

**PACIFIC RIM REAL ESTATE SOCIETY  
FIRST PRRES CONFERENCE, 1995**

**TITLE:** THE INTER-RELATIONSHIPS BETWEEN DETERMINANTS OF THE  
CAPITALISATION RATE - SOME EMPIRICAL RESEARCH

**AUTHOR:** David RR Parker  
BSc (Hons), Grad Dip Land Econ, MComm,  
ARICS, ASVA, ASIA, FVLE (Val & Econ)

**AFFILIATION:** UTS, Sydney  
(PhD Student)

**ADDRESS:** GPO Box 1849Q  
Melbourne Vic 3001

**TELEPHONE:** (03) 273 1895 (Office) (03) 809 0771 (A/H)

**FAX:** (03) 273 2049

**ABSTRACT:** Following a brief review of the relevant literature, potential inter-relationships between determinants of the capitalisation rate for prime, CBD, office investment property are proposed. The results of a preliminary survey of Sydney valuers, conducted in late 1992, concerning such inter-relationships are compared to the outcomes of the literature review and an analytical commentary provided. Guided by these findings, extensive empirical data on inter-relationships (which was collected through a subsequent, major survey of valuers in Sydney undertaken in late 1993) is analysed and an extensive commentary on the derived inter-relationships provided. Conclusions are drawn as to the implications of these findings for Australian practitioners endeavouring to select capitalisation rates for use in the valuation of prime, CBD, office investment property in Sydney. Such analysis based on data collected from Australian practitioners, to derive findings which may be applied in the local valuation profession, is contended to be consistent with the conference theme of working in the information age.

**RELEVANT**

**CATEGORIES:** Investment and Finance  
Valuation and Appraisal  
Post-Graduate Research in Property

# THE INTER-RELATIONSHIPS BETWEEN DETERMINANTS OF THE CAPITALISATION RATE - SOME EMPIRICAL RESEARCH

**David RR Parker**

BSc (Hons), Grad Dip Land Econ, MComm  
ARICS, ASVA, ASIA, FVLE (Val & Econ)

## 1.0 INTRODUCTION

In the valuation of prime, CBD office investment property by capitalisation, the traditional approach to the derivation of the appropriate capitalisation rate is through the analysis of "market transactions in respect of comparable properties" (Rost and Collins (1990)). However, in a market where transactions are limited, the assessment of the appropriate capitalisation rate for use in such valuations becomes particularly challenging.

In a previous paper (Parker (1993)) the author considered the problems faced by valuers in endeavouring to select a capitalisation rate during a falling market due to the absence of transactional evidence Table 1 shows the trend in various market activity indicators for the period 1991 to 1993, with an anticipated trend for 1994 included (though it should be noted that similar data for 1994 is not yet available).

| Year Ending               | Dec 1991 |   | Dec 1992 |   | Dec 1993 |  | Dec 1994 |
|---------------------------|----------|---|----------|---|----------|--|----------|
| Vacancy Rate              | 15.6%    | ↑ | 22.2%    | ↓ | 21.2%    |  | ↓        |
| Gross Rent PSM PA         | \$696    |   | \$592    |   | \$518    |  |          |
| Incentive PSM PA          | \$265    | ↑ | \$300    | ↓ | \$291    |  | ↓        |
| Effective Rent PSM PA     | \$431    | ↓ | \$292    | ↓ | \$227    |  | ↑        |
| Capitalisation Rate       | 6.75%    | ↑ | 7.50%    | ↓ | 7.25%    |  | ↓        |
| Capital Value Index       | \$6,000  | ↓ | \$4,150  | ↓ | \$3,800  |  | ↑        |
| Reported Sales Over \$3m: |          |   |          |   |          |  |          |
| Number                    | 16       | ⇒ | 17       | ↑ | 34       |  | ⇒        |
| Total Value               | \$261m   | ↓ | \$149m   | ↑ | \$461m   |  | ↑        |

**Prime Sydney CBD Offices - State Of The Market 1991-93**

Source: Jones Lang Wootton

**Table 1**

Accordingly, valuers in the major capital cities of Australia who are endeavouring to select a capitalisation rate in 1995 are likely to face the obverse of the 1991-92 problem. Rather than attempting to assess a capitalisation rate based on limited evidence in a falling market, they are likely to be required to ascertain a rate based on a similar volume of evidence but in a rising market.

In previous papers (see, for example, Parker (1994A)) it was suggested that valuations may effectively determine the level of the market in the absence of sales evidence such that, in a rising market, it may be the valuer who determines the speed and extent of the rise.

The valuation problem in both a rising and falling market is, however, common. How does a valuer interpret a capitalisation rate for a prime, CBD office investment property in the absence of comparable transactional evidence? What are the issues to be considered and how do these impact, relative to each other, upon the capitalisation rate selection process? For the practitioner, these are challenging and significant questions for which research by the academic is contended to be a very relevant application of the Conference theme of living and working in the information age.

## 2.0 LITERATURE REVIEW

Parker (1994C) notes that the literature generally lacks any detailed consideration of how to interpret the appropriate capitalisation rate in a market where comparable transactions for analysis are few. It is proposed that an understanding of the determinants of the capitalisation rate will contribute to such interpretation within the assessment of the appropriate capitalisation rate, for use within the valuation process, during such periods of limited transactional evidence.

Following a comprehensive literature review (detailed in Parker (1992)) and the application of the authors personal, professional experience as an institutional property investment operative, twelve groups of issues were identified as commonly cited influences upon the capitalisation rate. Table 2 summarises the identified groups of issues or determinants of the capitalisation rate and includes the description attributed to each within the empirical research referred to below. It is notable that a comprehensive list of such determinants of the capitalisation rate was not found within the work of other authors. Amongst the authors reviewed, the grouping of differing issues together under otherwise similar titles suggests that certain issues may be related to each other with numerous general comments to the effect that the capitalisation rate is an amalgam of inter-related factors. Cairns (1983), for example, discusses suggested potential links between specific factors but does not progress to any quantitative analysis.

|   |  |
|---|--|
| Alternative Investments                                 | Equities, bonds, other property investment alternatives, etc |
| Building Itself   | Services, features, reputation, etc                          |
| Economic Situation                                      | International, federal, state, city levels                   |
| Growth Prospects  | Potential for income growth and/or capital appreciation      |
| Legal Issues  | Freehold/leasehold, restrictive covenants, etc               |
| Location  | Situation, position, etc                                     |
| Planning  | Zoning, plot ratio, use limitations, etc                     |
| Risk  | The possibility of events not occurring as anticipated       |
| Sentiment   | Towards property as an asset class                           |
| Separable Characteristics Of Property As An Asset Class | Long term nature, illiquid, etc                              |
| State Of The Property Market                            | Supply and demand for investors and occupiers                |
| Tenants   | Security and regularity of income, etc                       |

