Paper Presented in the PhD Students' forum in Pacific Rims Real Estate Society, Christchurch, New Zealand, January 2002.

Determinants for Office Investment Markets in Southeast Asian Cities, with reference to Hong Kong, Singapore, Taipei, Bangkok and Kuala Lumpur

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Abstract:

The World Bank noted that from 1965 to 1990, the twenty-three economies of East Asia grew faster than all other regions of the world. Most of the growth could be attributed to just eight economies: Japan, the "Four Tigers" (Singapore, Hong Kong, Taiwan and South Korea), as well as the newly industrialising economies of Southeast Asian: Indonesia, Thailand, and Malaysia. These economies achieved high economic growth and attracted huge amounts of foreign investment.

The aim of this research is to build a model which can predict changes in rentals and values in the office investment market in these five cities, and describe the impact on the market of various institutional differences in these cities.

The office investment markets have been examined by previous empirical studies in Europe and the USA to predict the office market performance. Yet, there are not many empirical studies examining the office markets in Southeast Asian cities. In this research, we attempt to examine the relationship between office rents and economic factors in the first stage which followed the previous empirical studies. Secondly, the institutional approach will be applied to the office market behaviour in those cities. Finally, we will compare the factors affecting office investment markets behaviour across those selected cities.

Key Words: Office Market, Rents, Southeast Asia.

Introduction:

Since the 1960s, economic growth in East Asian countries has been higher than in other regions of the world. Those economies are mainly located in Northeast Asia: Japan and South Korea, and in Southeast Asia: Taiwan and Singapore. During the late 1980s, the newly industrialising economies in Southeast Asia, Thailand, Malaysia, and Indonesia, achieved their success through their sound fundamentals, such as high levels of domestic financial savings sustaining impressive investment levels, high rates of investment and progressive economic policies. All of these factors were major contributors to the rapid growth in this region. Moreover, macroeconomic management was fairly good and their performance was very stable, providing the necessary framework for private investment.

These countries had several common characteristics in their economic performance and follow similar growth patterns (Armitage 1996 and Yong 2000):

- Rapid urbanisation in emerging economies
- Sustained economic growth
- Extreme population pressure
- Accelerating rate of change
- An increasing share of international economic activity
- Growing affluence
- Large domestic markets
- Social and political tension
- Swift adoption of new technology and work practice
- High technology export accounting for large portion of GDP growth
- Higher initial levels and growth rates of human capital
- High rates of productivity growth

To sum up, Southeast Asia became one of the most successful regions in the last quarter of the 20th century with rapid economic expansion.

This research is ongoing, and the main object is to build a model for forecasting the office rents and find the factors affecting the office rents, in order to provide a framework for investing in the office market in Southeast Asia in terms of economic and institutional perspectives.

This aim will be achieved by

1. examining the factors which influence office market rents,
2. understanding the behaviour of the office market and its interaction with micro and macro economic factors and
3. understanding the differences between these five cities in terms of institutional aspects.

Hypothesis:

1. There is a positive relationship between office rents and economic activities in those selected mature and emergent cities in Southeast Asia. Office rents can be predicted by economic activities (both demand and supply) in those mature and emergent markets.
2. Institutional changes (informal and formal) play an important role in affecting the office markets' behaviour in those cities.

Issue of the Market Maturity:

Most of the research undertaken into the determinants of office investment markets has examined European and North America cities. Although Southeast Asia has been marked by high economic growth from the early 1990s to the mid-1997, it has largely been ignored. With the increasing globalisation of investments, it is very important to understand the environment of these investment markets. Before undertaking quantitative analysis for Southeast Asia, it is important to classify those markets in terms of the progress of their development.

Keogh (1991) suggests that the determination of capital values and yields may be partly explained in terms of the decision-making rules of investing institutions or the social symbolism of property as an asset. Opportunities in both the user and investor markets will be constrained by the legal system of property rights and the quality of professional advice available to those transacting property interests, with obvious implications for property rights. Therefore, in order to understand fully the property market, it is necessary to consider the nature of the markets and evolution of the market as well as economic conditions. In terms of analysing economic conditions, analysts usually look at economic conditions at a national level, regional level and also the urban economies. However, most of them ignore the cultural framework. Most of the popular analytical framework is justified by the demand and supply condition in three sub-markets: user, investment and development (Keogh 1991). A useful starting point is the work of D'Arcy and Keogh (1994), who construct a market maturity paradigm by looking at the examples of London, Barcelona and Milan.

In order to understand properly market behaviour and to assist investment decision making, it is very important to understand what market maturity is and what the current development level of the market is. In terms of market maturity, it can be described in economic, social, political, legal and institutional ways. Property maturity can be regarded as a subset of the wider evolution of the economies. (D'Arcy et al. 1994). Armitage (1996) defined the market maturity as "Market maturity is a term used both frequently and loosely by participants in the property market to describe a level of development or evolution achieved by a market".

The characteristics of property market maturity can be summarised in the following Table 1:

Table 1: Key Characteristics of Property Maturity:

Principal Characteristics	***Rethinking Characteristics***
• *Accommodation of full range of use and investment objectives*	• *The wider business of a full range of use and investment objectives* • *Investment culture*
• *Flexible market adjustment in both long and short runs*	• *Overshooting* • *Market decision rules*

• *Existence of a sophisticated property profession with its associated institutions and networks*	• *Problem of over-specialisation* • *Knowledge base*
• *Market openness in spatial functional and sectoral terms*	• *Market distortions* • *Destabilisations*
• *Standardisation of property rights and market practices*	• *Role for local real estate culture*

Source: D'Arcy and Keogh (1994)

In their study, London, Barcelona and Milan were been chosen to be case studies representing mature and emerging markets. The comparison criteria are listed as follows:

- User and investor opportunity
- Flexibility
- Profession
- Information and research
- Openness
- Standardisation
- Value Stability
- Development Stability
- Economic Development

They conclude that the concept of market maturity is too complex to provide a simple definition or route to define the market activity. Market maturity does not necessary follow the same route for all of the markets. The existing conventional analysis is mainly based on the economic fundamentals. They suggest that the way to examine property market maturity should include the economic fundamentals, the characteristics of local property culture, the use and misuse of market information and the role of the professional.

Followed by the pioneer criteria work of D'Arcy et al. (1994), the market activity of those Southeast Asian markets can be classified.

From the late 1980s, Southeast Asia became one of the highest economic growth areas in the world. Their common characteristics have been outlined in the previous section. Within those countries, many of these economies depend on each other, but USA and Japan are the major two biggest trading partners. GDP growth reached more than 5% from the late 1980s till 1997, with some countries even reaching double digits.

