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**Forecasting Property Market Cycles:
An Application Of The RICS Model To Australian Property Markets**

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Abstract: In May, 2000 the RICS Research Foundation published "Forecasting Office Supply And Demand". The publication included a multi-equation office market forecasting model based on office market cycles for the City of London (the "RICS Model").

The RICS Model adopted variables intended to be common to all office markets around the world and so may be expected to be capable of application to Australian office markets.

Using data sourced by the Property Council of Australia, the RICS Model was applied to the Sydney office market and the results observed.

Through a review of the differences arising from UK and Australian data sources and structural differences between the City and Sydney office markets, the results of the model are analysed and suggestions made to improve it's future use in Australian property markets.

Introduction

The RICS Research Foundation was launched in January 2000 to make a real contribution to the development of the property profession and to the support and encouragement of a dynamic research community. The clear mission and strategy of the RICS Research Foundation are to deliver focussed business solutions and to develop innovative solutions to problems being faced by the profession. Many issues affecting property markets are global in nature, such as the challenge of urbanisation, how to use scarce land resources and the relationship between economic cycles and the property and construction markets.

In May, 2000 the RICS Research Foundation published "Forecasting Office Supply And Demand" detailing the findings of research commissioned by the Corporation of London and the RICS Research Foundation and conducted by Dr Neil Blake of Business Strategies Limited, Dr George Matysiak of City University Business School and Professor Colin Lizieri of the University of Reading. The RICS Research Foundation made available copies of both the full report (Blake et al (2000a)) and the summary report (Blake et al (2000b)) for this study.

Blake et al (2000a) contend that the ability to model the future supply of and demand for office space may at least provide a powerful tool to mitigate the amplitude and effects of the property cycle. The publication included a multi-equation office market forecasting model based on office market cycles for the City of London (the “RICS Model”) which was intended for application to other world office markets.

However, the authors acknowledge that the City of London office market has the best data availability in the United Kingdom, with such a level of data possibly not existing in other markets and so potentially limiting the applicability of the RICS Model.

The purpose of this paper is to apply the methodology of the RICS Model in an Australian setting. For this purpose, the Sydney CBD office market was chosen because:

- it is the largest office market in Australia;
- it is a mature market;
- it has a deep pool of available data; and
- it has not, in the last two decades, suffered the wide amplitude of boom/bust swings exhibited in the smaller markets of Brisbane, Melbourne, Perth, Adelaide and Canberra.

The principal issue for consideration is whether the RICS Model is capable of effective application to markets other than that of the City of London.

To address the principal issue requires consideration of a range of secondary issues including:

- whether the Sydney CBD office market displays similar characteristics to the City of London market;
- whether that data available for the Sydney CBD office market is comparable to that for the City of London office market; and
- whether the web based model is user friendly or requires significant redesign for application to an alternative market.

The RICS Model

Figure 1 summarises the structure of the RICS Model which essentially comprises two halves being the supply side and the demand/price side. The model was developed using general concepts of office market dynamics and specific data for the City of London office market with the aim of creating a model, consistent with the mission and strategy of the RICS Research Foundation, that was capable of application in other global office markets. This section draws heavily on Blake et al (2000a) which is generically attributed herewith.

In designing the model, the authors had particular regard to previous studies of the central London office market (Wheaton et al (1997) and Hendershott et al (1999)), identified the similarities and differences in each together with the gaps and developed enhancements and extensions to address same.

On the supply side, the RICS Model addresses the interaction between rents and the amount of space made available. Supply is considered as largely a lagged function of rents. An increase in rents leads to additional starts but with a significant lag of 2 or more years until the new space is completed. This creates a recursive system where demand and rents interact with a pre-determined supply situation and where supply subsequently adjusts. Such a delayed reaction means that large fluctuations in rents are possible before the market clears. New building starts are influenced not only by rents, but also by planning policies and the capital gains anticipated. The lag of 2 or more years to complete new office space means that the expectations of future market conditions (rents, yields, vacancy rates, etc.) play a key role in

the decision to develop new sites. Hence, the ability to more accurately forecast these future market conditions is all the more critical.

On the demand side, the RICS Model addresses the amount of space taken up at a given rent. The main driver of demand is employment. Essentially, in the short term, available stock is given as is the level of employment that needs to be accommodated in the City's offices. This means that if the ratio of demand to available stock increases, real effective rents will increase and vacancy rates will fall.

The authors deliberately chose a stock intensity variable (being the employment to stock ratio) rather than a vacancy rate to avoid definitional issues and under-enumeration of the vacancy rate due to vacancy or under-occupation of space within a firm's corporate property portfolio. The employment to stock ratio accounts both for stock that is available (i.e.: formally on the market) and for changing levels of intensity of occupation. As demand for space falls, stock will be released onto the market and firms, unable to sub-let or assign surplus space, will under-occupy. This will be reflected in a lower employment to stock ratio. Conversely, in tight markets available space will be absorbed and firms, unable to expand or unwilling to pay higher rents, will use their existing space more intensively by reducing floorspace per worker ratios. Thus the employment to stock ratio overcomes the inherent sensitivity of a vacancy figure based on availability.

As shown in Figure 1, the RICS Model uses ten equations where supply and demand components are estimated:

Equation 1 Stock/available space

The available stock of office space in square metres at the end of the period is equal to the stock at the end of the previous period (start of the current period) plus any newly completed office space during the period less any depreciation/withdrawals from the stock during the period.

In the RICS Model, data for the available stock and new completions was sourced from the City Corporation with that for depreciation/withdrawals being derived;

Equation 2 Starts

The level of starts in the current period is a function of the expected change in capital values (approximated by real effective rents divided by the gilt yield plus an assumed constant risk premium), real effective rents in the current period and the amount of planning permission for new space in the previous period but which is not currently being developed. This reflects the two principal drivers for office development being rental returns and the prospect of capital gain, subject to the impact of planning policy.

In the RICS Model, data for starts was sourced from the City Corporation, gilt yield was that for nominal zero coupon yields medium dated 10 years sourced from ONS, real effective rents were derived and data for the amount of planning permission for new space but which is not currently being developed was sourced from the City Corporation;

Equation 3 Completions

The level of newly completed office space in the current period is a function of the level of new starts in previous periods. The authors derive data for completions by assuming that all starts are eventually completed with a development period from start to completion of eighteen months to three years (3 to 6 semi-annual periods);

Equation 4 Expected rents

The expected rent two years ahead is forecast as the product of the real effective rent in the current period (being nominal effective rents deflated by the GDP deflator) and a function of the change in office based employment in the City in the current period and gilt yields in the current period.