**Groups Of Issues Or Determinants Of The Capitalisation Rate**

**Table 2**

Having identified a potential list of the determinants of the capitalisation rate, subsequent empirical research has investigated the relative and proportionate importance of the respective determinants (see Parker (1994B), (1994C), (1994D) respectively). Such research has confirmed the list of determinants as likely to be complete, with none of the survey respondents either disputing or adding further determinants

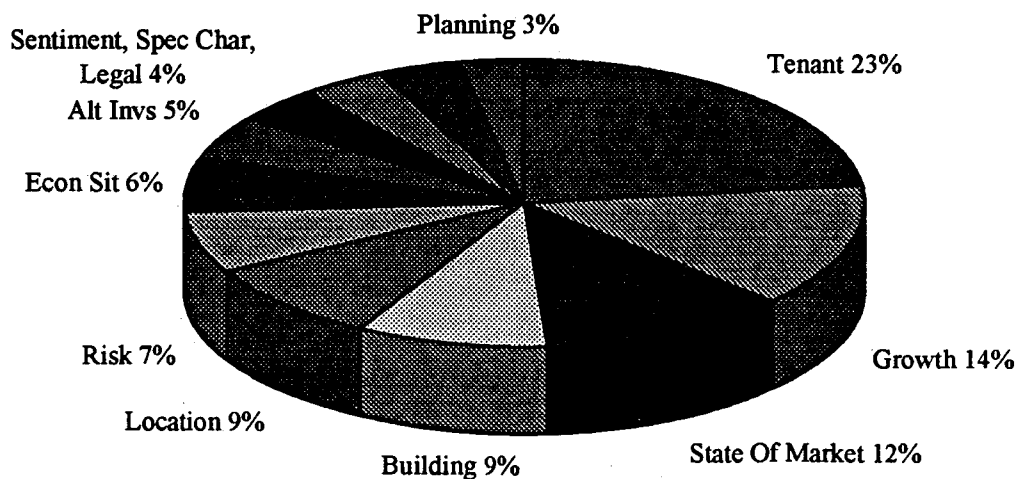
to those listed in Table 2. Table 3 summarises the findings of three surveys, conducted by the author, of practising valuers concerning the relative importance of the respective determinants, which are discussed in Parker (1994D)

| 1991   | 1992  | 1993  |
|--|---|---|
| 1. Location                                      | 1. Tenant   | 1. Tenant   |
| 2. Tenant  | 2. State of the property market                   | 2. Growth   |
| 3. Growth  | 3. Growth   | 3. State of the property market                   |
| 4. Building                                      | 4. Risk   | 4. Location                                       |
| 5. Risk  | 5. Location                                       | 5. Building                                       |
| 6. State of the property market                  | 6. Building                                       | 6. Economic situation                             |
| 7. Economic situation                            | 7. Legal  | 7. Risk   |
| 8. Legal   | 8. Alternative investments                        | 8. Legal  |
| 9. Characteristics of property as an asset class | 9. Economic situation                             | 9. Sentiment                                      |
| 10. Sentiment                                    | 10. Sentiment                                     | 10. Characteristics of property as an asset class |
| 11. Alternative investments                      | 11. Characteristics of property as an asset class | 11. Alternative investments                       |
| 12. Planning                                     | 12. Planning                                      | 12. Planning                                      |

#### Comparative Order Of Relative Importance Of Determinants 1991/93

Table 3

The findings of the practitioner survey concerning proportionate importance are also discussed in Parker (1994D) and are summarised graphically in Figure 1.



#### Proportionate Importance Of Determinants - 1993

Figure 1

Accordingly, the literature reviewed serves to identify twelve determinants of the capitalisation rate and provides an insight into their relative and proportionate importance. It is notable that, apart from the works of the author, neither the interpretation of a capitalisation rate in the absence of comparable sales nor the determinants of the capitalisation rate receive much attention within the literature.

### **3.0 PROPOSITION OF LINKS**

Though the literature suggests that links may exist between determinants of the capitalisation rate, it does not appear to investigate this aspect of capitalisation rate construction further with no empirical research into this aspect discovered. However, given that the literature does not comprehensively address the determinants of the capitalisation rate per se, an absence of attention to such further aspects is not surprising.

Theoretically, every determinant of the capitalisation rate could be totally dependent upon every other determinant, such that a level of perfect interdependency exists with a change in one determinant causing a change in every other determinant. Conversely, every determinant may be independent. Alternatively, only a proportion of determinants may be dependent upon each other giving a level of imperfect interdependency with changes in some interdependent determinants affecting other interdependent determinants whilst the balance of determinants are independent.

Both valuation theory and intuition suggest that perfect interdependency would appear unlikely as would perfect independence. Further, a level of imperfect interdependency would appear likely as certain determinants could be expected to be interdependent or linked with certain others, whilst some may be expected to be relatively independent. For example, Planning could be expected to be independent, as it may be likely to be common to all prime CBD office properties, such that it may not change in importance as other determinants change.

Conversely, Growth and Risk could be expected to be interdependent with or linked to several other determinants such as State Of The Property Market, Economic Situation, Tenant, Location and Building. This would be consistent with the argument that a strong tenant in a new, well located building in a strong economic and property market would provide a greater level of potential Growth and a lower level of potential Risk. Hence, there may be anticipated to be considerable linkage between several of the determinants and probable independence for a minority, which has implications for the pricing of property as a capital markets asset class.

It is suggested that the rankings of relative and proportionate importance contribute some guidance as to potential areas where significant links between determinants maybe found. The rankings by relative importance in Table 3 indicate considerable consistency between each of the three years. Whilst the determinants vary in importance over time, a hierarchy of determinants is emerging with some consistently ranked as of high or low importance and the balance moving fluidly in between. Generally, there is some consistency in those determinants ranking within the top six with Location, Tenant, Growth, Building and State Of The Property Market included within each year and Risk/Economic Situation arising in two out of three years. Similarly Planning has consistently been ranked as the least important determinant with the variation in rankings between seventh and eleventh places suggesting that valuers can identify the most and least important factors but have some difficulty mentally juggling the mid-range determinants (Parker (1994D)).

It is notable that the respective determinants have quite dramatically different proportions of importance in the capitalisation rate assessment decision. Significantly, the seven determinants which consistently rank highest in relative importance cumulatively sum to 80% in terms of proportionate importance. Accordingly, as the relative and proportionate importance of these determinants is such a significant component of the total, it may be proposed that such determinants are of potentially greater importance than the others in the assessment of the capitalisation rate. As such, it may be proposed that any links between Location, Tenant, Growth, Building, State Of The Property Market, Risk and Economic Situation

might be expected to have a greater impact on the capitalisation rate than those between other determinants. The literature and empirical research referred to above does not, however, provide any indications as to the extent or significance of such links between determinants.