Koh (1995) draws the market opportunities and risk in mature markets, developing markets and emerging markets with an example of Southeast Asian cities. (Table 2)

Table 2: Summary of Market Opportunities

Mature Markets	Developing Markets	Emerging Markets
Opportunities		
Prime locations	Demand for residential developments	Local housing
Prospects where there is growth (lower risk) Longer term review	Retail centres with income growth Recreational and leisure projects	CBD office in principal cities Industrial Business Hotels
Risks		
High entry costs	Wider fluctuations in market from mis-timing of development	Insufficient local demand
Less diversification possibilities	Choice of wrong locations not ready for growth	Title problems
		Lack of development control Lack of good information and professional services
Expected Return		
IRR: 12% - 15% Yields: 4% - 7%	IRR: 13% - 22% Yields: 8% - 11%	IRR: 20% - 35% Yields: 12% - 16%

Source: Koh 1995:9 (citied in Armitage 1996)

From the above table, mature markets have the lowest risk. Developing (emergent) markets and emerging markets have higher risk and some uncertainty such as lack of good quality information and professional services, and development process. All of these factors might affect investment markets significantly.

Armitage (1996) applies the paradigm of D'Arcy et al. (1994) to selected Southeast Asia prime office markets in 1996. The summary is listed in the following Table 3:

Table 3: Illustrative Indicators of Property Market Structure and Process

	Singapore	***Hong Kong***	***Jakarta***	***Kuala Lumpur***	***Vietnam***	***Bangkok***
Maturity Issue						
Use and investment opportunities	numerous	numerous	emerging	emerging	restricted	emerging
Flexibility	high	high	improving	low	low	improving
Profession	Specialist	specialist	Non-specialist	Non-specialist	Non-specialist	Mainly non-specialist

Information/ research openness standardisation	good	good	poor	poor	poor	poor
Market Aspects						
Value Stability	low	medium	low	medium	low	Medium
Development stability	Low-medium	medium	low	low	low	Low-medium

Source: Amritage (1996)

Those markets have changed considerably since this research was undertaken, with Jakarta relegated to third world levels in 1998. Therefore, it is useful to examine selected Southeast Asian cities by applying the same criteria used by D'Arcy et al. (1994). Owing to the scale and interests of my research topic, Singapore, Hong Kong, Taipei, Bangkok, and Kuala Lumpur will be included in this research.

D'Arcy (1998) mentioned that there are three levels of property markets in Southeast Asia: established, emergent and emerging markets. The mature markets comprise Singapore and Hong Kong; the emergent markets – Kuala Lumpur, Taipei and Bangkok; and finally the emerging markets – Jakarta, Beijing, Shanghai, Hanoi, Ho Chi Minh City and the Philippines. In terms of the criteria for mature market contained in their work, these five markets will be re-assessed from the current situation in the next research plan.

Background of Office Markets in those cities:

From 1985 to 1997, the best economic performance in global terms was Asia-Pacific region, with the property sector and stock market particularly strong during that period. As a consequence, foreign investment flowed into this area in search of huge profits. However, some countries of the region all displayed similar problems, while the accompanying risks were high. Lending to property proved to be a key causal factor throughout the region (D'Arcy 1998).

From the 1980s a construction boom occurred in most of the Asia-Pacific property markets, leading ultimately to a bad debt property in property sector, mainly as a result of the shallow banking system. An oversupply problem existed in most of the Southeast Asian cities, with a times over 200 million square feel of space under construction in the major cities, and an increasing vacancy rate. It is worth nothing that rents were very high for certain classes of space, even by international standards. In the area as a whole, differences in the property process, political uncertainty, and the regulation of the financial markets were all important factors, and were significant in the performance of the property market.

The return in property market experienced high-growth in the 1990s, attracting much local and foreign capital. In some countries, an oversupply problem had emerged by 1996. However, little attention was paid to this, leading to the regional financial turmoil in 1997.

When financial turmoil hit, the countries of the region were affected by the crisis to varying degrees, and could be divided into three different sub-groups in terms of Knight Frank's research (1998).

The first group, the worst performing, includes Thailand and Indonesia. In this group, the economies showed deepening financial crisis, with the property markets reflecting the health of their respective economies. The second group comprises Hong Kong, Japan, and Malaysia, all of which are on the verge of economic deflation. Property market prices and stock markets slumped; mortgage interest rates rose leading to further falls in property prices and values. The third group consists of China, India and Singapore. Both China and India have fairly closed markets as far as property markets are concerned and were isolated from the regional crisis. Singapore with its stable political situation and large foreign reserves was able to limit the financial damage.

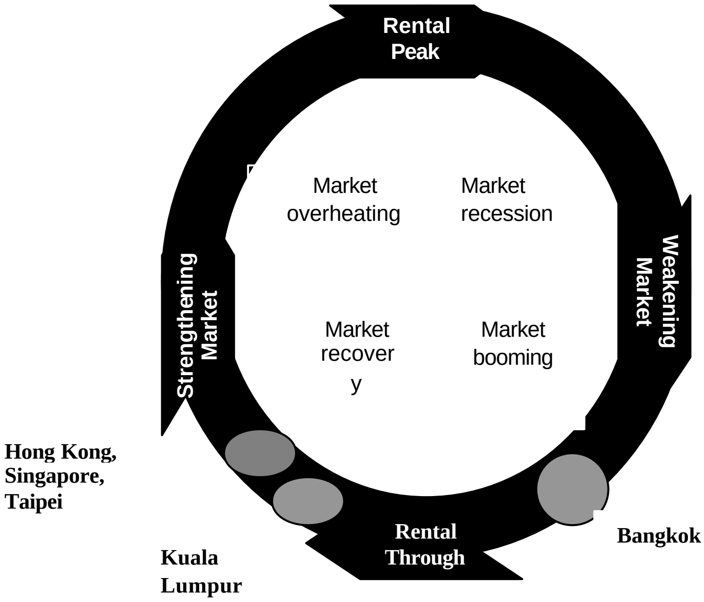
Political, social and economic reform instituted by many governments across the region has begun to show different level of success in 1999. Reform has resulted in lower inflation, higher export and increasing integration with the global economy.

Southeast Asia experienced a strong economic recovery in 1999, marked by strong growth and a robust performance after the dramatic slow down of 1998. Consistently strong global demand and recovering domestic demand proved to be major factors stimulating economic activity across the region. According to Cushman & Wakefield Research (2000), many prime office markets in Asia have rebounded strongly from the bottom of the cycle. Most office markets in the region have digested existing office space, and the oversupply situation seems likely to be solved in the near future. After nearly halving during 1997 and 1998, rents across this region have recovered well, but oversupply continues to affect some markets, despite limited new construction since the 1997 financial crisis.

The economies of the region performed relatively well during 2000, and the major office markets are expected to see growth in the near future. Figure 1.1 shows the office rental position in 2000.