In the RICS Model, data for office-based employment in the City was sourced from Business Strategies and ONS;

Equation 5 Expected yield on gilts

The expected gilt yield two years ahead is forecast as the gilt yield in the current period plus a function of the change in the price level (GDP deflator). Effectively, a change in the rate of inflation is used as a predictor of future gilt yields or, more practically, an indicator of how people might form a view on future gilts movements. Effectively, when inflation is going up, people think that gilt yields will increase and vice versa and beyond that they do not know. It is considered particularly interesting that the RICS Model should find a variable which reflects such a behavioural limitation to be significant.

In the RICS Model, data for the GDP (at market prices) deflator was sourced from ONS;

Equation 6 Depreciation/withdrawals

The level of depreciation or withdrawals from stock in the current period is a function of the available stock of office space in the previous period and the level of new starts in the current period. This reflects withdrawals because of obsolescence relative to the size of the stock and withdrawals through demolition in order to create space for new starts.

On average, this was found to equate to a withdrawal of about 1% of the stock every six months which was noted to be consistent with market perceptions;

Equation 7 Amount of planning permission for new space but which is not currently being developed

The amount of planning permission for new space but which is not currently being developed in the current period is equal to that for the previous period plus the level of new planning permission given in the current period less the level of new starts in the current period.

In the RICS Model, data for net new planning permission granted was derived;

Equation 8 Real effective rents - short term and long term

Real effective rents in the current period are driven by the level of office based employment in the City in the current period and the available stock of office space in the previous period. The authors also use a “dummy” variable to account for the change in office-based and non-office-based employment in the City of London over the data period (1980 to 1998).

The RICS Model focuses attention on prime rents, rather than secondary rents, on the basis that it is the prime end of the market that drives decisions on new supply and demand with the secondary market acting as a residual.

In the RICS Model, data for effective rents was sourced from the authors calculations;

Equation 9 Headline rents

Incorporated for completeness, headline rents are a function of effective rents, average rent free periods in months, average lease lengths in years and gilt yields.

In the RICS Model, data for headline rents was sourced from CB Hillier Parker with that for average rent free periods and for average lease lengths from the authors estimates. From this, effective rents were derived; and

Equation 10 Rent free periods

Average rent free periods in the current period are a function of average lease length in the current period, average rent free periods and lease length in the previous period and real effective rents in the current period.

The RICS Model is configured as an Excel spreadsheet workbook comprising eight linked worksheets with navigation by user-friendly buttons:

Model Overview	- describes the equations and identities used;
Baseline Forecasts	- detailed forecasts and workings of the Model;
Simulation 1	- scenario forecasts;
Simulation 2	- scenario forecasts;
At A Glance	- graph showing expected rents;
Source Data	- list of variables used;
Coefficients	- coefficients generated by equations;
Residual Feedback	- historical data and residual effects from equations.

The RICS Model is available free of charge on the Internet at

www.rics-foundation.org/officemodel/index.html

and is designed to be applied to other global office markets following the loading of relevant data.

Similarity of Office Market Characteristics

The Sydney CBD office market has many structural similarities to the City of London office market. It is a clearly defined area, being compact and bounded by water and Central Station, such that cluster analysis to define the area is not required. The Sydney CBD is administered by one Council, being a market relatively independent of and not significantly influenced by other adjacent markets. As a large office market, it is of sufficient scale to generate local effects and exhibit common internal patterns of behaviour.

The Sydney CBD is the highest order centre of the urban hierarchy for New South Wales, being a global city where financial and professional services dominate, rather than having a manufacturing or other base. It has a specific nature of dense existing development, significant size, functional sophistication and a high cost of new development. It is, in many respects, the Australian equivalent of the City of London.

Similar to the City market, the greatest period of growth in office stock took place in the very late eighties through to the early nineties in response to substantial increases in rents (and capital values) driven by earlier financial deregulation in the mid-eighties. In both markets, this late eighties/early nineties new supply in office stock coincided with a significant global economic downturn resulting in a massive decline in rents and capital values causing unprecedented havoc in the office space markets and associated areas of property investment. Figures 2-6 illustrate the cycles in office stock levels, completions, vacancy rates and effective rents for the Sydney CBD office market.

The main difference, however, between the City of London and Sydney markets is that while the growth in office stock over the 20 year period to the late 1990s represented an increase of about 12% in the City of London, it represented a 40% increase in the Sydney CBD.

Further differences include lease lengths being significantly shorter, on average, with average building height and construction periods being greater in Sydney together with the prevalence of effective rent structures in Sydney following a period of volatile face rent and incentive structures.

Though it is also likely that idiosyncratic differences will arise between the Sydney CBD and the City of London office market at different points in time, the construction of the RICS Model has a compelling logic which suggests it should be capable of application to the Sydney CBD office market.

Comparability of Available Data

To apply the RICS Model to a market other than the City, the user is required to replace the City data with locally relevant data for:

- new planning permissions;
- office based employment;
- starts;
- completions;
- depreciation and withdrawals;
- planning pipeline;
- the total available stock; and
- effective rent

and to modify the worksheets for Baseline Forecasts (update with historical data for both exogenous and endogenous variables and forecasts for the exogenous variables plus future values for the residuals), Coefficients (entering new estimated coefficients which have been separately derived in an appropriate software package) and Residual Feedback (replace historical data with local data).

Regrettably, the base data used by the current authors (which, it is considered, is close to the best available) falls short of that available to Blake et al (2000a) in a number of areas. Firstly, semi-annual (half-yearly) data has only been collected for a period of less than 10 years, while for some key variables (notably starts and completions) data was only available from 1993 onwards. Blake et al (2000a) derived a historic series of net new planning permissions over a 20-year period but the only data on permissions available to the current authors was annual data only over the last 5 years from the Sydney City Council (SCC). This SCC data also includes details on completed space which, for definitional or other reasons, differs substantially from data on completed space from other sources, thus casting doubts on the planning approvals information.

