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**INVESTMENT CHARACTERISTICS
OF
THE MALAYSIAN REISIDENTIAL PROPERTY SECTOR**

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Abstract

This paper examines the performance of Malaysian residential property sectors between 1989 - 2001, focusing on risk-return, comparison of residential risk-adjusted performance with equity investments and identification of risk reduction benefits through portfolio diversification.

1.0 Introduction

A potential investor before making an investment decision for a particular type of investment would like to know its past performance and related risk-return characteristics. Similarly, an investor who has made an investment would like to know how the investment has performed in comparison with similar assets and with different types of investment options. In this regard a comparative performance analysis of investment options is necessary.

Residential property investment is a popular form of investments among Malaysians apart from fixed deposits (FD), unit trusts and equities. The launching of the Malaysian House Price Index (MHPI) in February 1997, provides an opportunity to measure the investment performance of residential properties in Malaysia.

Prior to the publication of the MHPI, there is difficulty in measuring and comparing the performance of residential properties. The heterogeneous nature of residential properties has prevented direct comparison of performance even with the same type of property in the same locality.

2.0 House Price Indices in Malaysia

House price indices are relatively new in Malaysia. Interests in setting-up house price indices arise after the sharp real property asset inflation in 1995. Factors that have fuelled the investment and speculative demand is the availability of easy credit, low interest rate for housing loans and the increasing wealth per capita as evidenced by higher deposits in financial institutions, savings in provident funds and stock market investment.

Among the effort to come out with house price indices is the Maybank-RAM Property Index. It is an index based on the average actual transaction values of three types of houses in housing estates in Kuala Lumpur, Petaling Jaya and Shah Alam; covering single storey terrace house, double storey terrace and semi-detached houses.

The overall Maybank-RAM Property Index is computed using the aggregated value of houses in each district weighted by the district's share of the total housing stock. The base of the index is the second quarter of 1992. This index was not continued after being launched.

The Malaysian House Price Index is a national house price index initially prepared and published by the National Institute of Valuation (INSPEN). Thereafter with the establishment of the National Property Information Centre (NAPIC) the index is now produced by NAPIC.

The MHPI used the Passche method of index construction. Technical details on the construction of the index can be referred to in "*The Malaysian House Price Index : A Technical Summary*" published by the National Institute of Valuation (INSPEN).

The objective of the MHPI is to monitor the movement of house prices in Malaysia. The MHPI can be used to monitor the trend of house prices and as a barometer for measuring the general performance of the residential property market. The MHPI has more than 60 sub-indices apart from the national and state house price indices. The composition of the MHPI is shown in Table 1.

Table 1 : Composition of the Malaysian House Price Index

TYPE OF INDICES	Sub-indices/Composition
National indices	Malaysian House Price Index Malaysian Terrace House Price Index Malaysian Semi-detached House Price Index Malaysian Detached House Price Index Malaysian High-rise Unit Price Index
State Indices	One index each for the Federal Territory of Kuala Lumpur and the 13 states in Malaysia. Kuala Lumpur, Selangor, Johor and Penang have four other sub-indices based on housing types i.e. terrace, semi-detached, detached and high-rise residential units. The rest of the states have three other sub-indices based on terrace, semi-detached and detached houses.
Regional Indices	Klang Valley House Price Index Penang Island House Price Index Johor Bahru House Price Index Seremban-Sepang House Price Index Ipoh-Kinta House Price Index

Apart from price indices, the MHPI also contains related data and information on various aspects of the residential property sector :

- (a) the total number of residential property transactions based on states,
- (b) the total number of residential property transactions based on price range,
- (c) the total number of residential property transactions based on year for each state,
- (d) the value of property transactions,
- (e) the value per transaction,
- (f) descriptive statistics (i.e. lowest, highest and mean of prices) on each type of housing types by districts/mukim in each state.

3.0 Objectives of Study

This study examines the performance of the Malaysian residential property sectors between 1989 - 2001 focusing on :

- (a) risk-return;
- (b) comparison between the risk-adjusted performance of residential property, FD and equity investments;
- (c) investigate the diversification benefits of incorporating residential properties in investment portfolios.

4.0 Data Sources

Data on annual capital values of the residential property sector is represented by the Malaysian House Price Index Series which is published by the National Property Information Centre. Capital values of residential properties are obtained from the various MHPI Reports for the study period from 1989 to 2001. The beginning period for the year 1989 is chosen as the earliest period the Malaysian House Price Index is available is from 1988.

