both auctions. The pattern of premiums paid during the auction sessions is shown in Figure 1. They display a similar tendency to have only moderate premiums for the first properties offered, rising to a peak in the middle grades.

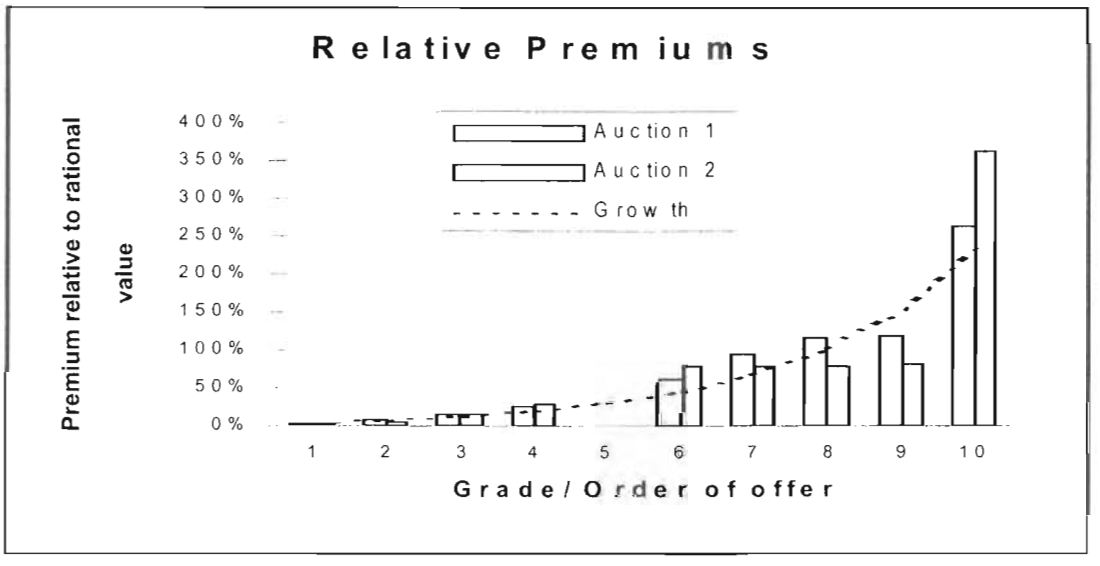
Figure 1: Auction premiums in order of offer



An initial interpretation could be that the market used the result of each successive auction sale in the first part of the auction session as data in making decisions regarding maximum bids. This would appear to be contradicted by the diminution in the second part of the session, but that could be explained an increasing realisation that the premiums could not be successfully supported, especially on properties of diminishing value.

Alternatively, the parcels were sold in order of diminishing value, so the growth in premiums may have been related in some way to the values of the properties. Figure 2 plots the premiums relative to the rational values. This shows a consistent relative increase through the auction session. Figure 2 illustrates this by adding a simple exponential growth curve (initial 6% premium, growing by 55%) which produces a visual fit to the observed data.

Figure 2: Relative Premiums



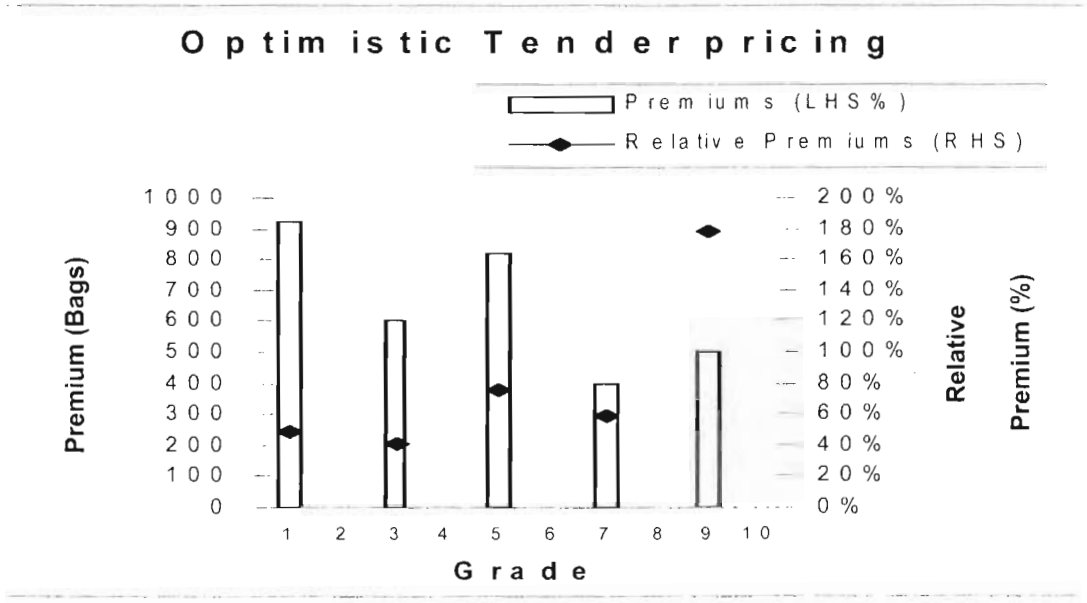
A behavioural explanation for this may be that the early premiums may have come from bullish bidders who were keen to become landlords at any cost. The successive prices may have resulted from the effect of a psychological reassurance provided by each previous sale. Despite the apparent elegance of this explanation, it infers some subtle mathematical analysis on the part of the bidders. It would mean that before making a final bid, subjects would have had to compute the pattern of previous premiums relative to their initial calculations of rational value, recognise an exponential growth curve and adjust their maximum bid decisions accordingly. This would appear to be beyond the conscious capabilities of naïve subjects.