Capital has moved from the old business sectors into the new economy sectors such as the Internet and telecommunications. The obvious evidence is the stock market. Many of the Southeast Asian stock markets are dominated by the new economic sectors, and these have become one of the major tenants for the office market, especially in Hong Kong, Singapore and Taipei.

Figure 1: Rental Position in Southeast Asian Cities: Office Rental Cycle at the end of 2000



Source: Cushman & Wakefield Research

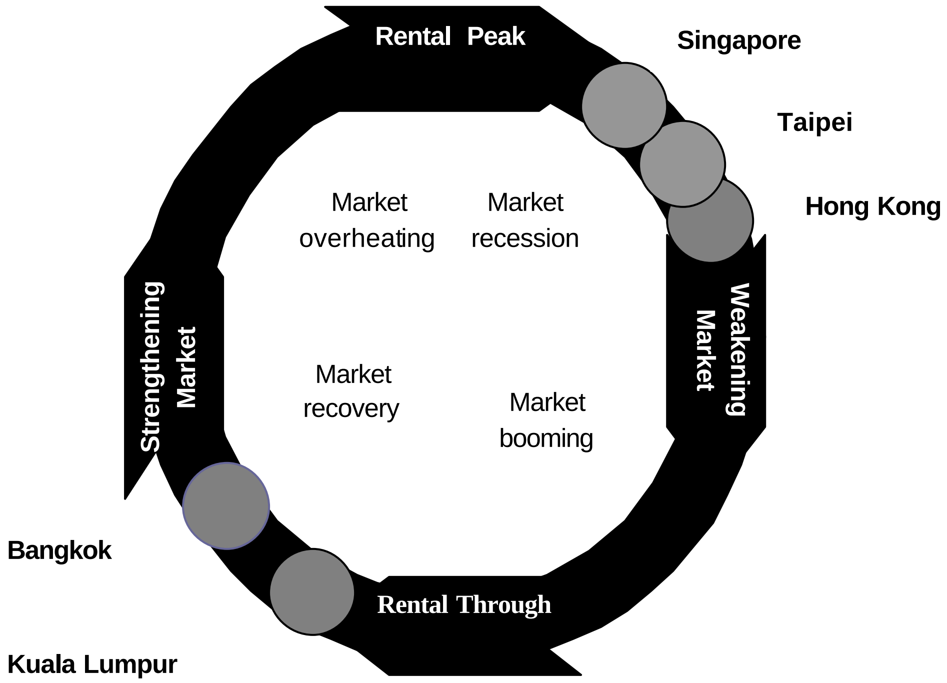
Compared to the office rental movement in those five cities (those figures can be seen in the appendix), office rents achieved their peak in the first half of 1990s owing to the economic expansion across the region. Foreign investments flowed into the region from the late 1980s, due to attractive rates of return and the low cost of lending. Office investment markets played an important role in the anticipated high rate of economic growth. Yet, oversupply problems existed in many of the cities, such as Bangkok and Kuala Lumpur from the mid-1990s. Owing to oversupply, developers were unable to pay off their debts and the problems of oversupply were common in both cities. Then the property and stock markets crashed in 1997, and turmoil spread across the region. Office rental levels dropped in late 1997 and early 1998. However, the prime office buildings were not severely affected.

There are some common factors existing in those five cities: the markets grew dramatically from the late 1980s till 1997; foreign investment accounted for a huge proportion of property investment; and governments supported the development schemes in order to attract more investment. However, political stability played an important role in the region, especially in the Hong Kong and Taipei markets. These markets depend considerably on their political relationship with China.

Within these five cities, IT, as well as the finance and telecommunications sectors are the most active players in the markets. These sectors will clearly affect growth and any recovery in this region.

In 2001, the global economic situation slows down, especially in the USA and Japan. The USA is one of the major trading partners for this region. Therefore, the economic situation did not seem to be as positive as in the first half of 2001, especially after September 11th attack. Taiwan and Singapore suffered the lowest GDP growth in a decade. Thailand, Malaysia and Hong Kong also show the sign of slowing down their economic growth in the third quarter of 2001. According to the report done by Cushman & Wakefield (2001), the current office rental cycle shows in Figure 2:.

Figure 2: Rental Position in Southeast Asian Cities: Office Rental Cycle in 2001



Source: Cushman & Wakefield Research

Background of Studies:

Fraser (1986) points out that returns from property investment are derived from income and changes in value. Therefore, investment returns derive from rent, and successful investment will depend on an understanding of principals and forces which explain the market's determination of rental vale and changes in the capitalisation rates. In the first part of this research, the quantitative method is going to be undertaken.

Returns on all forms of financial assets including property are sensitive to a large number of economic events or factors. Research shows that there is a strong relationship between stock market return and macro economic events

(Ling D.C. et al. 1998). It has been suggested by the authors that the way to measure this relationship is by regressing the historical data on a set of explanatory variables. Owing to the characteristics of property, it is not easy to obtain the accurate data to carry out this analysis.

In the previous research, economic activities have widely been examined in the users market and the development market. The influence of the investment financial market on the property market has not been thoroughly explored. There are many research papers using rental level to analyse the user market, the reason being that rents are the price resulting from the interaction between demand for space and the total supply of space. In an effective market, rents should move towards equilibrium, which should be the total site value plus total development value. In the short term, rents will not be in this equilibrium, because there are imbalances between supply and demand for leasehold space. Previous research has shown that the rental cycle is the most consistent component of the property cycle. It also shows a more regular pattern and a more consistent response to the economic cycle than yields and development activity. Rental growth feeds through to the capital and investment markets through incomes and valuations; and it also feeds through to development markets. When rents increase, surplus money will feed into investment capital and then impact on the development markets (RICS 1994).

Previous empirical studies (Bischoff 1970, Bower 1965, D'Arcy *et al* 1998, Fisher J. D. 1992, Giussani *et al* 1993 and Keogh 1994) have examined a wide selection of factors to predict office market performance. Office rental values can be modelled using the theoretical demand-supply framework, which has successfully linked a wide range of variables to proxy demand and supply influences even if the availability and reliability of the data is in question, because of the characteristics of the property market. Studies are available on a single country basis, specific city basis and sectoral market performance basis. These generally focus on a set of common variables in the determination of rental values.

The following Table 4 is the list of factors that previous researchers have been examined.