Taking these quality issues into account, the following is a summary of the data requirements of the RICS Model and the data available for use in application to the Sydney CBD:

Data used in the RICS Model and Sydney Data availability

RICS Variable Name	Description	Comment on Sydney Data Availability*
<i>COMP</i>	Completions	Available
<i>DEP</i>	Depreciation/withdrawals	Available
<i>ERENT</i>	Prime Effective Rent	Available
<i>HRENT</i>	Headline Rent	Available
<i>LL</i>	Average lease Length	Available
<i>N</i>	Office Based Employment	Available but of dubious quality as largely interpolated from 5-yearly surveys
<i>NPM</i>	Net new planning permissions	NOT Available
<i>PDGDP</i>	GDP (at market prices) deflator	Available (ABS)
<i>PIPPM</i>	Stock of space with planning permission not yet started	NOT Available
<i>RERENT (R)</i>	Real effective rents	Available
<i>RFP</i>	Average rent free period	Available
<i>ST</i>	Starts	Limited availability (only since 1992)
<i>STOCK</i>	Stock of office space	Available
<i>Y</i>	Nominal Zero Coupon yields (10 year)	Available (Reserve Bank)
<i>VAC</i>	Vacancy Rate (Sydney only)	Available

* Data from BIS Shrapnel and/or the Property Council of Australia (largely sourced from CB Richard Ellis, Jones Lang LaSalle and Sydney City Council) unless otherwise indicated

The lack of availability of the planning approvals data and the difference in frequency of the data make it virtually impossible to use the RICS Model and spreadsheets directly. It is eminently possible, however, to use the underlying RICS methodology (with some amendments to allow for these differences).

On the other hand, Blake et al (2000a) do not use “vacancy rate” as a variable in their model, giving a number of reasons why the available data on vacancy rates is an unreliable indicator of supply-demand market dis-equilibrium. While some of these concerns relate to all markets, some are more specific to UK market and particularly the City of London, where longer leases (of the order of 25 years) have historically been the norm. This impacts markedly on “hidden” vacancy. The relationship between vacancy rate and real effective rents for the Sydney CBD office market is given as Figure 7. It can be seen from this diagram that there is a strong, inverse relationship between (measured) vacancy rates and rent in the Sydney office market and the inclusion of the vacancy rate as a predictor variable in some of the equations in the model is likely to increase their forecasting ability.

The following table provides summary statistics for the variables used in the model for the Sydney CBD office market. Comparable figures for the City of London (Blake et al (2000a)) are also given (on the line below). While the RICS report indicates that these are either “level or annual percentage changes” it is not abundantly clear that this is always the case given that the City of London data is semi-annual.

Summary Statistics Sydney office market (London market in line below)

Variable Name	Start:End	Mean	Std Dev	Max	Min
<i>COMP ('000m2)</i>	71:99	147.8	82.4	386.5(90)	35.4(95)
		98.4	84.4	325.3(89:2)	1.8(83:1)
<i>DEP ('000 m2)</i>	71:99	70.7	46.7	173.5(88)	8.3(98)
		68.8	75.2	391.8(98:1)	1.1(83:1)
<i>ERENT (% ch.)</i>	70:99	7.9	14.1	33.3(71)	-22.0(92)
		6.1	18.1	35.0(96:2)	-30.6(92:1)
<i>HRENT (% ch.)</i>	70:99	8.0	12.3	33.3(71)	-12.9(73)
		5.4	14.4	27.5(97:1)	-28.8(92:1)
<i>LL (years)</i>	70:99	9.5	1.2	10.0(various)	6.0(98/99)
		17.4	3.1	25.0(90:1)	14.0(94:2)
<i>N(% ch.)</i>	72:99	1.4	3.9	10.8(94)	-6.3(92)
		0.4	4.9	8.4(95:2)	-8.3(91:2)
<i>NPM ('000 m2)</i>	n.a.				
		146.9	144.8	604.7(87:2)	-16.4(91:1)
<i>PDGDP(% ch.)</i>	70:99	7.0	4.6	16.3(74)	-0.2(97)
		4.6	2.0	7.8(90:2)	1.1(94:2)
<i>PIPPM ('000 m2)</i>	n.a.				
		9.2	26.8	109.8(86:2)	-23.0(98:1)
<i>RERENT (% ch.)</i>	70:99	0.9	13.4	24.3(71)	-22.9(73)
		1.5	17.8	30.8(96:2)	-34.0(92:1)
<i>RFP (months)</i>	80:99	12.0	11.8	36.0(92)	0.0(various)
		20.9	10.8	36.0(94:2)	6.0(98:1)
<i>ST ('000 m2)</i>	92:99	63.5	95.1	298.8(97)	0.0(93)
		118.9	113.5	515.0(87:2)	2.9(93:2)
<i>STOCK (ch. '000 m2)</i>	70:99	77.0	87.9	298.2(92)	-86.5(97)
		125.8	118.2	515.0(87:2)	2.6(93:2)
<i>Y (% yield)</i>	70:99	10.1	3.0	15.0(81)	5.0(98)
		9.3	1.9	14.1(82:1)	5.0(98:2)
<i>VAC (%)</i>	70:99	8.2	6.1	22.5(92)	1.2(87)

Comparison of the Sydney and City of London summary statistics indicates the many similarities between the markets (particularly in the timing of the extreme results – maxima and minima) and the notable differences (lease length in particular).

User Friendliness of RICS Model

While the spreadsheet incorporating the RICS Model is quite easy to use and follow, the substantive differences in the available data for Sydney compared to City of London rendered the RICS Model unusable for the current study. Even given greater similarities in the available data, differences in market fundamentals (lease length, construction time) and differences in the behaviour of the two markets giving rise to some ‘outlier’ results which need to be addressed in the relevant local models may well also have rendered the RICS Model of limited use.

The fact that another package needs to be used (Eviews by the current authors) to estimate the coefficients for the local model - which could be incorporated into the RICS spreadsheet together with the local data – means that it is probably easier to build a separate spreadsheet for the local data and model or to do any simulation or forecasting in the package used for the estimation.

Results Derived From Application of RICS Model to Sydney CBD Office Market

The following results were obtained for the dynamic equations, being those equations requiring the estimation of parameters (as opposed to Equations 1, 7 and 9, being identities arising from definitions). A number of the equations for the City market incorporate forecasts (or ‘expectations’) of market factors (bond yields, effective rents, capital values) four periods ahead as four half-years (2 years) is the approximate average construction period. For the Sydney model, this has been converted to 2 periods (years in the Sydney model) as the comparable period ahead that developers are attempting to anticipate. For the Sydney office market with its longer construction period, there is a valid argument that the model should incorporate a 3-year horizon over which to anticipate critical market conditions when projects currently commencing will then come on stream.

Equation 2

Starts (estimated equation)

Specification:

$$ST_t = STOCK_{t-1} * (\beta_0 + \beta_1 K_t^{e,t+2}/K_t + \beta_2 VAC_{t-1}) + r_t$$

where K_t is the current capital value and $K_t^{e,t+2}$ is the expected capital value 2-years hence

Variable	Estimated Coefficient	Estimated t-statistic
β_0	0.036	1.00
β_1	0.058	1.45
β_2	-0.005	-3.97

$R^2 = 0.84$

DW = 1.69

Equation 2 varies from that in the RICS Model due to the lack of data on planning approvals and the inclusion of the vacancy rate (lagged one period), which is the most significant term in the forecasting equation. The signs of the estimated coefficients in the forecasting equation are all as expected with the model indicating starts of about 4% of current stock, on average, per annum. This figure is comparable to the City of London data.