#### **4.0 EMPIRICAL RESEARCH**

To ascertain, primarily, whether or not there are links between the determinants of the capitalisation rate and, secondarily, whether such links are greatest between the seven determinants nominated above, relevant questions were included within the 1992 and 1993 practitioner surveys conducted by the author. As no form of empirical testing in this area has been conducted before, a simple exploratory survey was conducted in 1992 with the 1993 survey then building on the former's findings. The methods adopted and findings of each survey are detailed below.

##### **4.1 Survey Methodology**

The methodology of the annual surveys has been detailed extensively in Parker (1994B) and Parker (1994C). Briefly, the survey comprises a questionnaire completed in October/November of each year by professional Sydney valuers whose practise includes a significant proportion of CBD office valuation assignments. Valuers are used rather than investors as it is contended that they are greater in number in Sydney and more likely to be able to maintain a consistent focus on the capitalisation rate whilst adhering to a series of underlying assumptions (Parker (1994C)). The survey form includes questions qualifying the respondents to ensure that the sample comprises only experienced valuers of prime CBD office investment property with the profile of respondents in the relevant survey years being summarised in Table 4.

|   | <b>1992</b> | <b>1993</b> |
|---|-------------|-------------|
| Number Of Respondents   | 13          | 22          |
| Average Period Of<br>Practical Experience - Years   | 19.84       | 17.00       |
| Of Total Number Of Valuations<br>Undertaken In Previous Year,<br>Percentage CBD Office Buildings Valued | 16%         | 21%         |

**Profile Of Respondents**

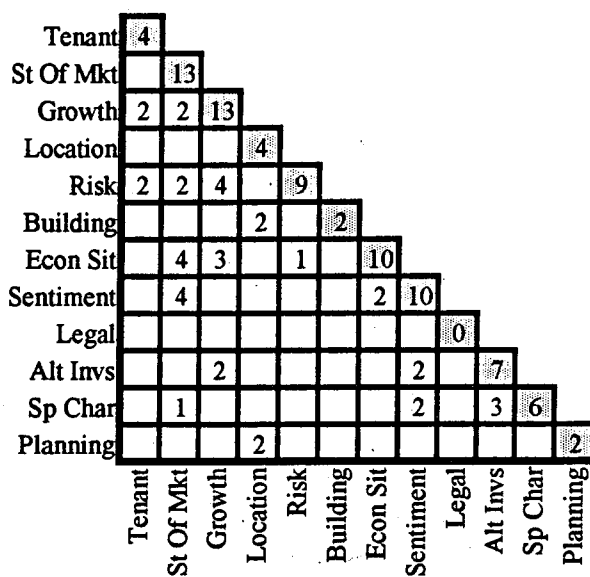
**Table 4**

To increase the consistency of responses and maintain a focus in the capitalisation rate, all respondents are asked to base their answers on a series of assumptions which are designed to remove many of the more common problems encountered in the valuation of office investment properties. The various assumptions include those of a prime building, let to several tenants on standard, institutional leases at rentals which do not require adjustment and without any extraneous problems. Thus any disadvantageous aspects of the property (single tenant risk, short leases, unusual lease covenants, outgoings problems, etc) are assumed to not require reflection within the capitalisation rate.

##### **4.2 1992 Pilot Survey**

This survey sought to make a very basic assessment of which determinants were linked and which were independent. The approach adopted was quite simple, with respondents requested to join by arrows upon the survey form those determinants which they considered may be linked in some way.

detailed consideration of the 1992 survey is undertaken below as a background to the 1993 survey.



### Matrix Of Observed Relationships - 1992

### Figure 2

Significantly, each determinant except Legal is found to have a link with at least one other determinant. Accordingly, it would appear that only Legal is likely to be an independent determinant with the remaining eleven all indicating some level of link with other determinants.

As referred to above, the determinants of Growth, Risk, Economic Situation, Tenant, Building, Location and State Of The Property Market may be intuitively expected to be linked. The results of the survey, however, do not support such an expectation as shown by the totals given in the shaded boxes in Figure 2. Whilst State Of The Property Market, Economic Situation, Growth and Risk show relatively strong linkages, Tenant, Location and Building show relatively few linkages. Significant linkages are also found for Sentiment, Alternative Investments and Separable Characteristics Of Property As An Asset Class.

It is easy, in retrospect, to argue that some of the results are as could logically be expected though finding an explanation for others is more challenging. For example, it is unlikely that a practitioner would have considered Location or the Tenant to have had such a relatively low level of linkages with other determinants. The results of the survey, therefore, provide an objective basis for certain intuitive anticipations and a rebuttal for others, thus providing a promising contribution to the further diminution of subjectivity in the capitalisation rate adjustment process.

The results of the survey are challenging to comprehend in overview and a variety of equally defensible but opposing conclusions could be drawn. To assist in the interpretation of the results, the following structure is proposed.

#### 4.2.1 An Alternative Approach

Following further analysis, it was found that the results are easier to comprehend if the component determinants are grouped into four categories:

1. Property Generic    being those determinants common to all CBD office properties:  
State Of The Market  
Economic Situation  
Sentiment  
Alternative Investments  
Separable Characteristics;
2. Property Specific    being those determinants which may vary between specific CBD office properties:  
Tenant  
Location  
Building  
Legal  
Planning;
3. Risk; and
4. Growth.

Table 5 divides the observed linkages into the four categories and clearly shows that over half of all the observed linkages involve Property Generic determinants. Interestingly, approximately one quarter involve Risk or Growth and the least number of observed linkages involve Property Specific determinants.

|                             | Number | Percentage |
|-----------------------------|--------|------------|
| Involving Property Generic  | 46     | 58%        |
| Involving Property Specific | 12     | 15%        |
| Involving Growth            | 13     | 16%        |
| Involving Risk              | 9      | 11%        |
| Total                       | 80     | 100%       |

#### Summary Of Observed Relationships - 1992

Table 5

It is contended that, for an understanding of the roles of Growth and Risk, the high level of linkage between the two may be significant. Respondents are effectively saying the Growth and Risk are linked which is logical if both are considered as determinants in their own rights.

A linear summary of the composition of Figure 2 is given in Appendix I and shows the following significant features:

1. Property Generic determinants show no linkages to Property Specific determinants;
2. Property Specific determinants show no linkages with Property Generic determinants;
3. Tenant is the only Property Specific variable to be linked with Risk and Growth;
4. Apart from Tenant, Risk and Growth are only linked to Property Generic determinants;
5. Risk is linked to Growth.