Table 4: Comparison of the Variables done by Previous Research

	Gardiner et al. (1988)	Gardiner et al. (1991)	Dobson et al. (1992)	Giussani et al. (1993)	McGough et al. (1994)	McGough et al. (1995)
Real GDP	•	•		•	•	
Employment Rate	•		•	•	•	
Unemployment rate	•			•		
Income	•				•	
Stock of Floor Space	•					
Interest Rate			•	•		

Volume of New Building output					•	
T-Bill rate					•	
Stock market index					•	
Lending Rate						
Consumer Price Index						
Past Values		•				•
Economic Uncertainty				•	•	

Continued:

	Hendershott et al. (1996)	D'Arcy et al. (1997)	McGough et. Al. (1998)	Keogh et al. (1998)	D'Arcy et al. (1998)
Real GDP	•	•	•	•	•
Employment Rate	•		•	•	•
Unemployment rate					
Income					
Stock of Floor Space			•		
Interest Rate		•			
Volume of New Building output				•	•
T-Bill rate					
Stock market index					
Lending Rate					
Consumer Price Index					
Past Values					
Economic Uncertainty					

The second part of my research is to examine the institutional changes and cultural changes of affecting the property market in those selected cities. Property markets will perform differently according to their institutional form and structure. North (1999) defines the institutions as "Institutions are the rules of the game in society or, more formally, are the humanly devised constraints that shape human interaction. In consequence, they structure incentives in human exchange, whether in political, social, or economic. Institutional change shapes the way societies evolve through time and hence is the key to understanding historical change". The major role of institutions is to reduce the uncertainty by establishing a stable structure of human interaction. Institutional changes can be formal and informal. Formal changes can be the result of political statement or a judicial decision; informal changes can be the changes in customs or traditions. Those cultural constraints not only connect the past with the present and future, but also provide the key to explaining the path of the changes (North1999).

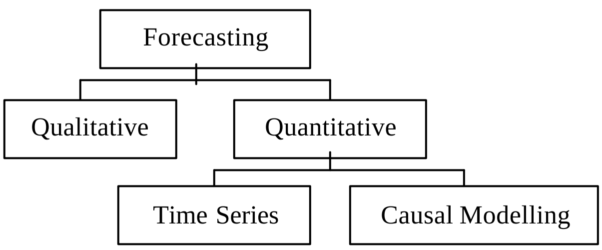
D'Arcy (1998) mentions that institutional analysis is a vital supplement to the existing quantitative approach to property market analysis for investment decision making. The institutional framework of property markets can be divided into the institutional environment, the property market as an institution and property market organisations. The first one of the hierarchy, the institutional environment can be divided into four categories: political institutions, social institutions, economic institutions and legal institutions. The second hierarchy regards the property market as an institution. In this aspect, the property market can be decentralised and informal. The legal and conventional aspects of property rights and land use and development exist in this whole institution. Finally, the property market organisations are the lowest in this hierarchy. They can be users, investors, developers, property service providers, financial service providers, professional bodies, and governmental and non-governmental agencies. Those organisations are the basic units in the property market and their interaction creates the activity of the market. Therefore, the property market can be regarded as a set of rules, norms and conventions which govern activity in property. Yet the actual outcomes in the market are from the choices made by the market actors and the interaction with the institutional situation.

Institutional form influences property market structure and performance, therefore, further review is essential to this research.

Methodology:

This research examines the factors for determining office rents in Southeast Asian cities (Singapore, Hong Kong, Taipei, Bangkok and Kuala Lumpur). The means of analysis can be seen from the following Figure 3 (Lee S. 1998):

Figure 3: Classification of Forecasting Method (Lee S. 1998)



This research is going to be conducted using both quantitative and qualitative methods. According to my first hypothesis, quantitative research is going to be employed to this work. Quantitative research is empirical research that aims to quantify relationship in the property market, and can be employed at the aggregate level (national or regional) or desegregate level (particular markets).

The quantitative method will be used in this research at the beginning, because the type of data for this research is time series data, which can be daily (e.g., stock prices), monthly (e.g., the unemployment rate), quarterly (e.g., GNP) or annually (e.g., government budget). The most popular quantitative method is Ordinary Least Squares (OLS) and this is the method which will be employed in this research. Time series approaches are preferable because of their ability to accommodate temporal variations in behaviour such as those displayed by the property development industry. The reason for choosing OLS regression is that it is the most appropriate technique to investigate the effect on a dependent variable (office rent) of several independent variables (X) simultaneously. It can eliminate the bias of some of the confounding variables and improve the reliablity of the equation. Linear regression analysis is a statistical technique used to make predictions on a new sample of observations based on the findings of a previous sample of observations. The linear regression analysis provides a line of best fit based on the data sampling. This drawn line of best fit is based on the equation $Y= a + b_1X_1 + b_2X_2 + \ldots.$ and is known as a scatter diagram. The goal of multiple regression analysis is to form an equation relating Y, office rent in this research, to independent variables, X, so that Y (office rent) can be predicted for given values of the various independent variables (X) with considerable confidence. Then, the factors affecting office return can be found, which can used to prove the first hypothesis.

Most of the office rental data quoted for those selected Southeast Asian cities was obtained from Jones Lang LaSalle, covering 1988 to Q1 2001. However, data from Taipei is from CB Richard Ellis: Q1 93 to Q2 2001. The first half of the data are annual figures (Prime Office Building). The base model of the first part of this research relates changes in office rents to changes in micro and macro economic variables and other related variables which have been examined in the previous European literature. This model is estimated for five Southeast Asian cities over the period 1988 to 2001 using quarterly data of Office rents as a dependent variable. As to the independent variables, they can be used to capture the effects of general economic conditions on office returns, and other variables or events affecting the office market, such as political issues, and public transportation. Most macro economic indictors will be examined, including real GDP, interest rates, lending rates, unemployment rates, and stock market prices. The effects of these variables on real office returns are examined as appropriate. This is based on the expectation that movements in the independent variables will have their full impact on office returns over a number of periods. The mathematical expression of the office return model is given as the following equation:

$$\text{Office Return}_{i,t} = A_0 + B_{it}X_{it} + C_{it}Y_{it} + \varepsilon_t$$

Where X_i is a economic variable.
Y_i is an uneconomic variable, which affects the office market.
ε is a random error term.

t is time.

In terms of the second part of the hypothesis, qualitative research will be employed. Office investment market behaviour can be influenced by the institutional changes (both formal and informal sides). Key issues of the property market process will be a focus for this analysis. Institutions and culture cannot be measured using a quantitative method. Therefore, interviewing, questionnaires, and reviewing the changes in the formal institutions will be the way to see the effect of the office rents. However, in terms of the characteristics of the time series analysis, the outcome of this research will be expected to produce a model including both economic measurement and institutional measurement. How to define the institutional influence (focussing on formal side) will be a key task, e.g. different legal and investment institutions will produce different behaviour in the property market.