Equation 3

Completions (estimated equation)

Specification:

$$COMP_t = \beta_1 ST_{t-1} + \beta_2 ST_{t-2} + \beta_3 ST_{t-3} + \beta_4 DUM_{96} + r_t$$

where $DUM_{96} = 1$ for 1996 and 0 otherwise

with $\beta_1 + \beta_2 + \beta_3 = 1$ (all starts completed over a 3-year period)

Variable	Estimated Coefficient	Estimated t-statistic
β_1	0.095	0.99
β_2	0.449	3.75
β_3	0.456	2.38
β_4	105.4	3.98

$R^2 = 0.88$

DW = 1.07

There is limited data on starts for the estimation of Equation 3. There also appears to be an inconsistency in the data with insufficient starts over the 1993-95 period to account for the completions in 1996 (hence DUM₉₆ in the model). The model indicates that about 10% of starts are completed in the following year with 45% completed 2 years later and 45% completed 3 years later. These figures indicate a longer average construction period than for the City of London, which is consistent with the generally taller office buildings in the Sydney CBD.

Equation 4 Expected change in rents (estimated equation)

Specification:

$$\ln(R_{t-2}^{e,t}/R_{t-2}) = \beta_0 + \beta_1 Y_{t-2} + \beta_2 \ln(N_{t-2}) + \beta_3 VAC_{t-2} + r_t$$

With R_{t-2} the Real Effective Rent at time (t-2) and
 $R_{t-2}^{e,t}$ the expected Real Effective Rent at time t, forecast at time (t-2)

Variable	Estimated Coefficient	Estimated t-statistic
β_0	0.015	0.37
β_1	-0.016	-0.67
β_2	0.050	0.03
β_3	-0.040	-2.71

$$R^2 = 0.47$$

$$DW = 1.23$$

Equation 4 is not a very good fit with only the variable on change in vacancy rate (= first difference) being significant. The sign of the bond yield coefficient is contrary to expectation but it is not significant. The comparable equation in the City of London model had $R^2 = 0.78$.

Equation 5 Expected gilt (bond) yields (estimated equation)

Specification:

$$Y_t = Y_{t-4} + \beta_1 \dot{P}_{t-2} + r_t$$

Where \dot{P} = change in the rate of inflation, $\dot{P} = 100(P_t/P_{t-1} - 1)$

Variable	Estimated Coefficient	Estimated t-statistic
β_1	0.033	0.25

$$R^2 = 0.40$$

$$DW = 0.92$$

Equation 5 relates changes in bond yields (2 years ahead compared to current yields) to current changes in the CPI. The fit here is better than for the City of London market ($R^2 =$

0.40 compared to $R^2 = 0.06$) but will forecast only slightly better than anticipating that bond yields in two-years' time will be the same as they are currently.

Equation 6 Depreciation/withdrawals (estimated equation)																	
Specification:																	
$DEP_t = \beta_1 VAC_{t-1} + \beta_2 STOCK_{t-1} + \beta_3 DUM_{88} + e_{t-1} + r_t$																	
<table border="1"> <thead> <tr> <th>Variable</th><th>Estimated Coefficient</th><th>Estimated t-statistic</th></tr> </thead> <tbody> <tr> <td>β_1</td><td>-2.234</td><td>-1.36</td></tr> <tr> <td>β_2</td><td>0.027</td><td>4.42</td></tr> <tr> <td>β_3</td><td>76.60</td><td>2.68</td></tr> <tr> <td></td><td>0.564</td><td>2.90</td></tr> </tbody> </table>			Variable	Estimated Coefficient	Estimated t-statistic	β_1	-2.234	-1.36	β_2	0.027	4.42	β_3	76.60	2.68		0.564	2.90
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	0.564	2.90															
$R^2 = 0.57$ DW = 1.69																	

Due to the limited data on STARTS, this variable has been omitted from Equation 6 and replaced by the variable VACRT (lagged one period) allowing 28 years of data to be used instead of only 7. The fitted model indicates annual withdrawals of the order of 2.7% of current stock. This figure is comparable to that from the City of London model (about 1% of current stock every 6-months).

Equation 8 Real effective rents (estimated equation)														
Specification:														
$R_t = \beta_0 + \beta_1 (N_t/STOCK_{t-1}) + \beta_2 VAC_{t-1} + r_t$														
<table border="1"> <thead> <tr> <th>Variable</th><th>Estimated Coefficient</th><th>Estimated t-statistic</th></tr> </thead> <tbody> <tr> <td>β_0</td><td>587.7</td><td>6.14</td></tr> <tr> <td>β_1</td><td>120.7</td><td>0.07</td></tr> <tr> <td>β_2</td><td>-15.77</td><td>-8.70</td></tr> </tbody> </table>			Variable	Estimated Coefficient	Estimated t-statistic	β_0	587.7	6.14	β_1	120.7	0.07	β_2	-15.77	-8.70
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β_0	587.7	6.14												
β_1	120.7	0.07												
β_2	-15.77	-8.70												
$R^2 = 0.80$ DW = 1.14														

Equation 8 includes both the vacancy rate and the stock intensity ratio. Not surprisingly, the coefficient associated with the stock intensity ratio is not significant ($t = 0.07$), largely due to the way in which employment numbers have been estimated from the occupied office space. On the other hand, the coefficient associated with the vacancy rate is highly significant ($t = -8.70$), providing a measure of the strong inverse relationship between effective rents and vacancy rate for the Sydney CBD office space as shown in Figure 7.

Equation 10

Average rent free period (estimated equation)

Specification:

$$100 * RFP_t / (12 LL_t) = \beta_0 + \beta_1 (100 * RFP_{t-1} / (12 LL_{t-1})) + \beta_2 R_t + \beta_3 VAC_t + r_t$$

Variable	Estimated Coefficient	Estimated t-statistic
β_0	-5.553	-1.65
β_1	0.406	3.16
β_2	0.012	1.82
β_3	0.968	4.38

$R^2 = 0.94$

DW = 0.86

Equation 10 expresses the rent free period (RFP) as a percentage of the average lease length. The close association between the length of the rent-free period and the vacancy rate is evident ($t = 4.38$).

As can be seen from the above discussions of the individual forecasting equations, while the spirit of the RICS Model flows through, the significant difference in available data and factors specific to each particular office market (City of London or Sydney) result in somewhat different specifications of the overall model.