The year-end closing values of the Kuala Lumpur Composite Index (KLCI) are used as a proxy for the performance of the Kuala Lumpur Stock Exchange. Annual data of the KLCI are obtained from the *Investors Digest*, a publication of the Kuala Lumpur Stock Exchange.

5.0 Risk-return analysis

Different investment options (e.g. government securities, property, FD etc.) exhibit different risk-return characteristics. Investments that have high liquidity e.g. shares would exhibit a high risk-high return profile. On the other hand, safe investments e.g. cash and FD would have a low risk - low return profile.

The most desirable investment choice is an investment which has high return and low risk profile. Thus investments located on the "high return/low risk" quadrant of a risk-return diagram would be the ideal investment choice while the least desirable is the "low return/high risk" quadrant.

For the risk-return analysis, the annual returns are computed based on the year-end values of the MHPI and stock indices. The returns are capital returns and not total returns as rental income data on the MHPI is not available. Risk is measured by the standard deviation of the annual returns.

To provide a meaningful assessment of the returns and risks profiles of the various investment options, the Sharpe Index has been used as an index of performance. A risk free return of 6.75% is adopted based on the average coupon rate of the Malaysian Government Securities for the same period.

The results on the returns, risks and risk-adjusted returns by housing types are tabulated in Table 2 (terrace), Table 3 (semi-detached), Table 4 (detached) and Table 5 (High-rise Units).

5.1 Risk-adjusted returns By Housing Types

(a) Terraced houses (Table 2)

The Terraced House Indices represent the capital values of townhouses, low and medium-cost for one, one and a half, two to three storey terraced houses in each states.

Table 2 : Risk-return analysis of the terrace house sector by states in Malaysia (1989 - 2001)

States	Average Annual returns (%)	Annual Risks (%)	Risk-return Ratio	Sharpe Ratio
Johor	5.22	5.13	0.983	0.298
K. Lumpur	7.94	9.00	1.134	0.132
Penang	6.42	7.00	1.090	-0.047
Selangor	5.05	7.23	1.432	-0.235
Melaka	4.34	7.02	1.618	-0.343
N. Sembilan	4.29	5.38	1.254	-0.457
Terengganu	3.75	4.51	1.203	-0.665
Pahang	3.77	4.16	1.103	-0.716
Sabah	3.45	3.51	1.017	-0.940
Kedah	2.92	3.34	1.144	-1.147
Perak	3.17	3.28	1.035	-1.091
Sarawak	2.83	2.86	1.011	-1.371
Kelantan	2.54	3.07	1.209	-1.371
Perlis	1.88	1.51	0.803	-3.225

On a risk-adjusted basis, Kuala Lumpur ranked number one followed by Penang and Selangor. The worst performing state is Perlis. Kuala Lumpur has the highest return volatility (9.00%) whilst Perlis has the least volatility in return (1.51%).

The results are expected for the three states as these states are the most urbanised states in Malaysia and there is always high demand for landed properties. Being urban centres of population and employment, there is always high demand for terrace houses in these states. Figure 1 shows the risk-return diagram of the terrace house sector by states.

(b) Semi-detached Houses (Table 3)

The Semi-Detached House Price Indices represent the capital values of one storey, one and a half storey and two to three storey semi-detached houses in each states.

Table 3 : Risk-return analysis of the semi-detached house sector by states in Malaysia (1989 – 2001)

States	Average Annual returns (%)	Annual Risks (%)	Risk-return ratio	Sharpe Ratio
K. Lumpur	11.37	17.02	1.497	0.2714
N. Sembilan	6.47	10.09	1.560	-0.0278
Penang	6.57	6.23	0.948	-0.0289
Selangor	6.07	15.39	2.535	-0.0442
Melaka	4.79	7.02	1.466	-0.2792
Terengganu	4.44	6.59	1.484	-0.3505
Pahang	3.40	7.37	2.168	-0.4545
Johor	4.25	5.38	1.266	-0.4647
Sabah	4.14	4.91	1.186	-0.5316
Perak	3.08	3.65	1.185	-1.0055
Kedah	2.23	4.47	2.004	-1.0112

NA - Incomplete house price series for the respective states for the study period.

Kuala Lumpur ranked number one followed by Negeri Sembilan and Penang. Kuala Lumpur being the capital city of Malaysia is the major urban center of population and employment. Demand from high concentrations of population and coupled with high income have bring about high capital appreciations of semi-detached houses in Kuala Lumpur.