These findings are fascinating for the analysis of determinants of the capitalisation rate and the adjustment process. They suggest that Property Generic and Property Specific determinants operate as two separate groups with Risk and Growth linked principally to Property Generic determinants. The results



also direct attention to the significant role of Tenant as a determinant of the capitalisation rate. Intriguingly, the absence of links would suggest that the Property Specific determinants are independent of the Property Generic determinants.

Hence, the market as a whole, alternative investments and the economy could all be in a state of change but this may have no effect on (or interdependency with) Property Specific determinants. Similarly, such changes would affect Growth and Risk as determinants but changes in Property Specific determinants (excluding Tenant) would not appear to affect Growth and Risk. Accordingly, changes in Location, Building, Planning and Legal would appear to have no effect on the Growth or Risk aspects of a property investment. The intuitive appeal within this simple division of the determinants is considerable.

Accordingly, the 1992 survey confirmed the likelihood of links suggested by the literature, finding a state of imperfect interdependency and further confirmed that linkage existed between the majority of the determinants with the minority independent. The survey findings do not, however, appear to support the suggestion that the links between those determinants ranking highest in relative or proportionate importance are likely to be of greater significance as such ranking appeared to be of limited relevance in the interpretation of links. It would appear that the Property Generic determinants have little relationship with the Property Specific determinants which, with the role of Growth and Risk, are the major findings of the 1992 survey. However, given the simplicity of the survey approach, it would be inappropriate to put such findings forward as definitive conclusions. It is clear that some determinants are linked and that some are not, though just which are which may not be entirely as intuition and the literature reviewed would suggest.

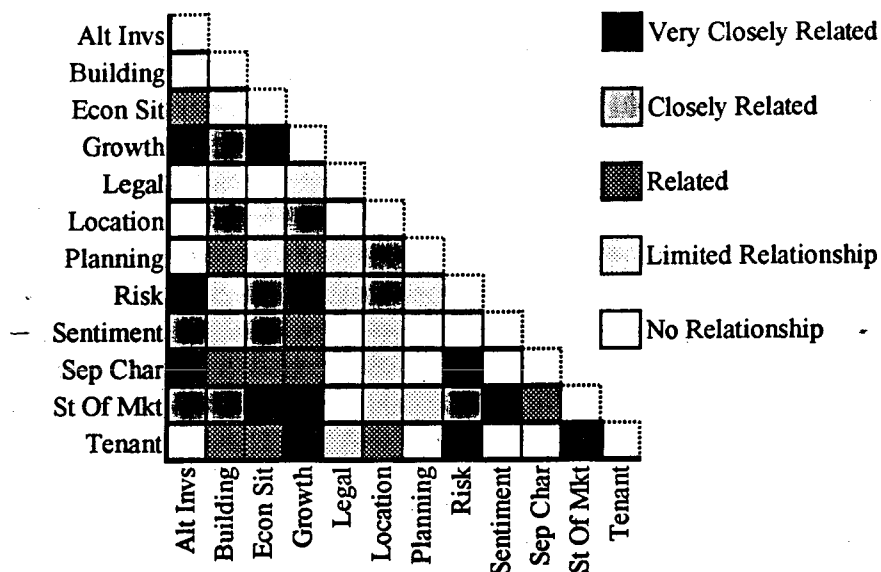
In order to clarify the position, confirm or challenge the 1992 findings, ascertain more about the level of independence and interdependency between the respective determinants and to investigate the strength of the links between determinants, the 1993 survey was structured in a different manner.

#### 4.3 1993 Pilot Survey

The 1993 survey question on interdependency was developed as a result of the 1992 findings. Respondents were given a matrix of the determinants, similar to that given in Figure 2, but with blank boxes in which they were asked to give their view of the strength of the relationship between the two specified determinants. A simple scoring system was adopted of 4 for very closely related, 3 for closely related, 2 for related, 1 for limited relationship and no score for no relationship (or independence), in order to facilitate quantitative analysis of the findings. Accordingly, respondents had to calibrate their view of the relationship between every pair of identified determinants of the capitalisation rate and were unable to discard or fail to consider any.

Given the greater sophistication of the survey question, the 1993 results are contended to be likely to be a more reliable guide to interdependency and independence than the 1992 findings. However, given the small sample size, it is acknowledged that the findings are, at best, indicative only. Figure 3 provides a matrix of median scores, with shading used to better illustrate the range and frequency of relationships. In overview, respondents used all five score options in their description of relationships which clearly indicates a wide range of strengths of relationships between the respective pairs of determinants.

The frequency of medians are summarised in Table 6 which is a simple but extremely informative overview. The broad similarity of score frequencies is rather surprising with almost even numbers of pairs of determinants either Related, Closely related or Very Closely related. The levels of Limited or No Relationships are, however, notably greater and comprise nearly half of the relationships when summed. This suggests that valuers may only need to consider a fraction of the total number of possible relationships between determinants when making the capitalisation rate adjustment decision.



Matrix Of Median Scores - 1993

Figure 3

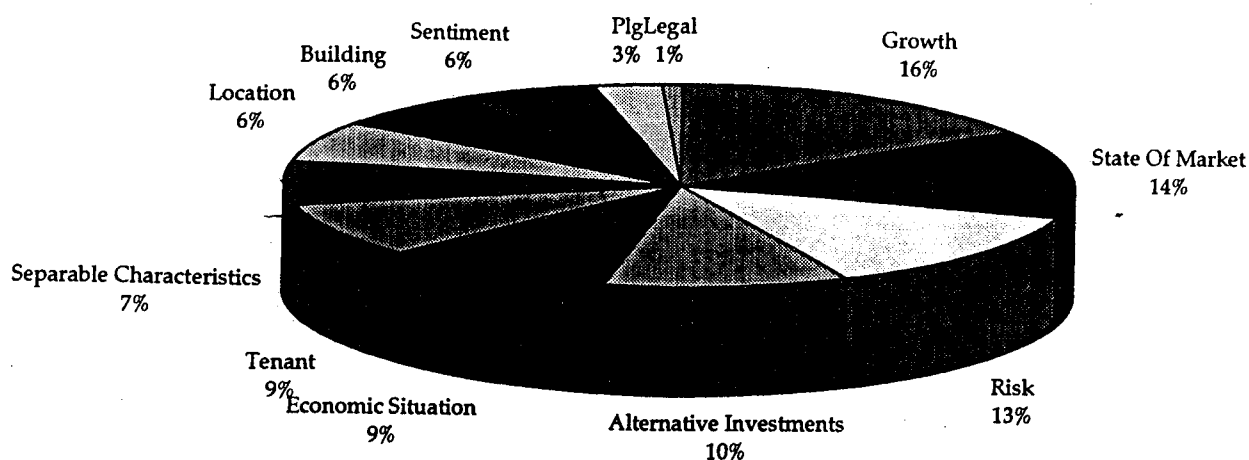
As Figure 3 shows, none of the determinants are consistent in the strength of their relationship with each of the other determinants. Some, however, clearly have a greater number of Very Close or Close relationships with other determinants, whilst some have a noticeably larger number of Limited or No Relationships with other determinants.

| Score Of | Frequency |
|----------|-----------|
| 4        | 12        |
| 3        | 11        |
| 2        | 11        |
| 1        | 15        |
| 0        | 17        |
| Total    | 66        |

Summary Of Frequency Of Medians - 1993

Table 6

To combine the relative numbers and strengths of relationships for a given determinant with each of the remainder, every score was squared (to amplify the relationship strength) and the total added for each determinant with the relative scores illustrated in Figure 4. This shows that Growth and Risk have a greater number of stronger relationships than all other determinants with the exception of State Of The Market. Conversely, Planning and Legal show a greater number of weaker relationships which is broadly consistent with the findings of the 1992 survey.