In its current form, the model of the Sydney office market could now be used to examine alternative policies or market conditions against the historic data, just as the RICS Model is used to consider a number of different scenarios commencing in 1986 and examining their impact through to the present time. While this is a very useful form of market analysis, it provides only a partial indication of the impact of current planning policies/decisions or the future impact of current market conditions.

Conclusions

The RICS methodology provides an extremely useful basis for studying office markets, bringing together the key factors which impinge on the supply and demand sides of the market.

Full use of models such as the RICS Model can only be achieved in Australia for our many important office markets if high quality base data is available, with a group such as the Property Council of Australia (PCA) being well placed to work with those collecting and using such base data in order:

- to ensure the comprehensive and frequent collection and collation of future office market data (certainly half-yearly) using a uniform set of definitions;
- to act as a clearing-house for the widest possible distribution of the data to interested parties; and
- to collect and collate the historic data to be as complete and consistent as possible with data to be collected in the future.

Since at least two complete cycles of data are necessary to produce acceptable forecasts and the length of the property cycle in Australian office markets is of the order of 15 years or longer, it is critical that time is spent thoroughly examining and compiling the historic data. Otherwise, it will still be many years until substantially better quality data is available than that currently in use.

The current study has successfully applied the RICS methodology to produce a forecasting model (a set of equations) for the Sydney CBD office market but was unable to use the accompanying spreadsheet due primarily to the poorer quality (less frequently collected and collated) data available on the Sydney office market.

While the City of London and Sydney office markets are similar in many ways, the differences between them in lease structures, average construction time and the occasional market-specific perturbations necessitate changes to the basic model of sufficient magnitude so as to make it extremely difficult to incorporate into a generally applicable spreadsheet.

Accordingly, data issues and differences in market structure preclude the effective application of the RICS Model to the Sydney office market.

It is likely that such differences between market circumstances and differences in available data would also be found elsewhere when comparing markets in different countries. This is regrettable since the development and application of a reasonably simple, generally applicable and universally accepted model would greatly help in allowing key decision makers (such as developers, investors, bankers, planners and so forth) to better understand the dynamics of their office market and the collective impact of their individual decisions, so potentially mitigating the amplitude and effects of the property market cycle.

The RICS methodology does, however, draw attention to the significance of the role of expectations in the operation of the property market by endeavouring to mirror the behaviour of market participants looking forward and making explicit many issues that are implicit in decision making.

Thus, despite the limitations noted above, there is still a great deal which can be accomplished in individual markets through the application of methodology along the lines of that developed in the RICS sponsored research into the City of London office market.

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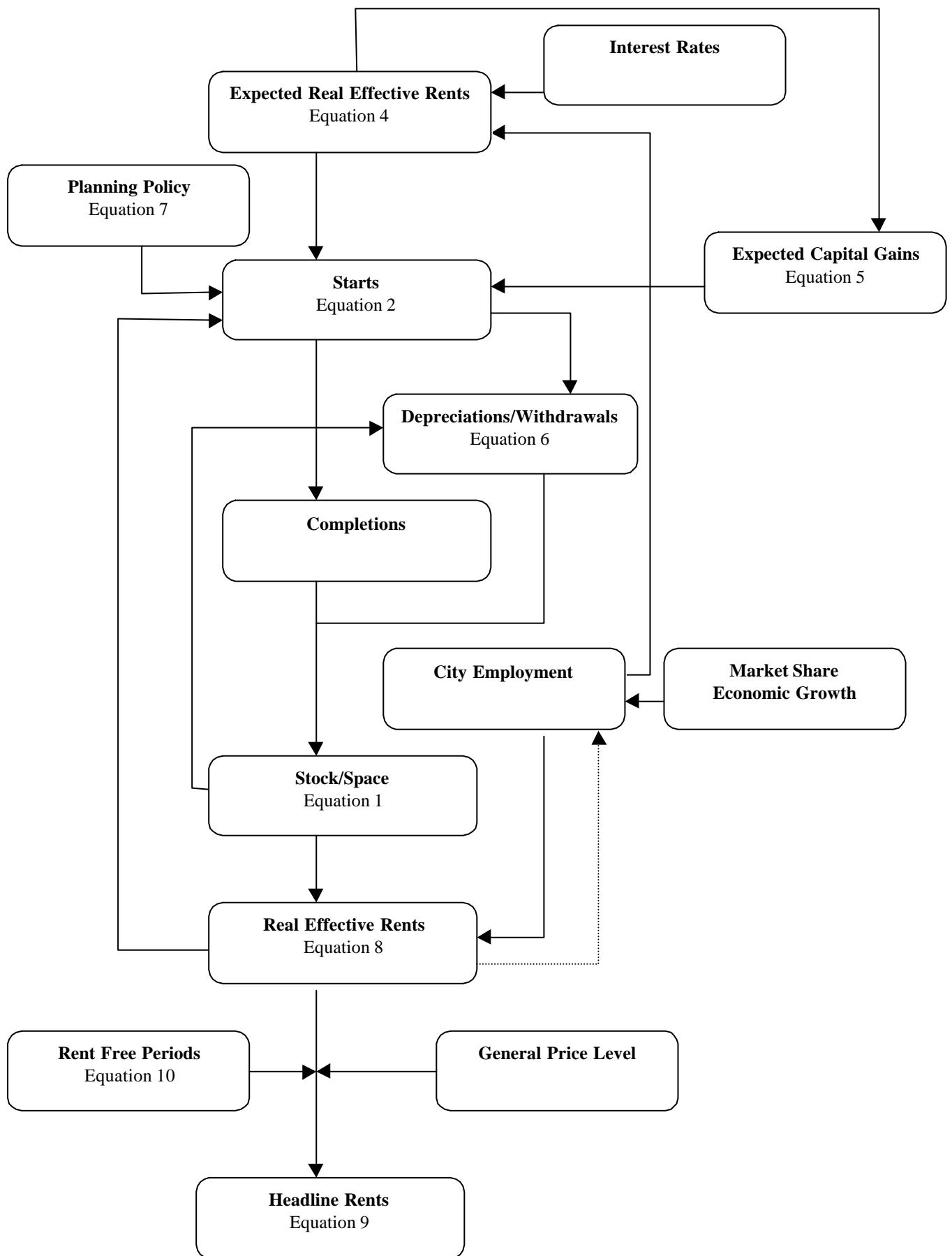


Figure 1: Model of the City Office Market

Source:Blake et al (2000a)

