Pacific Rim Real Estate Society (PRRES) Conference 2000

Sydney, 23-27 January 2000

THE INFLUENCE OF CLIENTS ON VALUATIONS: THE CLIENT'S PERSPECTIVE

DEBORAH S. LEVY* EDWARD J. SCHUCK

Department of Property The University of Auckland PO Box 92019 Auckland New Zealand

• Contact author for all enquiries

Phone: 64-9-3737599 ext 7331, Facsimile: 64-9-3082314, E-mail: d.levy@auckland.ac.nz

Keywords: Valuation Smoothing; Client Influence; Client Pressure; Ethics; Behavioural Approach; Interviews

Abstract

The high frequency with which references to the "political pressures" faced by valuers appear in the literature on valuation bias suggests that client influences are an important source of such bias. However, the volume of research that has considered explicitly the issue of client influence is small and almost entirely anecdotal in nature. Furthermore, all published studies focus on specific types of influence and are motivated by anecdotal evidence, media reports or the authors' personal experience. This article reports on the second part of a two-part study that seeks to redress these shortcomings. The study considers the theoretical potential for client influences to bias valuations, and assesses the validity of the resulting framework by seeking input from practising valuers and commissioning clients. The first part of the study involved a series of individual in-depth interviews with senior New Zealand Registered Valuers. Analysis of these interviews indicated that the primary factors affecting the degree to which clients influence valuations are the type of client, the characteristics of valuers and valuation firms, the purpose of the valuation and the information endowments of clients and valuers. The second part of the study, reported here, involved a series of individual interviews with senior New Zealand property executives responsible for the management of large portfolios of institutional-grade property assets. Our results indicate that clients with expertise and a high level of knowledge of the property market are able to influence valuers by way of expert and information power. Opportunities to exert influence are afforded by the fact that clients have a tight control over the valuation process in particular the common practice in New Zealand of permitting clients to review draft valuations prior to their formalisation.

1. Introduction

Investors require market valuations of assets for investment and lending decisionmaking and the measurement of historic performance. In contrast to financial securities, the procurement of market valuations for properties is problematic. Financial securities are standardised debt and equity claims that tend to be traded actively and continuously in centralised markets in which transaction prices are easily observed. The correspondence between transaction prices and market values in such markets is high.¹

Because property assets are heterogeneous, market values must be imputed from the prices at which comparable assets trade. However, the imputation process is complicated by the decentralised nature of property markets, the low velocity with which property assets trade, and the high proportion of private information that is relevant to the fundamental pricing of properties. These factors reduce the frequency of price signals and information content of price signals, and lead to a much looser correspondence between transaction prices and market values.

These difficulties create opportunities for third parties to develop competitive advantages in the areas of information gathering, the interpretation of market data and

¹ See Note 8 in Geltner et al (1994)

valuation technology. It is on the basis of such advantages that professional valuers are able to offer commercial valuation services.

1.1 The Error In Valuations

The large body of literature that has considered the issue of valuation accuracy weighs in favour of a conclusion that valuations are not accurate estimates of market values because they contain random and systematic error.²

The evidence falls in three areas. First, anecdotal evidence clearly indicates that industry practitioners believe valuations are lagged estimates of market values. For example, Webb (1994) observes that there is a "widespread perception that appraisers are slow in writing down commercial real estate values to market clearing levels."

Second, empirical studies that analyse the relationship between transaction prices and contemporaneous valuations also conclude frequently that incongruence between these variables is evidence of error. Some of these studies, however, fail to recognise that transaction prices in uncentralised markets will form a probability distribution around a 'true' market price.

Third, empirical studies that investigate the statistical properties of time series of valuation-based returns conclude that serial correlation is evidence of bias. It is worth noting that this conclusion rests on an assumption that serial correlation is inconsistent with weak-form informational efficiency. It is known, however, that serial dependence is not necessarily an indication of inefficiency.

1.2 Client Influences

More recently, some authors have argued that valuations are likely (at times) to be biased estimates of market values due to the influences that clients can have on valuers and valuation processes. In effect, these authors argue that clients exploit the 'leeway' in valuers' estimation of values. Their reasoning generally proceeds as follows:

- 1. Press articles, anecdotal evidence and personal experience indicate that clients influence valuations.
- 2. It is to be expected that clients in certain circumstances will attempt to influence valuations due to conflicts of interest that exist between clients and the parties who rely on valuations.
- 3. Valuations are not independent estimates of market values and are thus biased.