**Summary Of 1993 Scores, Squared**

**Figure 4**

Overall, Property Generic determinants show a greater number of stronger relationships and Property Specific determinants show a greater number of weaker relationships, with the exceptions of Sentiment and Tenant respectively. However, the variety of scores achieved by each determinant with the other determinants suggests that any overall, simple guiding principles which explain such relationships are unlikely to exist. For a dynamic concept such as the capitalisation rate, this is arguably not surprising.

To bring some order to the analysis of the results, it is proposed to consider the relationships in descending order of closeness and apply a similar approach to each group.

Appendices II to VI detail each observed relationship split into the categories of Property Generic, Property Specific, Risk and Growth, proposed above, which are then summarised into Table 7.

| Relationship Level                    | V Close | Close | Related | Limited | None |
|---------------------------------------|---------|-------|---------|---------|------|
|                                       | 4's     | 3's   | 2's     | 1's     | 0's  |
| Property Generic : Property Generic   | 6       | 6     | 6       | 0       | 0    |
| Property Specific : Property Specific | 0       | 4     | 6       | 6       | 2    |
| Risk                                  | 7       | 6     | 0       | 6       | 4    |
| Growth                                | 9       | 4     | 6       | 2       | 2    |
| Property Specific : Property Generic  | 2       | 2     | 4       | 16      | 26   |
| Total                                 | 24      | 22    | 22      | 30      | 34   |

**Summary Of Observed Relationships - 1993**

**Table 7**

The broad trends in relationship levels shown in Table 7 echo those of Figure 4. Whilst Growth and Risk have the same number of relationships, Growth has few Limited or None relationships whilst Risk, interestingly, follows a similar trend but shows a significant number of Limited relationships.

The broad trend for Property Generic:Property Generic relationships is the converse of that for Property Specific:Property Specific relationships. Hence, market wide factors appear to be generally closely related whilst property specific factors tend to be less closely related.

The separation between Property Generic and Property Specific is very clear in the number and strength of relationships between them. There are few Very Close, Close or Related relationships but a very significant number of Limited or None relationships.

As it would appear that the two groups of determinants are operating individually, those individual determinants which give rise to relationships between the two groups could be particularly significant.

#### *4.3.1 Very Close Relationships*

The twelve Very Close relationships between determinants are a fascinating but relatively limited group of relationships. It is interesting that the level of Very Close relationships represents only 18% of the possible total number of relationships, which is relatively low and makes the determinants involved potentially very significant in the capitalisation rate adjustment process.

Of the total number of Very Close relationships identified, Risk and Growth are involved in two-thirds with no Very Close relationships between pairs of Property Specific determinants. Further, Growth has a larger number of Very Close relationships than Risk with the relationship between Growth and Risk themselves being ranked as Very Close.

Significantly, the Property Specific determinants of Building, Location, Legal and Planning are the only determinants to have no Very Close relationships, with Tenant the only such determinant to so rank. However, if relationships involving Risk and Growth are set aside, there are only four other Very Close relationships involving only six determinants, which is a very small number, namely:

|                         |   |                         |
|-------------------------|---|-------------------------|
| Special Characteristics | : | Alternative Investments |
| State Of The Market     | : | Economic Situation      |
| State Of The Market     | : | Sentiment               |
| State Of The Market     | : | Tenant                  |

Accordingly, there are relatively few Very Close relationships and of those that exist, Growth dominates whilst Risk and Property Generic determinants are very significant with Property Specific determinants (excepting Tenant) being excluded. For the analysis of the performance of determinants of the capitalisation rate within the adjustment process, the roles of Risk and Growth would appear likely to be particularly important issues.

#### *4.3.2 Close Relationships*

Eleven pairs of relationships were described by respondents as Closely related, which represents 16% of the possible total number of relationships, again a relatively low proportion. Appendix III details each relationship split into the categories of Property Generic, Property Specific, Risk and Growth, considered above, which are then summarised into Table 7.

Amongst the Closely related determinants, a greater presence of Property Specific determinants is evident (over one quarter of the relationships compared with one twelfth in the Very Close relationships) with a lower proportion of relationships involving Risk and Growth (under half rather than two-thirds as in the Very Close relationships). The only determinant to not have a Close relationship with at least one other determinant is Legal with all the remaining Property Specific and every Property Generic determinant having some Close relationships with other determinants.

Interestingly, there are a greater number of relationships involving Risk at the Closely related level than involve Growth which is the reverse of the situation found at the Very Close relationship level.

If relationships involving Risk and Growth are set aside, a significant number of other Close relationships still exist, involving seven determinants and comprising the following:

|                     |   |                         |
|---------------------|---|-------------------------|
| Location            | : | Building                |
| Location            | : | Planning                |
| Sentiment           | : | Economic Situation      |
| Sentiment           | : | Alternative Investments |
| State Of The Market | : | Alternative Investments |
| State Of The Market | : | Building                |

This list clearly shows the increased significance of the Property Specific determinants of Location and Building and the absence of Tenant in close relationships. Tenant appears to be quite polarised as either a Very Closely related determinant or just a Related/unrelated determinant, which is an interesting finding. (The same also applies to Special Characteristics though this is a somewhat more challenging issue upon which to comment). Significantly, however, only one Property Specific determinant (Building) is involved in a Property Generic:Property Specific relationship. The balance of Close relationships are either between two Property Generic determinants or two Property Specific determinants, rather than a combination of the two groups.

Overall, the lower level of interdependency attributed by the ranking of Close relationship involves a larger number and wider spread of determinants. With one exception, all determinants are Closely related to at least one other determinant which confirms that a significant level of interdependency between the respective determinants of the capitalisation rate appears to exist. Such a finding is a noteworthy contribution to the understanding of the capitalisation rate adjustment decision which is clearly a complex, dynamic and interactive process.