Figure 2: Sydney CBD Office Stock (1000 m²)
1970 - 1999

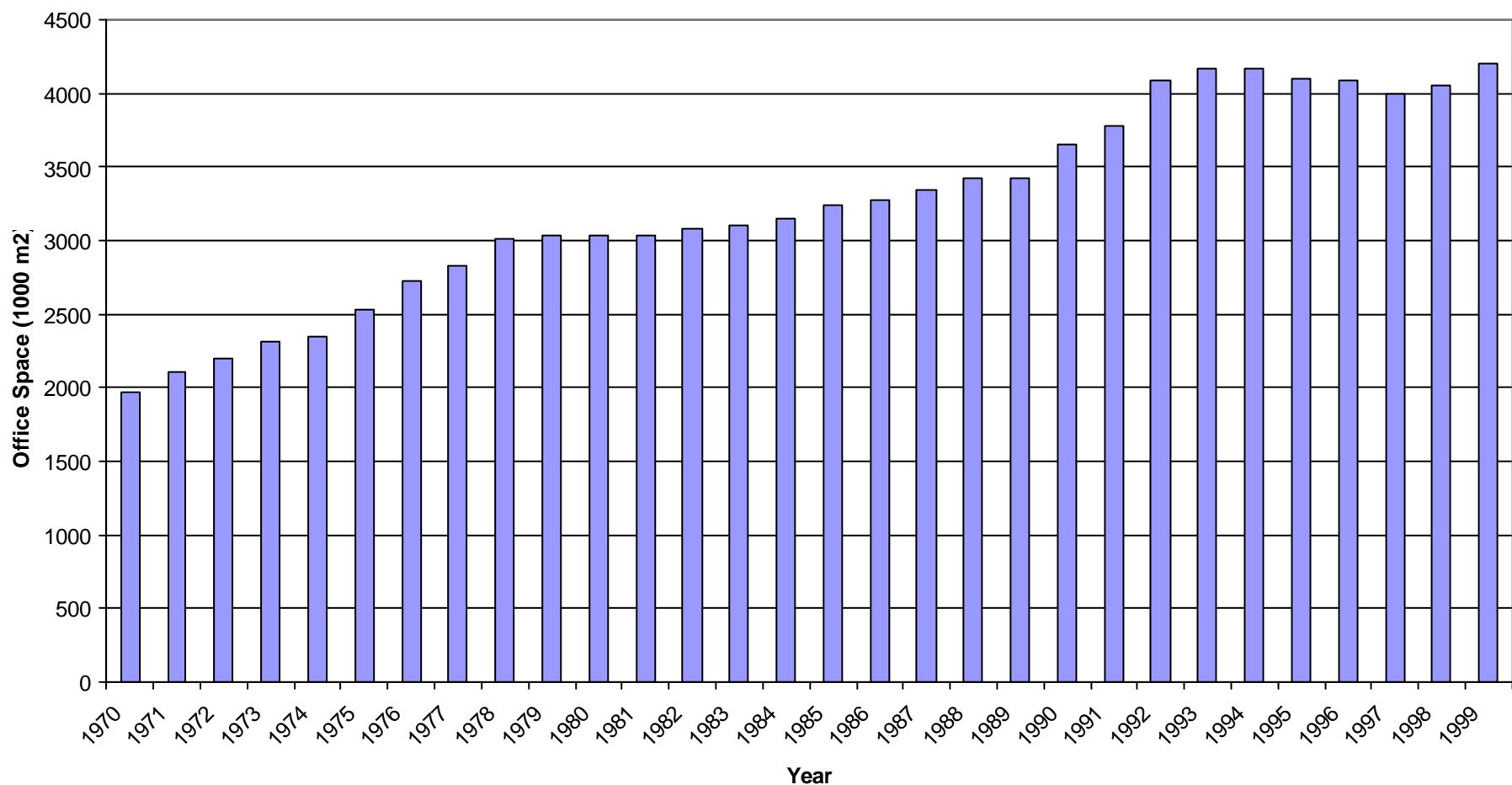
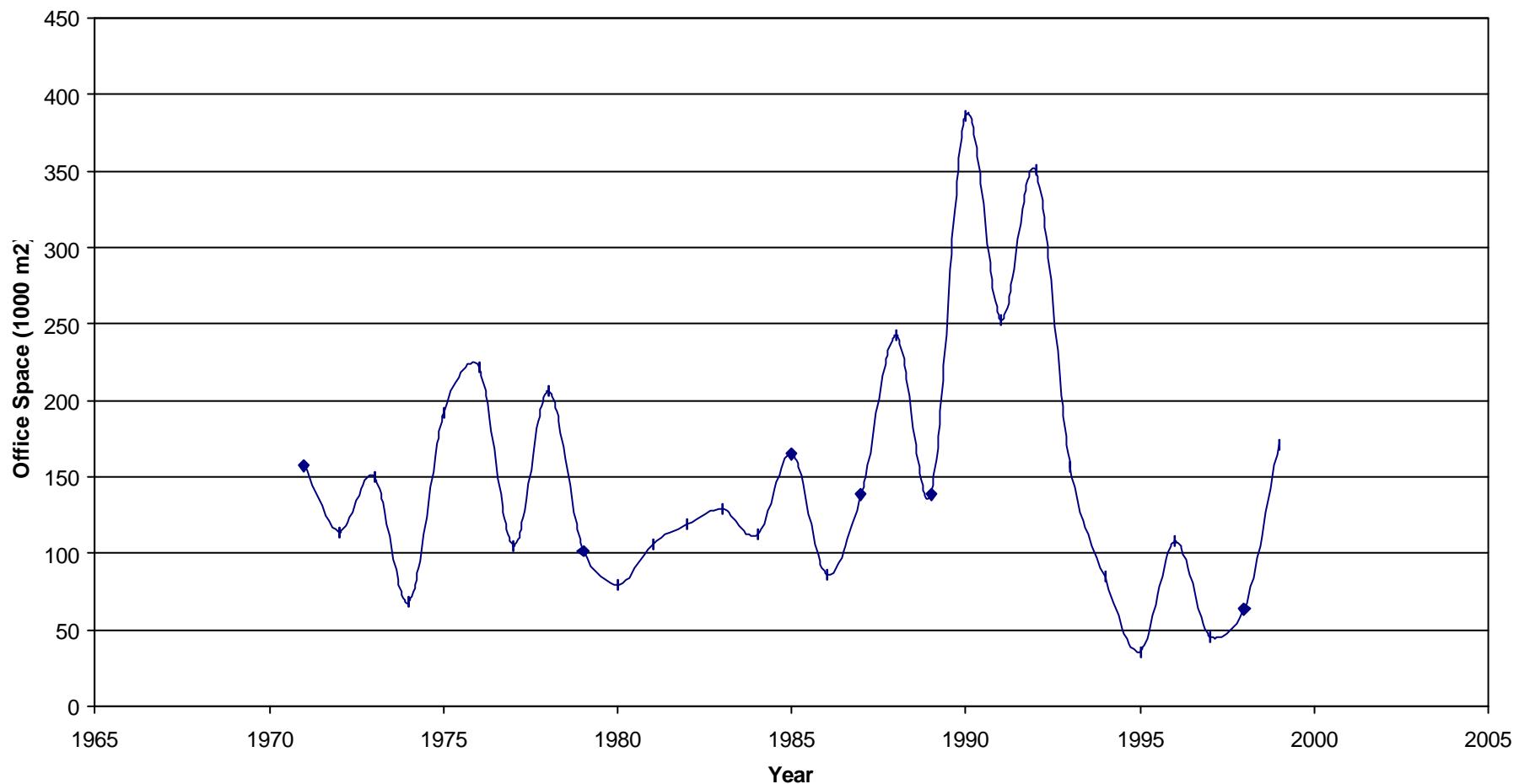
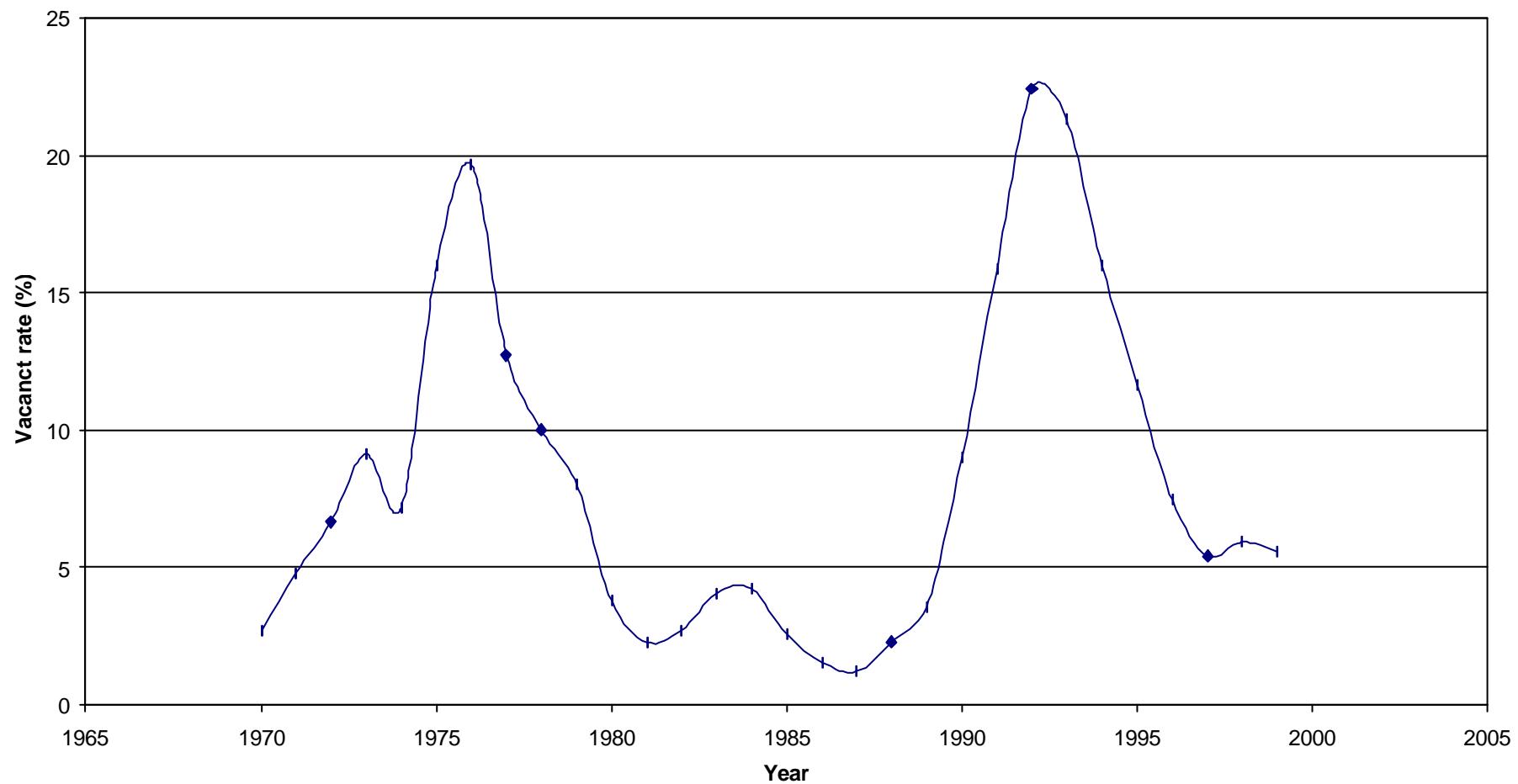