While the research on client influences that has been completed to date adds to the body of knowledge concerning their effects on valuations, it can be argued that the literature is limited and has focussed prematurely on specific types of influence. The empirical portion of many of these studies consists of surveys concerned with ascertaining whether specific types of influence exist, or how valuers react when a specific type of influence is brought to bear (see, for example, Worzala et al., 1998; Kinnard et al., 1997; Roberts and Roberts, 1991; Smolen, 1994; Smolen and Hambleton, 1997; Rushmore, 1993; Horne and Rosenblatt, 1996; Wolveton and Gallimore, 1999).

² No consensus has been reached, however. See Lai and Wang (1998).

In a recent article, Levy and Schuck (1999) argue that research in this area should have been initiated by studies that consider the entire issue of client influence holistically. Such studies create a justification for further theoretical and empirical research that is superior to press articles, anecdote and personal experience. They also create a defensible basis for selecting specific topics to be considered.

To conduct such a study, Levy and Schuck advocate an inductive research approach. This is a three-step process:

- i. Place the practice of professional valuation in its commercial context;
- ii. Develop a positive *a priori* theory about the mechanisms within which client influences affect valuation outcomes; and
- iii. Use qualitative research to refute, support and (most importantly) supplement various parts of the theory.

1.3 Valuation as a Commercial Enterprise

In order to develop theoretical expectations about the potential that clients have for influencing valuations, it is necessary to consider the practice of valuation in its commercial context. The roles of interested parties and the flows of information and compensation are shown graphically in Figure 1.

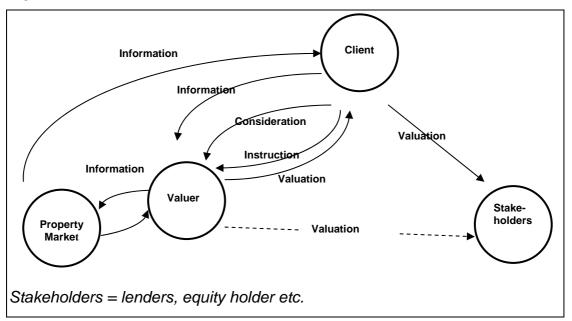


Figure 1. Valuation within the Commercial Environment (Holistic Model)

Valuations are the output of a service offered to clients on a contractual basis. It is frequently the case that valuations are commissioned by clients that are (in effect) acting as agents for third parties, e.g. lenders or shareholders, who require an independent opinion of market value. Professional valuers compete with each other for the provision of these services, for which fees are paid typically on a case by case basis on delivery.

1.4 The Mechanism of Client Influence

Consideration of the dynamics of the valuation process and the roles and objectives of the participants suggests the following:

Conflicting incentives – Clients face incentives and disincentives to influence valuation outcomes, and valuers face similarly conflicting incentives to permit or prevent client influences.

For example, Fletcher and Diskin (1994) note that clients and stakeholders enjoy an agency relationship in which conflicts of interest can arise due to an incongruence of objectives. Clients have economic incentives to influence valuations in order to maximise asset-based fees or loan-to-value ratios. These conflict with the desire of stakeholders for accurate and objective valuations. Furthermore, valuers face economic incentives to act in ways that conflict with the interests of stakeholders. Although valuers face regulatory obligations to provide independent and informed opinions of value, they are also interested in satisfying clients in order to avoid conflict over the payment of fees and precipitate repeat business.

Means of influence – Clients possess powers that arise from their expertise in property and the practice of valuation, their control over information that is relevant to valuations, and their control over the payment of fees and future business. These powers are known as expert, information, coercive and reward powers.

Means of resisting influence – Valuers possess means to resist or counteract client influences. Examples include drawing on the support of other professionals in a valuation firm, and qualifying a valuation in cases where information is inadequate or suspect.

Opportunities to influence – Clients are afforded opportunities to influence valuations and valuation processes. For example, because valuers rely heavily on private information provided by clients to value properties, clients have an opportunity to manipulate valuers' information sets. Valuers can also be drawn into a position in which they are forced to defend their choice of valuation methodology to a client. The ability to 'opinion-shop' affords clients an opportunity to exert influence on a valuer even before an instruction is given, while control over future valuation instructions affords clients an opportunity to exert their powers to reward or coerce a valuer for an 'acceptable' outcome.

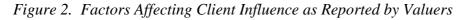
This combination of incentives, means and opportunities suggests that clients and valuers may, at times, have coincident motivations to produce valuations that are biased estimates of market values. The set of motivations specific to a particular valuation would be a function of the mix of incentives and the individual strengths of the parties. It is likely that the former would vary according to the purpose of a valuation.