What is clear, however, is that the progress of the auction session does have the capacity to affect bidder behaviour. The force and direction of the influence probably depends on other factors, such as market confidence and the strength of the desire to own property at any cost. If bidders during an auction session take cues from previous sales in the session, then this could incline prices either way. Although a pattern of premiums emerged in this experiment, in a fire sale environment, the trend could be for discounts. This would explain the variation in findings in the literature. Obviously, this is an interesting area for further research, especially by varying the order of offer through the auction sessions.

Tender behaviour under uncertainty

Simulation 3 was executed using tender, but subjects were told that there would be *a productivity increase sometime after year one*. The actual benefit suggested here is high risky. Its magnitude is not specified and it may not happen until after the critical first four years. The prices bid reflect an inability to price this risky prospect of future benefit. Figure 3 shows that there is no evidence of a systematic pattern in the bids. This further suggests that those patterns were indeed artefacts of the auction situation.

Figure 3: Tender premiums in an optimistic environment



The premiums averaged ฿648 and yielded an observed Z score of 10.8, which was a statistically significant departure from the other tenders and even the auctions. Simulation 3 could be most strictly compared to simulations 5, as they both used experienced subjects who had first done the experiment using auction. While this does not materially affect the statistical analysis, the fact that the other experienced subjects returned discount prices underlines the force of even risky optimism in distracting bidding behaviour from rational financial expectations.

SUMMARY

The preliminary conclusion from these results is that in a sober, competitive, well-informed market, tenders appear to return rational prices, whereas auctions under the same conditions appear to return premiums. The simulation that contained expectations of unspecified future growth appeared to be the least restrained by rational computations.

In actual markets, knowledge is seldom as complete as in these simulations. If it is the case that optimism can so bias bidding behaviour as to take it well out of the realms of what could be considered rationally defensible on financial grounds, it may be a major factor in price formation in actual markets.

IMPLICATIONS FOR PROPERTY CYCLES

There have been many attempts to explain property cycles, and there appear to be several possible explanations for them. However, the behavioural tendencies suggested by this experiment may also be applied to general market behaviour in a way that results in a mechanism that is capable of producing regular market fluctuations.

The two behavioural tendencies found in the simulations appear to be consistent with wider market behaviour. If bidders do take signals from recent sales, then the effect may extend outside the auction room and applied to other instances of sequential sales to suggest behavioural mechanisms in the real estate market generally. The trend in recent sales may therefore be a major factor in bidder expectations of the likely winning bid in a coming sale. This is common experience; in a rising market, all participants tend to expect the trend to continue.

Likewise, if the irrational pricing of optimism is a widespread reality, then it may have an inordinate influence on any market that adopts unduly optimistic expectations. A market that somehow develops optimism that property worth will increase in the future may therefore inordinately value this expectation.

These two mechanisms could combine under optimistic conditions to explain the boom phase of the property cycle. If pessimism causes comparably inordinate undervaluing of assets with the market taking cues from previous sales, then the negative correction phase of the cycle is also explained.

Small and Oluwoye (2000) suggested a conceptual model for the real estate cycle based on these two mechanisms, with turning points related to financing and yield triggers. Such a model has the advantage that it results in simple mathematical relations that describe the oscillations of the market and has the capacity to accommodate both

deterministic and chaotic fluctuation patterns. This study provides an important support for that conceptual approach. The key variable then becomes a quantification of optimism and the key research issue for understanding market fluctuations is the mechanism by which markets switch from pessimism, through neutrality, to optimism and back again.

CONSISTENCY AND VALIDITY

Experiments are only useful for research if they produce consistent results when repeated and have a valid relationship to the actual situation that they model. In this experiment, simulations 1 & 2 and 4-8 may be used to check for consistency for auctions and tenders respectively. In both cases, the results indicate consistency.

Validity is more difficult to prove. Three issues must be considered. Firstly, validity applies only to the causal mechanisms under investigation. Secondly, the control of other variables must be sufficient to eliminate spurious experimenter effects to contaminate the findings. Thirdly, the critical causal mechanisms operating in the simulated environment must operate analogously to those in the real world. These issues will be dealt with in reverse order.

In both the auction and tender runs, the sales processes operated exactly as they do in the real world. In addition, the bidders were part of sufficiently large populations of interested persons who were motivated to acquire property competitively to mimic the real world. In all runs, the subjects were exposed to similar psychological conditions to the real world: there was a small degree of uncertainty, a present challenge of competitiveness, possibly self-consciousness and pride, and some level of fear of failure. These critical similarities would support the claim of validity. Perhaps student subjects could be criticised as being more reckless than real world investors, but the data from the tender runs shows that they were capable of prudent behaviour. Perhaps they may have been more susceptible to the psychological pressures of the auctions, but if this was the case, it would suggest that the experiment was not so much invalid as oversensitive. The conclusions from the experiment do not assert quantitative relationships, so over-sensitivity is not problematic, even if it can be proven.