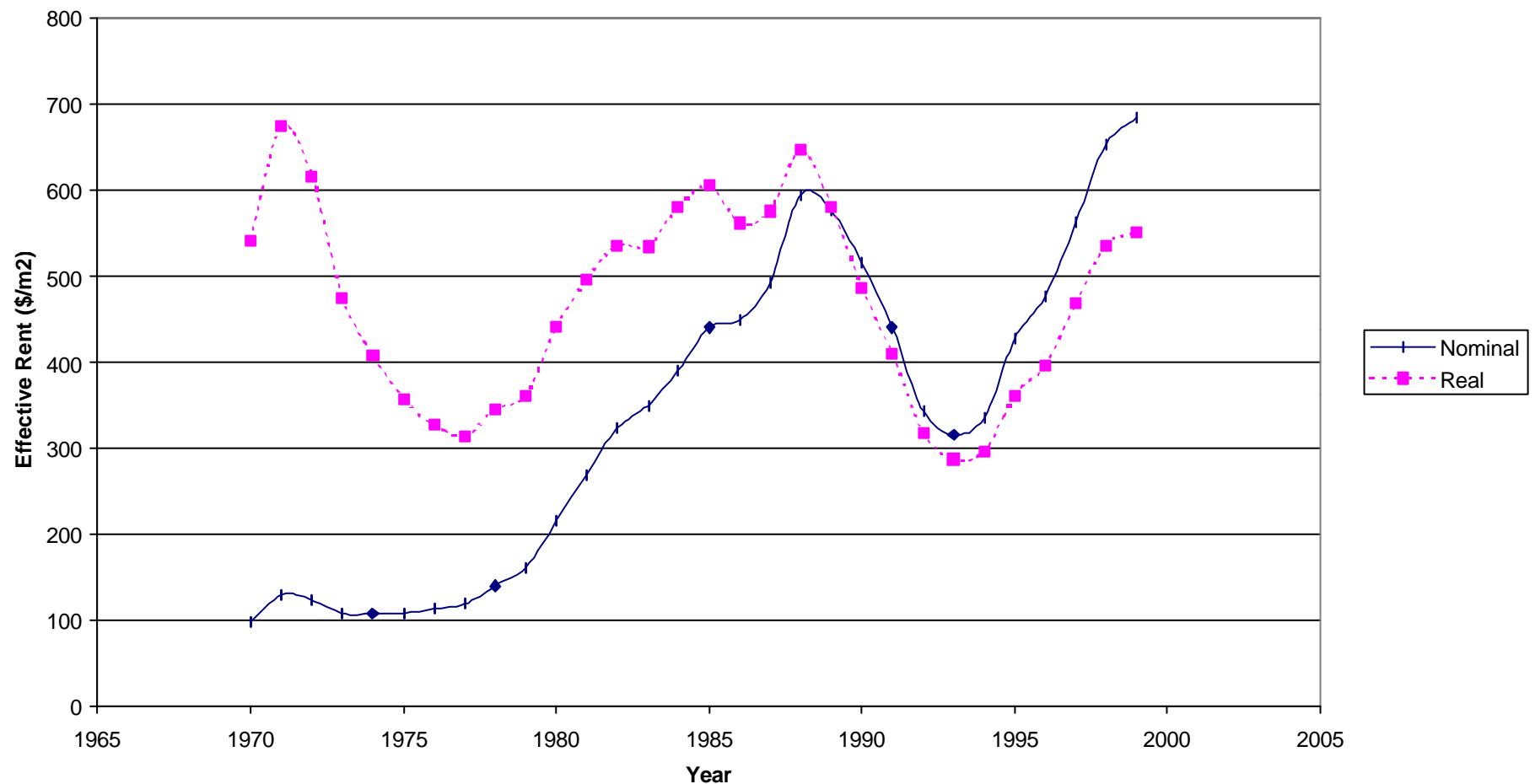
Figure 3: Sydney CBD Office Completions (1000 m²)
1970 - 1999