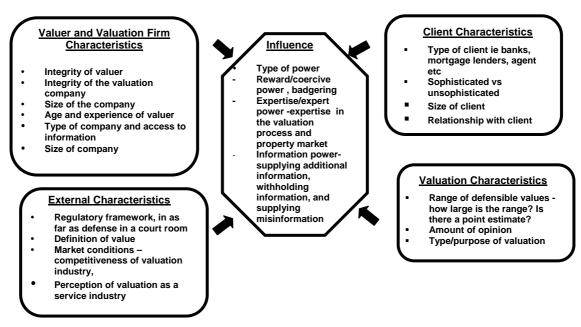
1.5 The Valuers' Perspective

Having placed the practice of valuation in its commercial context, it is then possible to proceed with an a priori identification of the factors that would be expected to govern the magnitude and direction of any bias that might arise from client influence in a particular valuation. Rational analysis suggests that this would be a function of the

strength of the motivations, and the characteristics of the client, appraiser and the valuation process.

In order to begin to verify empirically a priori expectations, Levy and Schuck undertook a qualitative investigation of the client-valuer relationship. This investigation took the form of interviews with practising valuers in New Zealand. The overall results of the Levy and Schuck study are summarised in Figure 2. They indicate that the type and amount of client influence are affected by four main factors; Valuer and valuation firm characteristics, external characteristics, client characteristics and characteristics of the valuation.





Valuers consider the type of client, the terms of reference and the definition of value or range of defensibility to be important factors in establishing the type and amount of influence. The clear theme that emerged from the study is that reported valuations are affected in particular by client-specific characteristics and, by proxy, the purpose to which the valuation is being put. Furthermore, a key ingredient in the influence process is the valuer's ability to rationalise their response to client influences through reference to the existence of a range of defensible values.

From the study several generalisations emerged. These are listed in Figure 3.

The conclusions of this study appear to confirm the widely held belief that clients influence valuations. This occurs via implicit or explicit means. Valuers respond by adjusting either their opinions of values or reported figures. In situations where valuers' opinions are not changed but reported values are altered, valuers may rationalise their position by claiming estimation error due to lack of market data, the notion of a range of defensible values, and issues of client satisfaction. These results verify those of prior studies concerning the types of influences that clients can bring to bear, e.g. reward/coercive power and information power. However, they also suggest that some clients are able to influence valuers' opinions through the application of expert power purely on the basis of their personalities or expertise in the field. The preliminary model however, also suggests that it is possible to categorise clients and valuers in order to make some generalisations about how they may interact to affect reported values. This is depicted in Figure 4.

Figure 3. Generalisations of Client and Valuer Type on Client Influence

- 1. Sophisticated clients tend to use expert and information power.
- 2. Unsophisticated clients tend to use reward/coercive and information powers.
- 3. Expert and information powers as used by sophisticated clients may change a valuer's original belief of a property's value.
- 4. Reward/coercive power is unable to change a valuer's belief of a property's value.
- 5. Information power as used by an unsophisticated client (which may include misinformation) is less able to change a valuer's belief of a property's value.
- 6. An ethical valuer will be prepared to change his/her valuation within or outside the original range of defensible values if the client's influence has changed their perception of value.
- 7. An unethical valuer will be prepared to change their reported value inside or outside the original range of defensible values even if the client's influence has not changed their perception of a property's value.

Figure 4. Influence and Response by Type of Client and Valuer

Type of Valuer	Type of Client
<i>Ethical</i> Not prepared to move outside the range of defensible values	Sophisticated Influence by means of expert and information power
<i>Unethical</i> Prepared to move outside the range of defensible values	Unsophisticated Influence by means of reward and coercive power

1.6 The Clients' Perspective

A natural progression in the development of this line of research is a qualitative investigation of the valuation process from the perspective of clients. To this end, a series of in-depth one-to-one interviews have been conducted with several 'sophisticated' clients in Auckland, New Zealand. In the following section, the methodology used to elicit the views of these clients on the client-valuer relationship is discussed. Section three summarises the results of these interviews and discusses the degree to which they coincide with *a priori* expectations (with the benefit of qualitative input from practising valuers). The last section concludes by presenting some implications for further research.