Future Plan of Work:

1. Define the market maturity in selected Southeast Asian prime property markets by using the approach done by D'Arcy et al. (1994).
2. After the relationship between office rents and variables has been specified, relevant data and facts will be collected and observations made, the period of study possibly to be defined by the trends of variables
3. Run the statistic method in order to find the factors influencing office investment markets.
4. After finding the factors, the next stage will be to define the institutional aspects (such as examining the investment institutions to compare each city). Construct the framework to explain those factors affecting office investment markets in Southeast Asia region and explain the difference across the region in terms of institutional environment by doing interviews, reviewing the legal, and economic institutions time series data.
5. Conclusions will be drawn up after the analysis to give investors a deeper view of the investment environment in those selected cities.

Bibliography

1. **Armitage L.** (1996), *International Property Investment Commercial Property Market Behaviour in South-east Asia*, paper presented in AREUEA Conference, Orlando, USA.

2. **Ball M., Lizieri C. and MacGregor B. D.** (1998), *The Economics of Commercial Property Markets,* Routledge, London.

3. **Barras R.** (1983), `*A Simple Theoretical Model of the Office-Development Cycle*`, Environment and Planning A, 15, pp. 1381-1394.

4. **Barras R.** (1984), `*The Office Development Cycle in London*`*,* Land Development Studies, 1, pp 35-50.

5. **Barras R. and Ferguson D.** (1985*), `A Spectral Analysis of Building Cycles in Britain*`, Environment and Planning A, 17, pp. 1369-1391.

6. **Barras R. and Ferguson D.** (1987), `*Dynamic Modelling of the Building Cycle: 1. Theoretical Framework*`*,* Environment and Planning A, 19, pp. 353-367.

7. **Barras R. and Ferguson D.** (1987), `*Dynamic Modelling of the Building Cycle: 2. Empirical Results*`*,* Environment and Planning A, 19, pp. 493-520.

8. **Barras R.** (1994), `*Property and the Economic Cycles: Building Cycles Revisited*`, Journal of Property Research, 11(4), pp. 183-197.

9. **Bell J.** (1993), *Doing Your Research Project: A Guide for First-Time Researchers in Education and Social Science*, Open University Press, Buckingham.

10. **BisChoff C**, (1970), *" A Model of Non-residential Construction in the United States" American Economic Revie*w, Papers and Proceedings, 60(2), pp. 10-17.

11. **Blake N, Matysiak G. and Lizieri C.** (2000), *Research Report*: *Forecasting Office Supply and Demand*, R.I.C.S., London.

12. **Boyd T** (1995), *'The Concept and Determination of Investment Value',* Paper Presented at the First Pacific Rim Real Estate Society Conference, Melbourne Australia.

13. **Brown G. R and Matysiak G. A.** (2000), *Real Estate Investment: A Capital market Approach*, Financial Times Prentice Hall, London.

14. **Burns A. F. and Mitchell W. C.** (1946), *Measuring Business Cycles*, National Bureau of Economic Research, New York.

15. **Carn N., Rabianski J., Racster R. and Seldin M**(1988), *Real Estate Market Analysis: Techniques & Applications*, Prentice- Hall International, London.

16. **Clapp J. M.** (1993), *Dynamics of Office Markets: Empirical Findings and Research issues*, The Urban Institute Press, Washington.

17. **Creswell J. W**. (1994), *Research Design: Qualitative and Quantitative Approaches,* Sage Publications, London.

18. **Cushman & Wakefield Research**, Asia Overview at http://www.cushwakeasia.com.

19. **D'Arcy E.** (1998), *Lecture Note: Economic for Planning and Land Management*, The University of Reading, Reading.

20. **D'Arcy E.** (1998), *Lecture Note: International Real Estate Markets*, The University of Reading, Reading.

21. **D'Arcy E., McGough T. and Tsolocos S.** (1994), *Modelling the Determinants of Office Rental Values in Major European Cities* , Discussion papers in Urban and Regional Economics, Series C, Vol. VII, No. 99, Department of Economics, The University of Reading, Reading.

22. **D'Arcy E., McGough T. and Tsolocos S.** (1997), *`National Economic Trends, Market Size and City Growth Effects on European Office Rents`*, Journal of Property Research, 13 (4), pp 297-308.

23. **D'Arcy E., McGough T. and Tsolocos S.** (1997), *`An Empirical Investigation of Retail Rents in Five Europea*n Cities`, Journal of Property valuation and Investment, 15 (4), pp 308-332.

24. **D'Arcy E., McGough T. and Tsolocos S.** (1998), *An Econometric Analysis and Forecast of the Office Rental Cycle in the Dublin Area*, Discussion papers in Urban and Regional Economics, Series C, Vol. XI, No. 33, Department of Economics, The University of Reading, Reading.

25. **D'Arcy E. and Keogh G.** (1994), *`Market Maturity and Property Market behaviour: A European Comparison of Mature and Emergent Markets`*, Journal of Property Research, 11, pp. 215-235.

26. **D'Arcy E. and Keogh G.** (1998), *`Territorial Competition and Property Market Process: An Exploratory Analysis`*, Urban Studies, 35 (8), pp. 1215-1230.

27. **Delhaise P. F.** (1998), *Asia in Crisis: The Implosion of the banking and Finance System,* John Wiley & Sons, Chichester, England.

28. **DiPasquale D. and Wheaton W. C.** (1992), `The Markets fir Real Estate Assets and Space: A Conceptual Framework`, Journal of the American Real Estate and Urban Economics Association, 22(1), pp. 181-197.

29. **DiPasquale D. and Wheaton W. C.** (1996), *Urban Economics and Real Estate Markets*, Prentice-Hall International, London.

30. **Dobson S. M. and Goddard J.A.** (1992), `*The Determinants of Commercial Property Price and Rents*`, Bulletin of Economic Research, 44(4), pp. 301-321.

31. **DTZ Research**, *Property Market Report*, various issues.

32. **Fisher J. D.** (1992), *'Integrating Research on Markets for Space and Capital',* American Real Estate and Urban Economic Association Journal, 20(2), pp 161-180.

33. **Gardliner C., Henneberry J.** (1988), `*The Development of a Simple Regional Model of Office Rent Prediction*`, Journal of Property Valuation and Investment, 7, pp 36-52.

34. **Gardliner C., Henneberry J.** (1991), *'Predicting Regional Office Rents Using Habit-Persistence Theories'*, Journal of Property Valuation and Investment 9(3), pp 215 – 226.

35. **Giussani B., Hsia M., Tsolacos S**. (1993), `*A Comparative Analysis of the Major Determinants of Office Rental values in Europe*`, Journal of Property Valuation and Investment, 11, pp 157-173.

36. **Graves N. and Varma V.** (1997), *Working for a Doctorate: A Guide for the Humanities and Social Sciences*, Routledge, London.

37. **Hendershott P. H.** (1996), `*Rental Adjustment and Valuation Overbuilt Markets: Evidence from Sydney Office Market*`, Journal of Urban Economics, 39, pp. 51-67.