**Figure 4: Sydney CBD Office Vacancy Rate (%)
1970 - 1999**



**Figure 5: Sydney CBD Office Premium Effective Rents (\$/m²)
1970 - 1999**



**Figure 6: Sydney CBD Office Annual Change in Premium Effective Rents (%)
1970 - 1999**

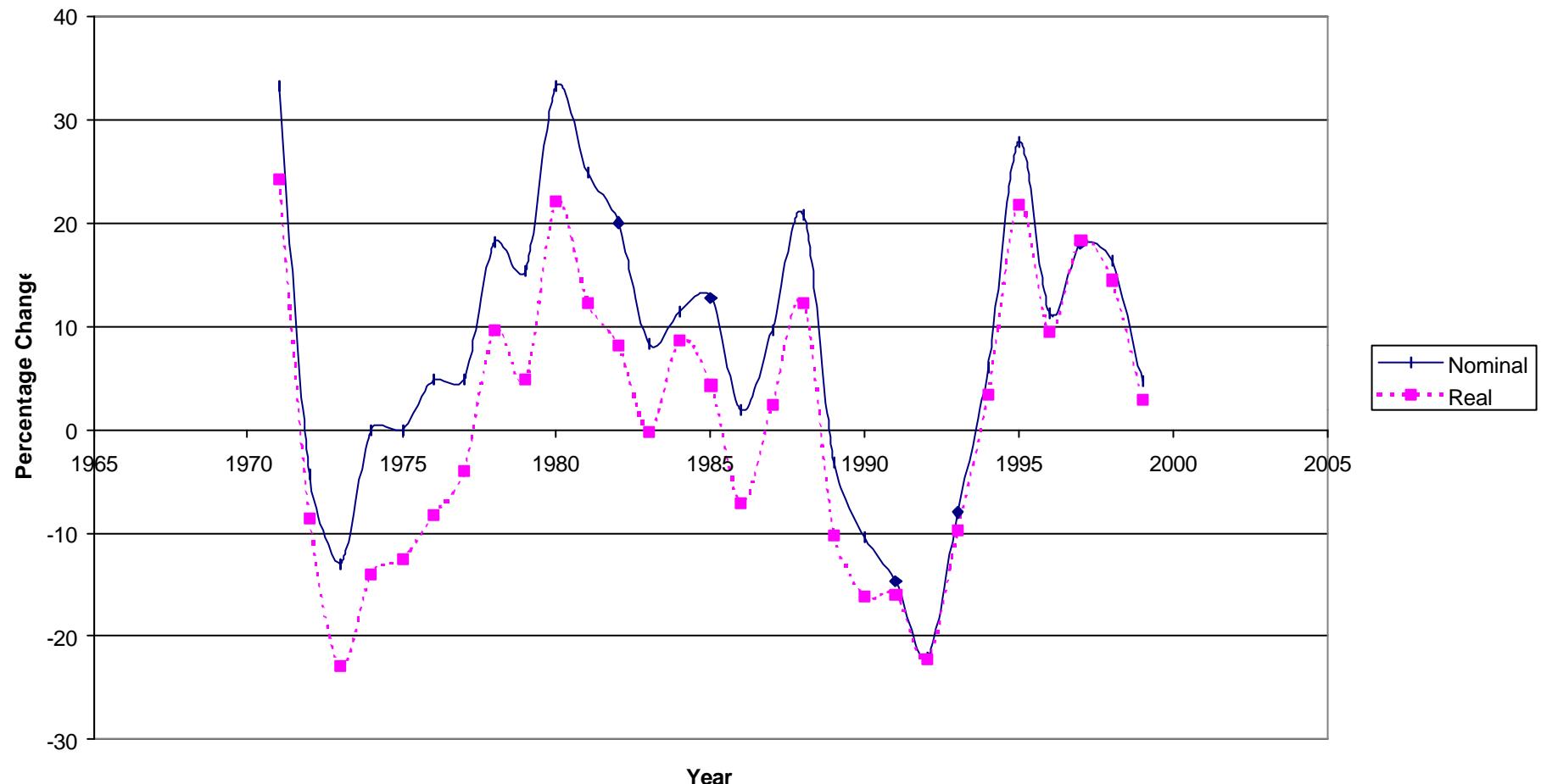


Figure 7: Vacancy Rate (%) and Real Effective Rent (\$/m²) Sydney CBD 1971-1999