2. Methodology

Property management executives of six institutional property investors were approached to contribute to this study. All agreed to participate. Each individual had in excess of 10 years commercial property experience; all hold senior positions within their respective organisations and instruct valuers on a regular basis. The initial prompt used in each interview is set out in Figure 5

Figure 5. Interview Prompt

"As you may be aware, a great deal of public and research attention has been brought to bear in recent years on the issue of valuation accuracy, and the degree to which valuations are accurate and an unbiased estimate of a property's market value. In exploring this issue, researchers have focussed in general on valuation methods, the quality and quantity of information available to valuers and the effects that the use of heuristics or rules of thumb have on value estimations.

Little attention has been paid to the effects that the client/valuer relationship may have on valuations. To address this shortcoming, we are undertaking a series of interviews with valuers and clients in an effort to improve our understanding of the client/valuer relationship. A pilot study based on interviews with valuers has now been completed, and our attention now turns to clients. To just get things kicked off and to begin our interview today, we would like to start off with the following question - How do you as a client describe the client/valuer relationship?"

Once completed each interview was transcribed and independently audited by both interviewers. The audit included an examination of the transcripts to identify the main issues highlighted by the interviewees.

3. Outcome of Client Interviews

The results of interviews reported below have been divided into three sections. The first examines the incentives clients may have to influence valuations, the second the types of power available to them and the third the opportunities they have to use this power.

3.1 Client incentives to influence valuations

The interviews suggested that there were a number of incentives that clients may have to influence the outcomes of valuations. These are set out in Figure 6 below. There was a very strong feeling amongst the clients interviewed that one of the most important incentives in the current market is for market credibility not only with their own shareholders but also the market as a whole. This highlights the importance of the commercial environment as illustrated in Figure 1.

The interviewees not only emphasised the importance of accurate and realistic valuations to enhance market credibility but also to assist in the effective management of their portfolio. They were however critical of many of the valuation approaches used by valuers which they did not consider reflect accurately the commercial property environment.

These results indicate that clients not only have incentive to influence valuers away from accurate assessments of market value but may also if given the opportunity, try and influence valuers to be more accurate and realistic in their assessment of value.

Another incentive highlighted by the research related to the purpose of the valuation in particular of buying or selling, rent reviews and borrowing purposes. Compensation-based performance may also give rise to potential influence and finally when in-house valuations are carried out external valuations may be seen as a validation process.

Figure 6. Client Incentives

CLIENT INCENTIVE	Α	В	С	D	Ε	F
Market Credibility						
Consistency in valuations from year to year	$\checkmark\checkmark$			✓		\checkmark
Reporting attractive divident/returns to unitholders	✓	✓	✓	✓		✓
Perceived market transparency		✓				
Accurate and realistic						
Manage future liability		✓	 ✓ 		✓	
Commercial rather than evidential approach	✓			\checkmark		✓
Purpose for valuation affecting the preferred	✓	✓	✓		 ✓ 	
outcome						
Compensation						
Performance-based compensation	✓	✓	✓		✓	
In-house valuation validation						
Value or strategy			✓	✓		

3.2 *Powers available to clients to carry out this influence Expert Power*

It was not surprising that all six respondents seemed to use their expertise in the area of valuation in some form or another, in particular they were extremely knowledgeable about the property markets they were investing in and the implications of different valuation techniques and methodologies. They all indicated that for certain buildings they were unhappy with the use of transaction or evidence-based valuations and perceived a more commercial approach to be a more accurate reflection of market value. They also suggested that valuers were not aware of some of the nuances relating to building quality which would be an important factor in how much an investor would pay for a building.

Respondents were also aware of the subjectivity of valuations and the difficulty in determining a pinpoint value for a building thus leaving opportunities for negotiation and influence. Clients also had the expertise in identifying inconsistencies and inaccuracies in draft valuations.

Information Power

Valuers are dependent on the client for information and thus all six clients were able to exert this type of power over their valuers. As already reported in the previous section most of the clients were keen to record values for their properties that were accurate and realistic and thus they were keen to pass on as much information as possible about their buildings and the market. It was not uncommon for valuers to come into an organisation and have full access to files relating to the properties being valued.

Some clients gave their valuers complete access to previous valuations and sale and purchase agreements. Some respondents felt that this information could bias valuation and thus kept this information from them.

All respondents were active in the market and had the opportunity in many situations to pass on information about deals within and outside their portfolio and other information that was not necessarily available to their valuer.