#### *4.3.3 Related*

A simple interpretation of valuation theory would suggest that practitioners might have been expected to have attributed a Related score to the majority of the balance of relationships between pairs of determinants. However, only one quarter were Related with the balance three quarters of limited or no relationship. Accordingly, over half of the total relationships between determinants are either Limited or None relationships. This is somewhat different to the outcome that might have been expected from theory. Within the 16% of the possible total number of relationships that were scored 2 (or related), Legal remains the only determinant not to have at least one relationship. Appendix IV details each relationship split into the categories of Property Generic, Property Specific, Risk and Growth, considered above, which are then summarised into Table 7.

The differences are easily spotted with Growth now involved in one quarter of relationships and Risk having no relationships at this level. The Property Specific determinants are much more important and are now involved in half of the identified relationships. Property Generic determinants, however, continue to be involved in a larger number of relationships. Excluding Risk and Growth, the number of determinants which are considered to be Related is far greater, totalling nine pairs compared with six for Closely related and four for Very Closely related respectively.

Of the determinants deemed to be Related, Property Specific determinants are as commonly identified within relationships as Property Generic determinants which is different to the position for Very Close and Close relationships. Thus, as the strength of the relationship decreases, so does the role of Property Generic determinants with that of Property Specific determinants increasing.

#### *4.3.4 Limited Relationship*

The level of Limited and None relationships is far higher than valuation theory would suggest. Approximately 23% of identified relationships, the second largest group, were scored 1 or Limited. Alternative Investments is the only determinant not to have a Limited relationship with at least one other

determinant. Appendix V details each relationship split into the categories of Property Generic, Property Specific, Risk and Growth, considered above, which are then summarised into Table 7.

Notably Growth is involved in just one Limited relationship with Risk involved in only 20%. No Property Generic determinants have Limited relationships with other Property Generic determinants and only 20% of Limited relationships are between Property Specific determinants.

The most significant change is that over half of the Limited relationships are between a Property Generic and a Property Specific determinant involving seven of the eleven determinants exhibiting Limited relationships. At this level, the role of Property Specific determinants is far greater, with such determinants being involved in all of the identified Growth or Risk relationships also. Significantly, though the number of Property Specific:Property Generic relationships is much higher, the lower strength of the relationship renders this potentially less relevant in capitalisation rate construction.

#### 4.3.5 None Relationships

Valuation theory suggests that some level of relationship exists between the various determinants of the capitalisation rate, but the significant number of identified None relationships questions this traditional view.

At 27% of the total identified relationships, the None relationship group was the largest found. Under one-third of such relationships were between two Property Generic determinants, two Property Specific determinants or Risk, with Growth being the only determinant to have zero None relationships. Appendix VI details each relationship split into the categories of Property Generic, Property Specific, Risk and Growth, considered above, which are then summarised into Table 7.

Over three quarters of the None relationships were between a Property Specific and a Property Generic determinant, with each of these determinants having at least one such None relationship. At the individual determinant level, the findings dramatically illustrate both the division of determinants into Property Generic/Property Specific and the absence of a general relationship between the two groups.

#### 4.3.6 Summary

Table 8 summarises the trends in relationships between the various groups of determinants.

| Relationship Level                    | V Close<br>4's | Close<br>3's | Related<br>2's | Limited<br>1's | None<br>0's | Trend |
|---------------------------------------|----------------|--------------|----------------|----------------|-------------|-------|
| Property Generic : Property Generic   | 25%            | 27%          | 27%            | 0%             | 6%          | ↗     |
| Property Specific : Property Specific | 0%             | 18%          | 27%            | 20%            | 12%         | ↗     |
| Risk                                  | 29%            | 27%          | 0%             | 20%            | 6%          | ↗     |
| Growth                                | 38%            | 18%          | 27%            | 6%             | 0%          | ↗     |
| Property Specific : Property Generic  | 8%             | 10%          | 19%            | 54%            | 76%         | ↑     |

### Summary Of Observed Relationships - 1993

Table 8

The majority of the strong relationships involve Property Generic determinants, Risk and Growth. Property Specific determinants exhibit few strong relationships. There is a clear trend from high levels of relationship for Property Generic determinants to low levels of relationship for Property Specific determinants, with Risk and Growth following a broadly similar direction. Furthermore, the level of None relationships between Property Generic and Property Specific determinants reinforces that the two groups operate quite distinctly.

#### 4.4 Overview

The above findings concerning the relationships between the determinants of the capitalisation rate broadly confirm the findings of the 1992 survey. Given the practically non-existent relationship between Property Generic and Property Specific determinants, it is worthwhile to consider whether any of the Property Specific determinants exhibit stronger relationships with Property Generic determinants than others. Such determinants could provide a bridge between the two apparently independent groups and are summarised in Table 9.

| Relationship Level | Property Generic          | Property Specific |
|--------------------|---------------------------|-------------------|
| Very Close         | State Of Market           | Tenant            |
| Close              | State Of Market           | Building          |
| Related            | Separable Characteristics | Building          |
| Related            | Economic Situation        | Tenant            |

**Summary Of Property Generic:Property Specific Relationships - 1993**

**Table 9**

It could, therefore, be argued that there are two principal conduits between capital markets activity and a given prime, CBD office investment property, which are the determinants of Tenant and Building.

The above results do not, however, provide any indication as to how such a conduit might work. Whilst it would appear that a change in certain Property Generic determinants could lead to/result from a change in Tenant and Building as determinants of the capitalisation rate, exactly how is yet to be ascertained.

The findings would, however, appear to further undermine the relevance of the traditional property adage of "location, location and location" as the three most important influences on value.

## 5.0 CONCLUSIONS

The results of the 1993 practitioner survey appear to confirm that relationships between determinants of the capitalisation rate do exist with none of the determinants appearing to be independent, but that such relationships are of very significantly differing strengths between the respective pairs of determinants.

A state of imperfect interdependency was found to exist with the division of the determinants into Property Generic, Property Specific, Risk and Growth aiding the interpretation of relationships and leading to some particularly interesting conclusions. Property Generic determinants appear to relate to each other but to be largely independent of Property Specific determinants, with little relationship between the two groups. The majority of significant relationships are found to exist between Property Generic determinants, such that the movement of any one Property Generic determinant could be expected to result in changes to other Property Generic determinants.

Whilst it was interesting to find that relationships between Property Specific determinants and other Property Specific determinants were generally of a low strength, the relationships observed between Tenant, Building and various Property Generic determinants would suggest that those Property Specific determinants may also be affected by the aforementioned changes (and, possibly, vice versa).

The findings, therefore, suggest that movements in the economy, property market and other capital markets impact each other at the macro level but may have relatively little influence at the individual building level.