38. **Hendershott P. H., Lizieri C. M. and Matysiak G. A.** (1996), `*Modelling the London Office Market*`, Paper Presented at RICS Cutting Edge Conference, September 1996, Bristol.

39. **Hekman J.** (1985), *'Rental Price Adjustment and Investment in the Office Market',* American Real Estate and Urban Economics Association Journal, Vol. 13 (1), pp31 –47.

40. **Hetherington F. T.** (1988), Forecasting of Rents, in MacLeary A.R. and Nathacumaran N. (Eds), *Property Investment Theory*, Spon, London.

41. **Hillier Parker** (2000), *Global market Rents: Office Rents and Occupancy Costs Worldwide*, CB Hillier Parker, London.

42. **Jones Lang Wootton (JLW) Research**, *Report Property Market*, various issue.

43. **Jones Lang Wootton (JLW) Research,** *Asia Pacific Property Digest*, various issue.

44. **Jones Lang LaSalle (JLL) Research**, *Report Property Market*, various issue.

45. **Kahn M. N.** (1999), *Technical Analysis: Plain & Simple*, Prentice Hall, London.

46. **Kelly H.** (1983), *'Forecasting Office Space Demand in Urban Areas', Real Estate Review*, Vol. 13, pp. 87-95.

47. **Keogh G.** (1994), *'Use and Investment Markets in British Real Estate',* Journal of property Valuation and Investment, 12 (4), pp. 58-72.

48. **Keogh G. and D`Arcy E.** (1999), *`Property Market Efficiency: An Institutional Economics Perspective`,* Urban Studies, Vol. 36, No. 13, pp 2401-2414

49. **Keogh G., McGough T. and Tsolacos S.** (1998), *`Modelling Use, Investment, and Development in the British Office Market`*, Environment and Planning A, Vol. 30, pp 1409-1427.

50. **Knight Frank Research**, *Asia Pacific Property Review*, various issues.

51. **Kotler P. and Kartajaya H.** (2000), *Repositioning Asia: From Bubble to Sustainable Economy*, John Wiley & Sons, Singapore.

52. **Lee S.** (1998), *Lecture Note: Forecasting*, The University of Reading, Reading.

53. **McClure K.** (1991), *`Estimating Occupied Office Space: Comparing Alternative Forecast Methodologies`,* The Journal of Real Estate Research, 6(3), pp. 305-314.

54. **McCue T. E. and Kling J. L.** (1987), *`Office Building Investment and the Macroeconomy: Empirical Evidence 1973-1985`,* Journal of the American Real Estate and Urban Economics Association, 15(3), pp. 234-255.

55. **McCue T. E. and Kling J. L.** (1994), *`Real Estate Returns and the Macroeconomy: Some Empirical Evidence from Real Estate Investment Trust Data, 1972-1991`,* The Journal of Real Estate Research, 9(3), pp. 277-287.

56. **McGough T. and Tsolacos S** (1994), `*Forecasting Office Rental Values Using Vector Auto-regressive Models`,* The Cutting Edge 1994, Proceedings of the Cutting Edge Property Research of RICS, The Royal Institute of Chartered Surveyors, London, pp. 303-319.

57. **McGough T. and Tsolacos S.** (1994), `*Forecasting Commercial Rental Values Using ARIMA Models`,* Journal of Property Valuation and Investment, 13(5), pp. 6-22.

58. **McGough T. and Tsolacos S.** (1995), `*Property Cycles in the UK: an Empirical Investigation of the Stylised Facts`,* Journal of Property Finance, 6(4), pp 45-62.

59. **McGough T. and Tsolacos S.** (1997), `*The Stylised Facts of the UK Commercial Building Cycles`,* Environment and Planning A, 29, pp. 485-500.

60. **McGough T. and Tsolacos S.** (1999), `*Rational Expectations, Uncertainty and Cyclical Activity in British Office Market*`, Urban Studies, Vol. 36, No. 7, pp. 1137-1149.

61. **McGough T., Olkkonen O. and Tsolacos S.** (1998), *The Cyclical Behaviour of Office Rents in Helsinki*, European Real Estate Society's Annual Conference, Maastricht, The Netherlands.

62. **Mera K and Renaud B** (2000), *Asia's Financial Crisis and the Role of Real Estate*, M.E. Sharpe, New York.

63. **Morrison N.** (1994), `*Forecasting Local Property Market in Kent*`, The Cutting Edge 1994, Proceedings of the Cutting Edge Property Research of RICS, The Royal Institute of Chartered Surveyors, London, pp. 271-289.

64. **North , D. C.** (1981), *Structure and Change in Economic History*,. W.W. Norton& company, USA.

65. **North, D. C.** (1999), *Institution, Institutional Change and Economic Performance*. Cambridge University Press, Cambridge.

66. **Omar I. And Na A V. M.** (2000), *The Dynamics of Office Property Market in Kuala Lumpur: an Institutional Economic Perspe*ctive, Paper Presented at Asian Real Estate Society Fifth Annual Conference, Beijing China.

67. **Pindyck R. S. and Rubinfeld D. L.** (1998), *Econometric Models and Economic Forecasts*, Irwin and McGraw-Hill, Singapore.

68. **Pollakowski H. O.** (1992), `*Research on Office Markets*`, Journal of American Real Estate and Urban Economics Association, 20(1), pp. 155-160.

69. **Pollakowski H. O., Wachter S. M. and Lynford L.** (1992), `*Did Office Market Size Matter is the 1980s? A Time Series Cross-Sectional Analysis of Metropolitan Area Office Markets*`, Journal of American Real Estate and Urban Economics Association, 20(1), pp. 303-324.

70. **Rosen K. T.** (1984), `*Toward A Model of The Office Building Sector*`, Journal of the American Real Estate and Urban Economics Association, 12 (3), pp. 261-269.

71. **Richard Ellis**, *Market Index*, various issues.

72. **RICS** (1994), *Understanding The Property Cycle: Economic Cycles and Property Cycles*, RICS, London.

73. **RICS and Society of Property Researchers** (1989), *The Application of Forecasting Techniques to the Property Market*, RICS and Society of Property Researchers, London.

74. **Tsolacos S.** (1996), `*An Econometric Model of Retail Rents in the United Kingdom*`, The Journal of Real Estate Research, 10(5), pp. 519-529.

75. **Tsolacos S.** (1998), *Lecture Notes: International Real Estate Markets*, The University of Reading, Reading.

76. **Walker A and Chung L. W.** (1990), *Hong Kong: Property, Construction and the Economy*, RICS, London.

77. **Walker A. and Flanagan R.** (1991), *Property and Construction in Asia Pacific: Hong Kong, Japan, Singapore*, Blackwell, Oxford.