Below is recorded the specific information that respondents supplied to the valuer. The interviews indicated that the amount of information varied considerably between different clients and it was at the clients' discretion as to how much or how little information they divulged

Information
Construction budgets
Plans and specifications
Location details
Agreement to lease
Property leasing details
Nature of the property
Constructions costs
Background information on the acquisition of the property
Agreed rentals
Occupancy levels
Contract rates
Tenant information
Parts or complete previous valuations
Copy of sale and purchase agreements
Book values
Client projections
Full access to files
Anomalies in the lease
Information on the market and specific deals

Figure 7. Specific information Recorded in Interviews

Reward and coercive power

The presence and use of reward power was inferred throughout the interviews. The respondents for this study were all in control of large property portfolios and thus in a position to provide valuers with a substantial amount of work over a number of years. Valuers may therefore be placed in a position to have to please the client. Respondents reported cases where they decided not to renew a valuer's contract due to a non-commercial approach, (for example refusal to use a DCF approach) or the quality of reporting to be below an acceptable standard.

Fee scales did not seem to be an important issue in the current Auckland market, it seems that valuers are aware of the competition and *are "pretty realistic*". It should be noted however that interviewees suggested that the quality and accuracy of a valuation could be affected if a client insisted on negotiating fees, forcing a valuer to spend less time or using a junior valuer to do much of the work. Respondents also indicated that more coercive influence may exist depending on the purpose of the valuation, in particular where clients are involved in lease negotiations, purchasing or selling a building or requiring a favourable valuation for borrowing purposes.

Procedural power

The outcome of the interviews seems to suggest a number of different processes and procedures were elected by clients. These processes and procedures reflected their concerns of encouraging market transparency, consistency and accurate and realistic valuations.

The next section expands on these procedural powers by discussing the opportunities currently available to clients to influence the valuation process and in turn reported values to stakeholders. As explained, this influence may exist on an intra-valuer level, where clients use their powers to influence the valuer personally. Influence may also exist on an inter-valuer level where clients influence the valuation process this influence may include such things as the choice of valuer, how often and when a valuation is commissioned.

3.3 Opportunities available to clients to influence valuation outcomes Opportunities exist for clients to influence exist in a number of areas these are discussed below.

Competitiveness of the valuation market

As identified in previous research the degree of competitiveness in the valuation market may influence a valuer to wish to satisfy a client. This may be by way of fee negotiation, methodology or by way of other issues they perceive as being important to the client. This may provide opportunities within the valuation process itself as the valuer may wish to obtain future work and be more amenable to the client's wishes.

Client/valuer relationship

It was clear from this research that the clients interviewed have maintained close longterm relationships with their valuers. A common theme was a relationship that they perceived as a partnership. This relationship results in regular contact between the client and valuer, this contact provides plenty of opportunity for the client to express their views of value to the valuer. This could in turn influence a valuer to present a value to their client that they know the client would be happy with, or conversely building in an adjustment in anticipation of the client's influence.

Choice of valuer and the length of contract

The client has complete control over the choice of valuer and the length of contract term. This provides opportunities to influence reported values in two ways; on a macro level the client has the option of choosing specific valuers which they believe will have an approach consistent with their own. They can also choose a valuer that fits with their requirements, for example providing market credibility. On a more micro level this client control may encourage a valuer to please a client in order to win a future contract or alternatively to have their contract extended. Clients also have control over the valuation process by deciding whether to rotate valuers. All but one of the respondents rotated their valuers on a two or three yearly basis, they believed this practice has resulted in improved market perception and reduced valuers defending historic values. One interviewee however alleged that changing a valuer would only lead to inconsistencies and adversely affect market credibility.

Valuation process

It was clear from the interviews that although certain standards need to be adhered to for valuation reporting purposes these are relatively flexible and create opportunities for the client to influence valuation outcomes. The instruction process and the submission of a draft report to the client were identified as elements of the valuation process, which opens up opportunities for client influence.

The instruction process – There is no prescribed letter of instruction which leaves room for the client to request certain valuation methodologies and valuation assumptions, these could include the inclusion of disposal costs and a defined

marketing period. The amount of information provided to the valuer by the client at this time is also at the discretion of the client.

Submission of a draft report – The submission of a draft report to a client seems to be common practice in New Zealand and creates a ready forum for client influence by way of information and expertise.

Subjectivity associated with valuations

The subjectivity associated with the valuation of a building and the difficulty in defining a pinpoint value was discussed by all respondents. This subjectivity creates opportunities for the client to influence the end value within an acceptable range that would best suit their purposes. These opportunities are further enhanced as different methodologies may give rise to different values and in turn the more complex a valuation the greater the range of values.

The outcome of this research suggest a complex relationship between the client and valuer and highlights a number of incentives and opportunities for a client to influence client outcomes the following sections discusses the implications of these for the real estate community and also suggestions for future research programmes.