Semi-detached houses in Negeri Sembilan, on the other hand, have benefited from the spill-over effects of the Kuala Lumpur International Airport development. Prices of semi-detached houses have performed poorly in the states of Kedah and Perak due to a lower level of urbanisation in these states.

There are no reported values for certain years in the MHPI for Sarawak, Kelantan and Perlis states hence there are no comparable risk-return values for the study period for these states. Figure 2 shows the risk-return diagram of the semi-detached house sector by states.

(c) Detached Houses (Table 4)

The Detached House Price Indices represent the capital values of one and two storeys detached houses of each states.

Table 4 : Risk-return analysis of the detached house sector by states in Malaysia (1989 – 2001)

States	Average Annual returns (%)	Annual Risks (%)	Risk-return ratio	Sharpe ratio
K. Lumpur	13.8	22.84	1.655	0.309
Penang	7.52	10.84	1.441	0.071
N. Sembilan	5.46	11.28	2.066	-0.114
Melaka	4.82	12.42	2.577	-0.155
Johor	4.90	10.09	2.059	-0.183
Selangor	4.11	12.84	3.124	-0.206
Perak	3.21	7.51	2.340	-0.471
Kelantan	4.06	3.99	0.983	-0.674
Terengganu	2.67	3.97	1.487	-1.028
Kedah	1.96	4.59	2.342	-1.044

NA - Incomplete house price series for the respective states for the study period.

Again Kuala Lumpur ranked number one followed by Penang and Negeri Sembilan. The results are expected as demand for detached houses are from the high income group which are concentrated in these states. Prices of detached houses do not perform well in the states of Kedah, Terengganu and Kelantan. Figure 3 shows the risk-return diagram of the detached house sector by states.

(d) High-rise Residential Sector (Table 5)

The High-rise Units Price Indices represent the capital values of low-cost flats, medium to high-cost apartments and condominiums in each states.

Table 5 : Risk-return analysis of the high-rise residential sector by states in Malaysia (1989 - 2001)

States	Average Annual Returns (%)	Annual Risks (%)	Risk-return ratio	Sharpe ratio
Penang	5.47	7.98	1.459	-0.160
Johor	4.61	11.07	2.401	-0.193
K. Lumpur	3.3	10.75	3.258	-0.321
Selangor	2.96	7.9	2.669	-0.480

Penang ranked first followed by Johor and Kuala Lumpur. Penang being an island has limited supply of land suitable for housing development. Housing needs in Penang are met mainly by developing high-rise flats, apartments and condominiums. As prices of landed properties in Penang are high, housing demand is focused on high-rise units. Thus it is not surprising to find the High-rise Units Price Index for Penang shows the highest level of capital appreciation during the study period. Strata properties are less popular in other states due to the availability of choice in landed properties. Figure 4 shows the risk-return diagram of the high-rise residential sector by states.

5.2 Risk-adjusted returns of the Malaysian Residential Property Sector by States and Regions (Table 6 & 7)

State

The state indices represent the performance of the overall residential sector in the respective states. Based on the respective House Price Indices for each states, the Sharpe Index shows that Kuala Lumpur ranked first followed by Penang and Selangor. The worst performing state is Perlis (Table 6).

Table 6 : Risk-return analysis of the Malaysian residential sector by states Malaysia (1989 - 2001)

States	Average Annual Returns (%)	Annual Risks (%)	Risk-return ratio	Sharpe ratio
K. Lumpur	7.34	10.04	1.368	0.059
Penang	5.74	5.22	0.909	-0.193
Selangor	5.16	6.65	1.289	-0.239
Johor	4.92	5.35	1.087	-0.342
N. Sembilan	4.58	5.1	1.114	-0.425
Melaka	4.21	5.98	1.420	-0.425
Pahang	3.47	4.56	1.314	-0.719
Terengganu	3.47	4.38	1.262	-0.749
Perak	3.31	3.45	1.042	-0.997
Sarawak	3.18	3.45	1.085	-1.035
Sabah	3.18	3.25	1.022	-1.098
Kelantan	3.23	2.89	0.895	-1.218
Kedah	2.84	2.75	0.968	-1.422
Perlis	1.53	1.66	1.085	-3.145

Region

On a regional basis, Johor Bahru ranked first and Klang Valley second. The worst performing region is the Ipoh-Kinta region (refer Table 7). The Johor Bahru residential property market has performed better than the Klang Valley Region due to demand by foreign investors from Singapore. The Ipoh-Kinta region is less active and less developed compared to the other three regions due to its geographical location and lesser economic activities in the region.