Such findings may reflect respondents more easily understanding Property Specific determinants and thus being able to assess their relative independence more precisely, whilst finding Property Generic determinants harder to comprehend and so treating them more amorphously.

It would, therefore, appear that relative and proportionate importance is distinct from interdependency. Property Generic determinants generally have a lower relative and proportionate importance as determinants of the capitalisation rate but a greater propensity for relationships. Conversely, Property Specific determinants would appear to have a greater level of relative and proportionate importance as determinants of the capitalisation rate and a greater propensity for independence, with the relationship between Property Generic and Property Specific being very tenuous.

The findings concerning Risk and Growth are contended to be very significant, particularly the Very Close relationship identified between Risk and Growth as determinants in themselves. At the Very Close and Close levels of relationship, Risk and Growth represent two-thirds and nearly half of the identified relationships respectively. At the Very Close relationship level, Tenant is common to both Risk and Growth, whereas at the Close level it is Location which is common, with Building also being closely related to Growth. The slight majority of Very Close and Close relationships are, however, between Risk, Growth and Property Generic determinants.

Thus, whilst the Property Specific determinants may have little relationship to the Property Generic determinants, both are very relevant when considering Risk and Growth as determinants of the capitalisation rate. However, given the relatively high relationship scores of Risk and Growth as shown in Figure 4 which suggest a very pervasive character, it may be appropriate to consider whether each is actually a determinant of the capitalisation rate in its own right. It may be that Risk and Growth are not determinants in their own rights but, instead, some form of positive or negative influence on the other respective determinants.

For example, within the capitalisation rate for a given CBD office investment property, Risk may be primarily a function of the relative significance of Alternative Investments, Separable Characteristics and the Tenant with Growth being primarily a function of the relative significance of the State Of The Market, Economic Situation, Alternative Investments and Tenant. Perhaps, given the Very Close relationship between Risk and Growth, the relative significance of common determinants such as Alternative Investments and Tenant may be the principal determinants for attention by the valuer when considering the appropriate capitalisation rate. Such issues are potentially fascinating but require considerably more sophisticated research to be undertaken before any meaningful conclusions could be drawn.

The suggestion, in valuation theory, that the capitalisation rate is determined by a number of factors, which are related, is found to be broadly correct. However, it would appear that the strength of the relationships between factors differs significantly.

Given the differences in findings concerning the relative and proportionate importance of and relationships between the respective determinants, simple guiding principles for practitioners in assessing the capitalisation rate during a market devoid of transactional evidence are unlikely. The capitalisation rate is clearly a dynamic and complex concept with considerable further research required in order to achieve a clearer understanding of its composition and operation.



## BIBLIOGRAPHY

- Cairns, WH (1983) Effects Of Inflation On Capitalisation Rates, The Valuer, V27 April 1983
- Jones Lang Wootton (1994), Australian Property - Corporate Subscribers Report, JLW Advisory Services Pty Ltd, Sydney
- Parker DRR (1992), Analysis Of The Relative Importance Of Security Of Income As A Determinant Of The Capitalisation Rate For CBD Office Investment Property In Sydney, Journal Of Property Research, 9, 1992
- Parker DRR (1993), Aspects Of A Depressed Property Market - Some Issues Facing Valuers, The Valuer And Land Economist, February 1993
- Parker DRR (1994A), Sydney Office Valuations - Where Next?, The Valuer And Land Economist, February 1994
- Parker DRR (1994B), Determinants Of The Capitalisation Rate (ARY), Proceedings Of The XX FIG Congress, Melbourne, March 1994
- Parker DRR (1994C), Determinants Of Capitalisation Rates For Sydney CBD Office Buildings, Proceedings Of The AIVLE National Biennial Conference, Sydney, May 1994
- Parker DRR (1994D), Determinants Of The Capitalisation Rate - Relative And Proportionate Importance, AIVLE Research Notes, Australian Institute Of Valuers And Land Economists (Incorporated), Canberra
- Rost RO and Collins HG (1990), Land Valuation And Compensation In Australia, Australian Institute Of Valuers And Land Economists (Incorporated), Canberra

# APPENDIX I

## SUMMARY OF MATRIX OF OBSERVED RELATIONSHIPS-1992

### Involving Property Generic

|                         |                           |   |    |    |
|-------------------------|---------------------------|---|----|----|
| State Of Market         | Growth                    | 2 |    |    |
|                         | Risk                      | 2 |    |    |
|                         | Economic Situation        | 4 |    |    |
|                         | Sentiment                 | 4 |    |    |
|                         | Separable Characteristics | 1 | 13 |    |
| Economic Situation      | Growth                    | 3 |    |    |
|                         | Risk                      | 1 |    |    |
|                         | State Of Market           | 4 |    |    |
|                         | Sentiment                 | 2 | 10 |    |
|                         | State Of Market           | 4 |    |    |
| Sentiment               | Economic Situation        | 2 |    |    |
|                         | Alternative Investments   | 2 |    |    |
|                         | Separable Characteristics | 2 | 10 |    |
|                         | Growth                    | 2 |    |    |
|                         | Sentiment                 | 2 |    |    |
| Alternative Investments | Separable Characteristics | 3 | 7  |    |
|                         | State Of Market           | 1 |    |    |
|                         | Sentiment                 | 2 |    |    |
|                         | Alternative Investments   | 3 | 6  | 46 |

### Involving Property Specific

|          |          |   |   |    |
|----------|----------|---|---|----|
| Tenant   | Growth   | 2 |   |    |
|          | Risk     | 2 | 4 |    |
| Location | Building | 2 |   |    |
|          | Planning | 2 | 4 |    |
| Building | Location | 2 | 2 |    |
| Legal    |          |   | 0 |    |
| Planning | Location | 2 | 2 | 12 |

### Involving Growth

|                         |  |   |    |    |
|-------------------------|--|---|----|----|
| Tenant                  |  | 2 |    |    |
| State Of Market         |  | 2 |    |    |
| Risk                    |  | 4 |    |    |
| Economic Situation      |  | 3 |    |    |
| Alternative Investments |  | 2 | 13 | 13 |

### Involving Risk

|                    |  |   |   |   |
|--------------------|--|---|---|---|
| Growth             |  | 4 |   |   |
| Tenant             |  | 2 |   |   |
| State Of Market    |  | 2 |   |   |
| Economic Situation |  | 1 | 9 | 9 |

**Total** **80**

## SUMMARY OF OBSERVED VERY CLOSE RELATIONSHIPS - 1993

**Involving Property Generic:Property Generic**

|                           |                           |
|---------------------------|---------------------------|
| Economic Situation        | State Of Market           |
| Separable Characteristics | Alternative Investments   |
| Sentiment                 | State Of Market           |
| State Of Market           | Economic Situation        |
| State Of Market           | Sentiment                 |
| Alternative Investments   | Separable Characteristics |