4. Summary and Conclusions

This research was to develop an holistic view of the process of valuation. The findings help highlight the justification for further theoretical and empirical research in this area in order to achieve a more in-depth knowledge of the valuation process.

The results suggest that there are a number of specific influences that have to date not been documented but appear to have the potential to affect valuation outcomes and the valuation figure that is ultimately reported to stakeholders. In particular the strong influence the client has over the whole valuation process. The main findings of the research suggest that the client has incentives, ability and opportunities to influence valuations.

- 1. The sophisticated clients interviewed have a large amount of control over the whole of the valuation process resulting in a number of opportunities to exert both reward and coercive power. This influence is not only evident during the valuation process itself but also prior to the contract as the client is free to choose which valuer they wish and depending on the clients motives this control could be to bias the valuation towards or away from the market value.
- 2. Clients were able to affect the timing of valuations which may influence valuation figures ultimately reported to third-party stakeholders
- 3. The study identifies that much information relating to property transactions is not in the public domain and that valuers may not have access to the same information as the client. This situation enhances the client's ability to influence valuations.
- 4. The sophisticated clients interviewed were critical of current valuation practices in particular the use of comparable evidence as the sole means for assessing accurate market values. This led to conflict between the valuer and the client.

5. Opportunities exist for influence because of the definition of market value and the subjectivity of valuations, valuers may be encouraged to move within this range due to the commercial relationship between the valuer and client.

Not all client influences automatically give rise to bias away from market values. Depending on the purpose of the valuation, incentives exist for client to influence valuations toward market values. Hence prescriptions of other published research to reduce the role of clients the in valuation process may be ill conceived. The study highlights the extreme complexity of the client valuer relationship. Client influence has great potential to affect valuations. Further research is required to identify situations where bias may occur not only away from but also towards market values. It is important at this stage to recognise that at present the client is an important supplier of information and in some cases expertise and experience to the valuer, it should not be assumed that by separating the two valuations will automatically become more accurate reflections of market value. It is important therefore that 'the baby is not thrown out with the bath water'.

The global trends towards greater transparency and higher levels of disclosure will have implications for the way clients and valuers contract and ultimately may reduce the amount of power available to the client.

References

Fletcher, Stuart and Barry A. Diskin (1994) 'Agency relationships in Appraising for Institutional Asset Managers', *The Appraisal Journal*, Vol 62 No 1. Pp 103-112

Geltner, David M., Richard A. Graff and Michael S. Young (1994) 'Random Disaggregate Appraisal Error in Commercial Property: Evidence from the Russell-NCREIF Database', The Journal of Real Estate Research, Vol 9 No 4. Pp 403-419

Kinnard, W.N., M.M. Lenk and E.M. Worzala (1997) 'Client Pressure in the Commercial Appraisal Industry: How Prevalent is it?', *Journal of Property Valuation and Investment*, Vol 15 No 3

Lai, Tsong-Yue and Ko Wang (1998) 'Appraisal Smoothing: The Other Side of the Story', *Real Estate Economics*, Vol 26 No 3. Pp 511-535.

Levy, D.S. and Edward J. Schuck (1999) 'The Influence of Clients on Valuations', *Journal of Property Investment and Finance*.

Roberts, J.R. and E. Roberts (1991) 'The Myth About Appraisals', *The Appraisal Journal*, Vol 59 No 2.

Rushmore S. (1993) 'Ethics in Hotel Appraising', *The Appraisal Journal*, Vol 61 No 3. Pp 357-363

Rutledge, J.K. (1994) 'Conflicts of Interest or "Thou Shalt Not Steal" revisited', *Real Estate Issues*, Vol 19 No 3: 15 - 19 December

Smolen, G.E. (1994) 'Do We Need Statewide Appraisal Peer Review System?' *The Appraisal Journal*, No 62 Vol 1. Pp 86-93

Smolen G.E. and D.C. Hambleton (1997) 'Is the Real Estate Appraiser's Role Too Much to Expect?' *The Appraisal Journal*, Vol 65 No 1. pp 9-17

Wolveton, M.L., and Gallimore, P., (1999), Client Feedback and the Role of the Appraiser' Journal of Real Estate Research, 18 (3) pp 415-432.

Worzala, Elaine M., Margarita M. Lenk and William N. Kinnard, Jr. (1998) 'How Client Pressure Affects the Appraisal of Residential Property', *The Appraisal Journal*, Vol 66 No 4. pp 416-427