The experiment aimed at controlling all variables not directly associated with the sales process. This meant that several extraneous factors were simplified or even omitted from the simulated environment. These include units and volumes of currency, valuation methodology, financing mechanisms, actual property descriptions, property management strategies, cyclical influences and potential capital gains. None of these factors were under investigation and hence they could be simplified or omitted so long as the result did not impact on the behavioural mechanisms under investigation. While it is recognised that they may obscure the effect of the essential pricing behaviour attributable to the independent variables studied here in real markets, this fact makes their control all the more important if we are to answer the question of whether the auction room can distort bidding behaviour from rational pricing etc. That is, the fact that this experiment controls or excludes these variables has no impact *per se* on validity.

Finally, since the experiment created an environment wherein the critical mechanisms operated analogously to the real world and the control of other variables was defensible,

the experimental findings must be valid, even though they may not be apparent in real world markets due to being swamped by extraneous factors. This does not mean that their validity is unbounded. The experiment has shown that the auction situation has the power to deflect bidding away from rational expectations. The validity of the experiment may not extend to the claim that the auction effect should always produce a premium, or that the premium should be of a magnitude similar to the experimental.

RELATIONSHIP OF FINDINGS TO THE LITERATURE

The auction premium effect is counter to most of the literature; Lusht (1994), Mayer (1998) Allen and Swisher (2000), and Brennan (1971) all found that auction prices were at discounts to expected values. However, the instances examined may have carried other implicit expectations of lower prices. For example, Allen and Swisher (2000) studied properties sold at an auction devoted to mortgage defaults. Buyers could be expected to expect discount prices under these forced sale conditions, especially as they often occur at depressed parts of the property cycle. Similarly, Lusht (1994) studied the sale of bank branches in Australia as they were released in bulk onto the market. Likewise, buyers could have expected discounts under these conditions or could have been suspicious of the long-term prospects signalled by the bank's choice to liquidate its property. Brennan (1971) examined early auctions in Canberra (Australia), finding them to return heavy discounts as evidenced by later private re-sales. In that case, there was considerable uncertainty regarding the viability of the Australian Capital Territory as an urban centre. All of these instances were blighted by either undue pessimism or the self-fulfilled expectation that the sales would be at a discount.

At first sight, the positive trend within auction sessions also appears to only correspond with some of the literature, and is not substantiated by the majority of real-world studies. This may be because of other behavioural issues. This study has concluded that bidders appear to use earlier sales in an auction session in forming their final opinion of market sentiment and hence their maximum bid. If the earlier sales were at discounts to expectations, then this may be taken as evidence that deeper discounts should be expected and bids limited accordingly. Hence, despite returning a trend opposed to many other studies, this study supports the conclusion that the auction session itself can influence prices. In this way, it fits into the literature without contradiction. A direction for further research is to use optimism/pessimism as the independent variable in order to expose the effect of market sentiment on the direction of prices in an auction session.

CONCLUSION

This experimental approach appears to offer insights into the behaviour of property purchasers. In a well-informed, moderately optimistic market, the tender process appears to return prices close to rational financial evaluations. By contrast, auctions appear to encourage prices at a premium to the underlying rational value. Moreover, bidders appear to use earlier sales in an auction session in setting their bids. The precision with which optimism is priced appears to be poor. Uncertain prospects of future benefit appear to be given irrational premiums, suggesting a behavioural flaw in bidder rationality.

All of this suggests that while subjects can display rational behaviour on occasions, other factors can influence market behaviour. The three factors revealed in this study are

the type of sale (auction versus tender), the influence of peers (being the previous successful bidders in auction sessions), and the valuation of uncertain future prospects (optimism or pessimism).

One advantage of the experimental approach is that it can be designed to focus on these variables in a way that field studies cannot. Indeed, it would appear possible to design experiments to explore their actual operation in a way that cannot be done by *post-hoc* study of actual auctions. The simulation/game that forms the basis of this study would appear suitable for this purpose.

The inordinate pricing of uncertainty is a finding that deserves closer study. If optimism can produce unduly bullish markets, then its absence may explain the discount pricing found in previous studies. Auctions do appear to be well regarded as an effective marketing method, which would not be the case if they always returned discount prices. This author noticed a trend towards auctions during the strongly rising market in 1988 in Sydney that appeared to return premium prices, similar anecdotal evidence suggest discounts in other markets in other market conditions. A systematic study of this relative popularity would be necessary before drawing firm conclusions.

The behaviours revealed in this experiment are sufficient to explain market behaviour in boom conditions and perhaps in the pessimistic phase of the property cycle as well. This would appear to provide sufficient behavioural mechanisms to construct a behavioural theory of property cycles.

The experiment appears to produce consistent results and is arguably a valid tool for understanding actual property market behaviour.

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