**Involving Property Specific:Property Specific**

None

**Involving Risk**

|                           |                           |
|---------------------------|---------------------------|
| Risk                      | Alternative Investments   |
| Risk                      | Growth                    |
| Risk                      | Tenant                    |
| Risk                      | Separable Characteristics |
| Alternative Investments   | Risk                      |
| Tenant                    | Risk                      |
| Separable Characteristics | Risk                      |

**Involving Growth**

|                         |                         |
|-------------------------|-------------------------|
| Growth                  | Tenant                  |
| Growth                  | State Of Market         |
| Growth                  | Risk                    |
| Growth                  | Alternative Investments |
| Growth                  | Economic Situation      |
| Tenant                  | Growth                  |
| State Of Market         | Growth                  |
| Alternative Investments | Growth                  |
| Economic Situation      | Growth                  |

**Involving Property Specific:Property Generic**

|                 |                 |
|-----------------|-----------------|
| State Of Market | Tenant          |
| Tenant          | State Of Market |

## SUMMARY OF OBSERVED CLOSE RELATIONSHIPS - 1993

**Involving Property Generic:Property Generic**

|                         |                         |
|-------------------------|-------------------------|
| Sentiment               | Economic Situation      |
| Sentiment               | Alternative Investments |
| Alternative Investments | Sentiment               |
| Alternative Investments | State Of Market         |
| State Of Market         | Alternative Investments |
| Economic Situation      | Sentiment               |

**Involving Property Specific:Property Specific**

|          |          |
|----------|----------|
| Location | Planning |
| Planning | Location |
| Building | Location |
| Location | Building |

**Involving Risk**

|                    |                    |
|--------------------|--------------------|
| Risk               | Economic Situation |
| Risk               | Location           |
| Risk               | State Of Market    |
| Economic Situation | Risk               |
| Location           | Risk               |
| State Of Market    | Risk               |

**Involving Growth**

|          |          |
|----------|----------|
| Growth   | Building |
| Growth   | Location |
| Building | Growth   |
| Location | Growth   |

**Involving Property Specific:Property Generic**

|                 |                 |
|-----------------|-----------------|
| Building        | State Of Market |
| State Of Market | Building        |

## SUMMARY OF OBSERVED RELATED RELATIONSHIPS - 1993

**Involving Property Generic:Property Generic**

|                           |                           |
|---------------------------|---------------------------|
| Alternative Investments   | Economic Situation        |
| Separable Characteristics | Economic Situation        |
| Separable Characteristics | State Of Market           |
| Economic Situation        | Separable Characteristics |
| Economic Situation        | Alternative Investments   |
| State Of Market           | Separable Characteristics |

**Involving Property Specific:Property Specific**

|          |          |
|----------|----------|
| Building | Tenant   |
| Building | Planning |
| Tenant   | Building |
| Tenant   | Location |
| Location | Tenant   |
| Planning | Building |

**Involving Risk**

None

**Involving Growth**

|                           |                           |
|---------------------------|---------------------------|
| Growth                    | Planning                  |
| Growth                    | Sentiment                 |
| Growth                    | Separable Characteristics |
| Planning                  | Growth                    |
| Sentiment                 | Growth                    |
| Separable Characteristics | Growth                    |

**Involving Property Specific:Property Generic**

|                           |                           |
|---------------------------|---------------------------|
| Separable Characteristics | Building                  |
| Building                  | Separable Characteristics |
| Tenant                    | Economic Situation        |
| Economic Situation        | Tenant                    |

## SUMMARY OF OBSERVED LIMITED RELATIONSHIPS - 1993

**Involving Property Generic:Property Generic**

None

**Involving Property Specific:Property Specific**

|          |          |
|----------|----------|
| Legal    | Building |
| Legal    | Planning |
| Legal    | Tenant   |
| Building | Legal    |
| Planning | Legal    |
| Tenant   | Legal    |

**Involving Risk**

|          |          |
|----------|----------|
| Risk     | Building |
| Risk     | Legal    |
| Risk     | Planning |
| Building | Risk     |
| Legal    | Risk     |
| Planning | Risk     |

**Involving Growth**

|        |        |
|--------|--------|
| Growth | Legal  |
| Legal  | Growth |

**Involving Property Specific:Property Generic**

|                           |                           |
|---------------------------|---------------------------|
| Building                  | Economic Situation        |
| Building                  | Sentiment                 |
| Location                  | Economic Situation        |
| Location                  | Sentiment                 |
| Planning                  | Economic Situation        |
| Location                  | Separable Characteristics |
| Location                  | State Of The Market       |
| Planning                  | State Of The Market       |
| Economic Situation        | Building                  |
| Economic Situation        | Location                  |
| Economic Situation        | Planning                  |
| Sentiment                 | Building                  |
| Sentiment                 | Location                  |
| Separable Characteristics | Location                  |
| State Of The Market       | Planning                  |
| State Of The Market       | Location                  |

**SUMMARY OF OBSERVED NONE RELATIONSHIPS - 1993****Involving Property Generic:Property Generic**

|                           |                           |
|---------------------------|---------------------------|
| Separable Characteristics | Sentiment                 |
| Sentiment                 | Separable Characteristics |

**Involving Property Specific:Property Specific**

|          |          |
|----------|----------|
| Location | Legal    |
| Tenant   | Planning |
| Legal    | Location |
| Planning | Tenant   |

**Involving Risk**

|           |           |
|-----------|-----------|
| Risk      | Sentiment |
| Sentiment | Risk      |

**Involving Growth**

None

**Involving Property Specific:Property Generic**

|                           |                           |
|---------------------------|---------------------------|
| Alternative Investments   | Building                  |
| Alternative Investments   | Legal                     |
| Alternative Investments   | Location                  |
| Alternative Investments   | Planning                  |
| Alternative Investments   | Tenant                    |
| Economic Situation        | Legal                     |
| Sentiment                 | Legal                     |
| Sentiment                 | Planning                  |
| Sentiment                 | Tenant                    |
| Separable Characteristics | Legal                     |
| Separable Characteristics | Planning                  |
| Separable Characteristics | Tenant                    |
| State Of The Market       | Legal                     |
| Building                  | Alternative Investments   |
| Legal                     | Alternative Investments   |
| Legal                     | Economic Situation        |
| Legal                     | Sentiment                 |
| Legal                     | Separable Characteristics |
| Legal                     | State Of The Market       |
| Location                  | Alternative Investments   |
| Planning                  | Alternative Investments   |
| Planning                  | Sentiment                 |
| Planning                  | Separable Characteristics |
| Tenant                    | Alternative Investments   |
| Tenant                    | Sentiment                 |
| Tenant                    | Separable Characteristics |