Table 7 : Risk-return analysis of the Malaysian residential sector by regions in West Malaysia (1989 - 2001)

States	Average Annual Returns (%)	Annual Risks (%)	Risk-return ratio	Sharpe ratio
Johor Bahru	6.5	12.05	1.854	-0.021
Klang Valley	5.44	8.42	1.548	-0.156
Penang Island	5.12	8.09	1.580	-0.201
Seremban – Sepang	4.4	5.73	1.302	-0.410
Ipoh – Kinta	3.32	3.16	0.952	-1.085

5.3 Risk-adjusted Returns by Investment Options (Table 8)

To make comparisons of other investment options with the residential property sector, equities and fixed deposit rate have been included in the analysis. A final table is prepared comparing these two investment options with the best performing states in the terrace, semi-detached, detached and high-rise unit sectors.

Table 8 shows that the best performing investment option being all the three landed properties in Kuala Lumpur i.e. Kuala Lumpur Detached, Semi-detached followed by Terrace House Sectors.

Table 8 : Risk-adjusted returns by investment options (1989 – 2001)

States	Average Annual returns (%)	Annual Risks (%)	Risk-return Ratio	Sharpe ratio
Kuala Lumpur Detached	13.80	22.84	1.655	0.309
Kuala Lumpur Semi-detached	11.37	17.02	1.497	0.271
Kuala Lumpur Terrace	7.94	9.00	1.134	0.132
KLCI	11.18	38.03	3.402	0.116
Penang Detached	7.52	10.84	1.441	0.071
Kuala Lumpur State	7.34	10.04	1.368	0.059
Johor Bahru Region	6.50	12.05	1.854	-0.021
N. Sembilan Semi-detached	6.47	10.09	1.560	-0.028
Penang Semi-detached	6.57	6.23	0.948	-0.029
Selangor Semi-detached	6.07	15.39	2.535	-0.044
FD	6.31	1.72	0.27	-0.256
Johor Terrace	5.22	5.13	0.983	-0.298

6.0 Portfolio Diversification Benefits of Malaysian Residential Property

Share investment is a popular investment option among Malaysian individual investors. Direct property investment particularly in the residential sector is equally popular.

Theoretically by adding property into an investment portfolio, property will provide diversification benefit by reducing the level of overall risk. The reduction is achieved due to the negative correlation of property with share.

Correlation analyses are carried out on residential properties, shares and fixed deposit rates. Residential properties are represented by the MHPI, shares by year-end values of KLSE Composite Index and FD by 12-month fixed-deposit rates of commercial banks. Correlation analyses on the three investment options are carried out and the resulting correlation factors are :

KLSE and MHPI	$r = 0.023$
KLSE and FD	$r = -0.268$
MHPI and FD	$r = 0.506$

Figure 5 shows the efficient frontier of the Malaysian share/FD/residential property portfolio. The efficient frontier shows the risk-return trade-off of the three investment options and demonstrates the potential of residential property in providing diversification benefits when combined in a mixed asset portfolio of shares, property and fixed deposits.

Table 9 shows the asset mixes incorporating residential property investment. A high percentage of property is found to form the optimal portfolio mix (Residential/share/FD : 80%/10%/10%). The reason could be due to serial correlation of the house price indices as the index construction is based on market values of stamp duty valuations on transacted residential properties. The percentage of residential property in the optimal portfolio mix is expected to be lower upon adjustments are made for valuation smoothing.

Table 9 : Risk and return of asset mixes with residential property included.

Risk (%)	Return (%)	Share (KLCI)	12 month FD rate (Commercial bank)	MHPI
8.25	6.46	0.0	0.1	0.9
7.08	6.93	0.1	0.1	0.8
8.20	7.40	0.2	0.1	0.7
7.78	7.39	0.2	0.2	0.6
10.77	7.86	0.3	0.2	0.5
10.69	7.84	0.3	0.3	0.4
11.89	7.98	0.333	0.333	0.333
14.42	8.31	0.4	0.3	0.3
18.22	8.80	0.5	0.2	0.3
22.04	9.28	0.6	0.1	0.3
26.04	9.75	0.7	0.1	0.2
30.09	10.22	0.8	0.1	0.1
34.17	10.69	0.9	0.1	0.0
38.03	11.18	1.0	0.0	0.0

7.0 Drivers of residential property returns

Kuala Lumpur is found to dominate higher returns of the Malaysian landed residential property sectors. The drivers behind the higher returns are due to the higher growth rate of population in Kuala Lumpur in the 1970s (refer Figure 6). Residential properties in good locations and accessibility in Kuala Lumpur have turned into prime residential areas in the 1980s and 1990s. Taman Tun Dr. Ismail, Bangsar, Bukit Tunku, Damansara Heights etc are examples of such housing estates which are much sought after by the high income group of the population. Capital appreciation of the landed properties in these areas have contributed significantly to the capital return for residential properties in Kuala Lumpur.