78. **Wheaton W. C.** (1987), `*The Cyclic Behaviour of the National Office Market*`, Journal of the American Real Estate and Urban Economics Association, 15(4), pp. 281-299.

79. **Wheaton W. C. and Torto R. G.** (1988), `*Vacancy Rates and the Future of Office Rents*`, Journal of the American Real Estate and Urban Economics Association, 16(4), pp. 430-436.

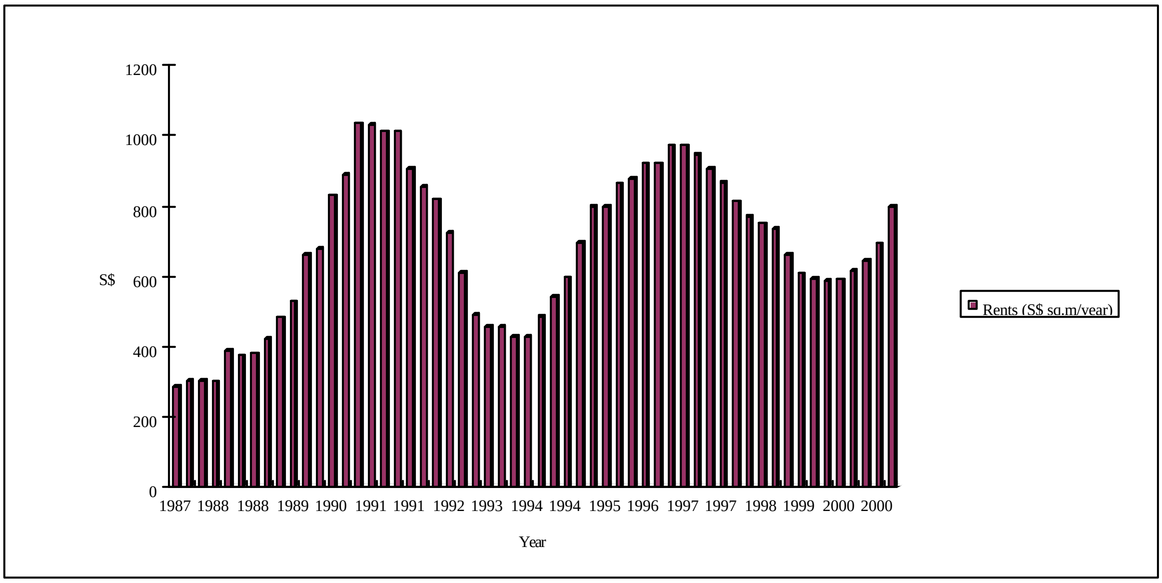
80. **Wheaton W. C. and Torto R. G.** (1990), `*An Investment Model of the Demand and Supply for Industrial Real Estate*`, Journal of the American Real Estate and Urban Economics Association, 18(4), pp. 530-547.

81. **Wheaton W. C., Torto R. G. and Evans P.** (1997), `*The Cyclic Behaviour of the Greater London Office Market*`, Journal of Real Estate Finance and Economics, 15 (19), pp. 77-92.

82. **Yong S.** (2000), *Impact of the Asian Crisis Including the Malaysian Property Market Perspective*, Pacific-Rim Real Estate Society Conference, Sydney.

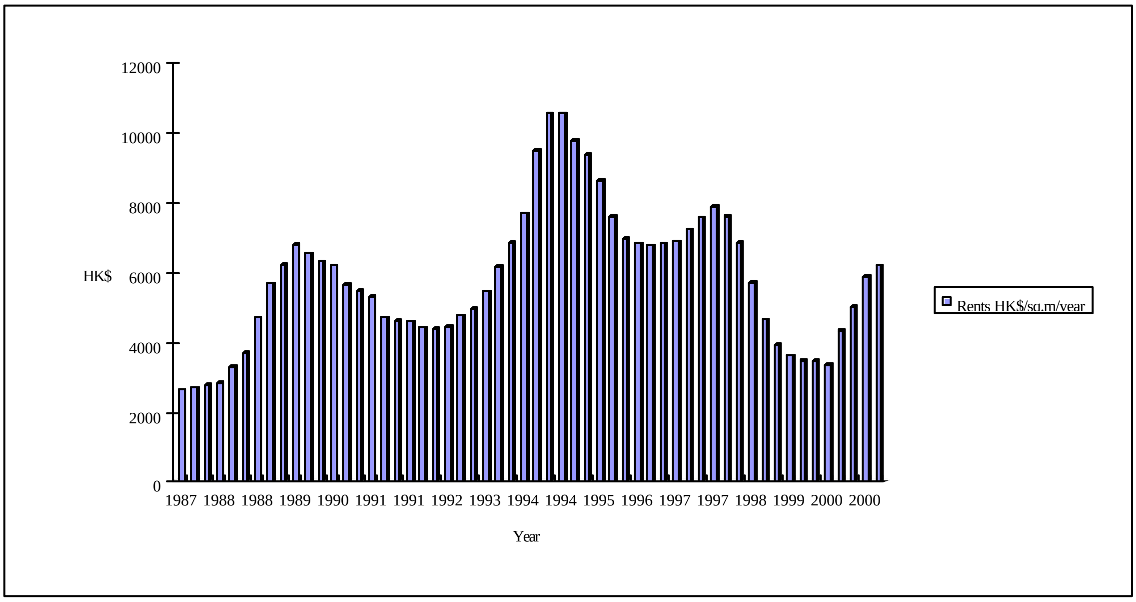
Appendix:

A: Effective Rents in Singapore Prime Office Market



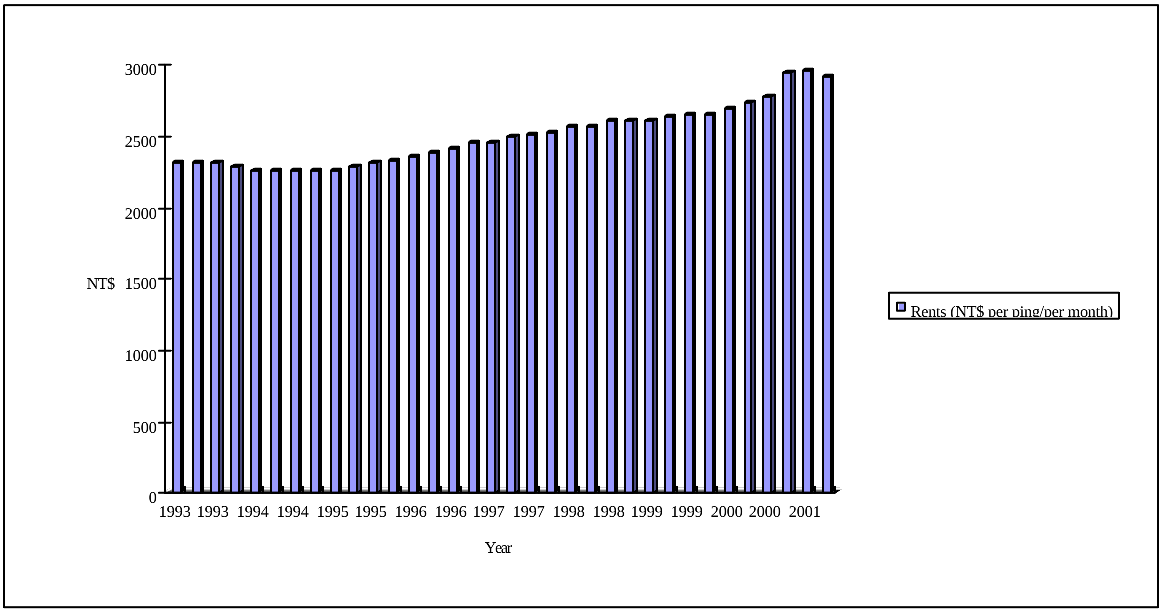
Source: Jones Lang LaSalle

B: Effective Rents in Hong Kong Prime Office Market



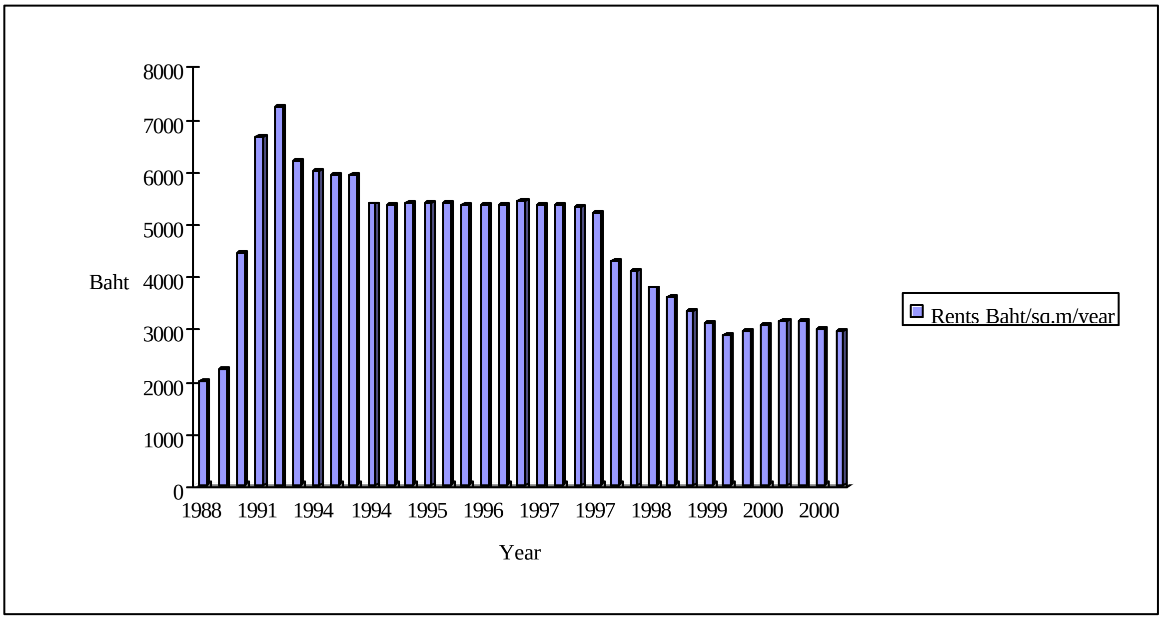
Source: Jones Lang LaSalle

C: Effective Rents in Taipei Prime Office Market



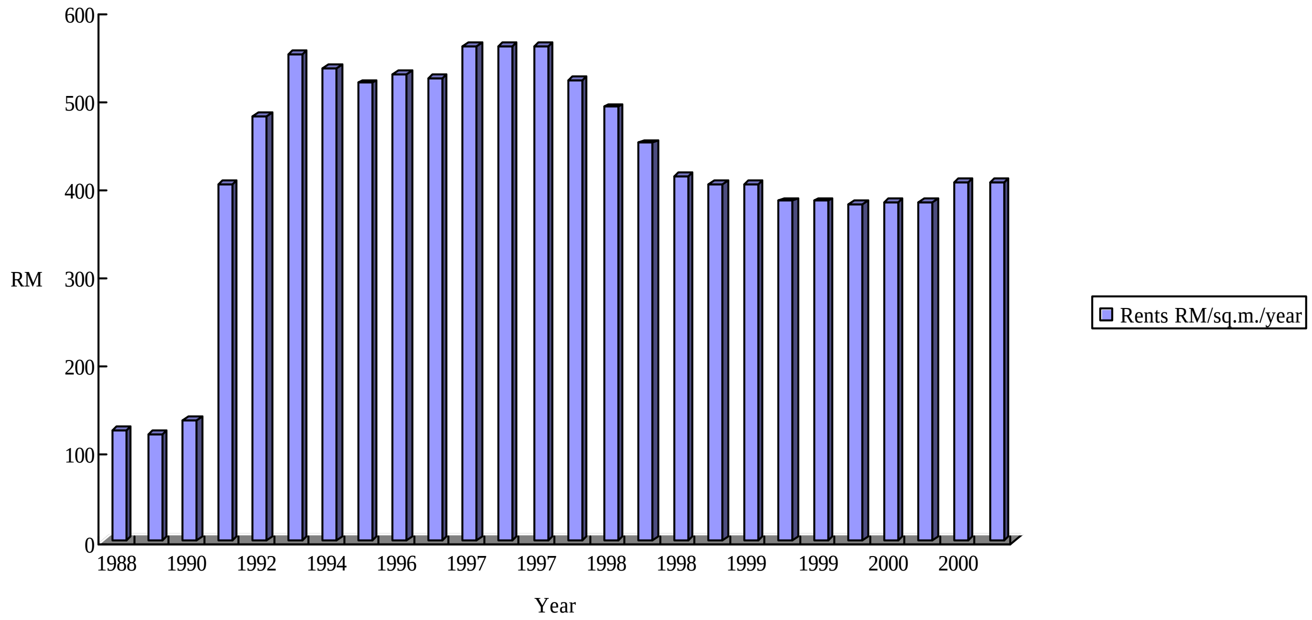
Source: CB Richard Ellis
[1] 1 Ping = 3.305785 Square Meter

D: Effective Rents in Bangkok Prime Office Market



Source: Jones Lang LaSalle

E: Effective Rents in Kuala Lumpur Prime Office Market



Source: Jones Lane LaSalle