However with limited land supply for housing in Kuala Lumpur, residential development have spread to the state of Selangor particularly its major towns i.e. Petaling Jaya, Subang Jaya and Shah Alam in the Klang Valley. Fig. 6 shows the higher population growth rate enjoyed by Selangor in the 1980s and 1990s.

The districts of Selangor such as Ulu Langat and Petaling which adjoin Kuala Lumpur have enjoyed high population growth rates. The Sepang District has high population growth rate in the 1990s (refer Table 10) when the development trend in the Klang Valley began to shift southwards toward Putrajaya and KLIA which provide new catalyst for housing development in the district.

Table 10 : Population growth rates (% pa) of major districts in Selangor

Districts	1980 – 91	1991 - 2000
Gombak	6.85	5.01
Petaling	5.13	6.93
Sepang	1.56	6.47
Ulu Langat	7.68	8.20

Gross per capita income of the Malaysian population has also increased over the study period. Higher demand from the increasing population and higher disposable income has lead to the higher returns on the housing sector.

The higher demand for residential properties is depicted in Figure 7 and 8 which shows increasing number and value of property transactions for the 1988 to 2001 period.

8.0 Limitations of Analysis

The MHPI is a constant quality price index constructed using the hedonic method. To have sufficient number of observations for the construction of the indices, the pooling and aggregation of data is necessary so that statistical inferences can be made with confidence. However such aggregations may cause the loss of explanatory power for price changes by property types or by locations/zones within a region/state.

Due to the lack of transactions, a price index created may not have enough data points to test for time trend differences across locations/zones within a region. Similarly, separate regressions for each location are not possible without sufficient data (Guttery and Sirmans 1998).

The lack of transaction data possibly explains why there is no 1997 index values for the Perlis and Kelantan Semi-detached House Indices and the Pahang, Perlis, Sabah and Sarawak Detached House Indices.

The regional indices provide a useful indicator on price trends of residential properties in regional growth centres. The indices could be made more useful if a series of sub-indices based on property types are produced which could provide further insight on regional residential price movements. Maps should be used to indicate the boundaries of the regions.

The study period (1989 - 2001) coincides with a full property cycle, thus the performance analyses provide insight into the risk-return characteristics of the various residential property sectors in Malaysia.

It would be ideal to include Government Securities/Bonds into the study. However, there is a difficulty to establish the Government bond capital returns despite the existence of a RAM-Quant Shop Malaysian Government Securities Index. The Index is an accumulation index and the fact that the Malaysian Government Securities are long-term bonds of varying terms, different years of issue and varying interest rates makes it a difficulty to establish a new bond capital series that would allow risks and returns to be analysed and compared.

Currently there is no commercial property indices being developed in Malaysia. The lack of such property performance measures hampers any analysis that compares the performance of the residential sector with commercial property sectors. However the National Property Information Centre (NAPIC) is currently in the process of coming out with more performance indices.

The analyses of the performance analysis have been constrained by the lack of a higher frequency Malaysian House Price Index (i.e. semi-annual or quarterly data). Semi-annual data are available only from the January-June 1997 period. The results of the analyses could have been biased with a higher volatility on risks and returns due to the use of annual data.

9.0 Conclusions

In terms of housing type, the results show that detached houses provide higher capital appreciation compared to other forms of housing. But the high returns are associated with high risks. Thus although detached houses provide the highest returns but it has higher variability in its return. In another words, investors in detached houses may enjoy higher capital gains during housing booms but they will suffer from higher drop in their house prices compared to other forms of housing during the recession period.

The best states to invest in residential properties are in Kuala Lumpur, Penang and Johor. In terms of regions, investors would perform well by investing in Johor Bahru followed by Klang Valley and Penang Island.

On an inter-asset comparison basis, the best risk-adjusted performance comes from detached and semi-detached houses in Kuala Lumpur which has outperformed shares represented by the KLCI.

For individual investors, the better direct residential property performance over shares clearly identifies the residential property sector as a comparatively attractive investment option.

In conclusion, Malaysian residential properties in selected states and by types have perform well and individual investors could enjoy considerable risk reduction by incorporating residential properties in their investment portfolios.

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